

Quality and organisation of type 2 diabetes care - Appendices

KCE reports vol. 27 - Supplements

Belgian Health Care Knowledge Centre

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Conflict of interest :	Non declared
Disclaimer :	The experts and validators collaborated on the scientific report, but are not responsible for the policy recommendations. These recommendations are under the full responsibility of the Belgian Health Care Knowledge Centre.
Layout :	Nadia Bonnouh, Dimitri Bogaerts
Studie : 2004-10	
Domein : Good Clinical Practice (GCP)	
Brussels, July 2006	
MeSH : Diabetes Mellitus, Type 2 ; Quality Indicators, Health Care ; Organizations ; Health Services Research	
NLM classification : WK 810	
Language : English	
Format : Adobe® PDF™ (A4)	
Legal depot : D/2006/10.273/09	
Any partial reproduction of this document is allowed if the source is indicated.	
The full document is available on the website of the Belgian Health Care Knowledge Centre (http://www.kenniscentrum.fgov.be).	
How to refer to this document?	
Mathieu C, Nobels F, Peeters G et al. Quality and organisation of type 2 diabetes care - Appendices. Brussels : Belgian Health Care Knowledge Centre (KCE) ; July 2006. KCE reports vol. 27 - Supplements. Ref. D/2006/10.273/09.	

Appendix Part I: Quality Indicators for diabetes care

1.1 Matrix for diabetes care quality indicators

The first idea was to classify all potential quality indicators into a matrix. This matrix would represent different aspects and topics of diabetes care (rows of the matrix), while taking into account the severity of the diabetes problem as well (columns of the matrix).

The rows of the matrix would be representing the following aspects of diabetes care:

- Diagnosis
- Treatment through life style adaptations
- Treatment with OAD
- Treatment with insulin
- Evaluation of the cardiovascular risk
- Follow-up and treatment in case of cardiovascular disease
- Follow-up and treatment in case of nephrological disease
- Follow-up and treatment in case of ophthalmological disease
- Follow-up and treatment in case of neurological disease
- Follow-up and treatment in case of diabetic foot
- Psychosocial aspects in the care of people with diabetes
- Aspects of shared care, collaboration and referral

Concerning disease severity (columns of the matrix), a distinction would be made between the following 4 groups of patients:

- diabetes patients treated with life style interventions only
- diabetes patients additionally treated with oral anti-diabetic drugs (OAD)
- diabetes patients treated with insulin
- diabetes patients with complications (independent of the treatment)

As such, the quality indicators would be classified into the following matrix:

Severity Aspect	Life style	OAD	Insulin	Complications
Diagnosis				
R/ life style				
R/ OAD				
R/ insulin				
Evaluation CV ris				
CV disease				
Nephro disease				
Ophtalmo disease				
Neuro disease				
Diabetic foot				
Psycho-social				
Shared care				

1.2 Systematical search for guidelines on type 2 diabetes care: results

SELECTED GUIDELINES

Selected: **176**
Accepted: **104**

- INTERNATIONAL – MAJOR (DIABETES) ORGANISATIONS
 - WHO

Accepted: -

No	GUIDELINE	ACCEPTED	REJECTED
1	Definition, diagnosis and classification of diabetes mellitus - www.staff.ncl.ac.uk/philip.home/who_dmc.htm	-	not addressing diabetes care
2	Primary prevention of type 2 (non-insulin-dependent) diabetes mellitus (XX(65187.1)) - King, H.	-	not addressing diabetes care
3	Prevention of type II diabetes by physical training: epidemiological considerations and study methods - King, H.	-	not addressing diabetes care
4	The Economics of diabetes and diabetes care: a report of a diabetes health economics study group (WK 810 97EC) - Gruber, W.	-	economical report
5	Screening for type 2 diabetes [pdf 145kb] : Report of a World Health Organization and International Diabetes Federation meeting 2003 - http://www.who.int/topics/diabetes_mellitus/en/	-	not addressing diabetes care

- Publications with IDF → see IDF

- **IDF**

- Accepted: 2

No	GUIDELINE	ACCEPTED	REJECTED
1*	Desktop Type 2 1999 - Together with WHO www.sediabetes.org/publicaciones/1999_idf_dm2.pdf	+	-
2	Arterial Risk Factors in Type 2 1997 - with WHO http://www.staff.newcastle.ac.uk/philip.home/guidelines	+	-
3	WHO Diagnosis and Classification of Diabetes 1999 - Together with WHO http://www.staff.newcastle.ac.uk/philip.home/guidelines	-	not addressing diabetes care

* “source document to be published later will go further than the previous guidelines in referencing the evidence and strength of the recommendations given here”:
DOCUMENT NOT FOUND (availability?)

- **ADA - American Diabetes Association, ADA**

- Accepted: 1

No	GUIDELINE	ACCEPTED	REJECTED
• E l u r	Standards of medical care in diabetes : 2005 Clinical Practice Recommendations http://care.diabetesjournals.org/content/vol28/suppl_1/	+	-
o p e	2005 Clinical Practice Recommendations: <i>Summary of Revisions for the 2005 Clinical Practice Recommendations</i> care.diabetesjournals.org/cgi/content/full/28/suppl_1/s3	+	-
a 2 n	Hyperglycemic crises in diabetes . 2000 Oct (revised 2001 republished 2004 Jan). NGC:003428	-	position statement
3A s	ADA and American Academy of Pediatrics - Joint Consensus Statement, 2000: Type 2 Diabetes in Children and Adolescents pediatrics.aappublications.org/cgi/content/extract/114/1/259	-	article, not guideline
s 4 o	Diabetes management in correctional institutions . 1989 (revised 2004 Jan; republished 2005 Jan). NGC:004136	-	position statement
c 5 i	Diagnosis and classification of diabetes mellitus . 2004 Jan (republished 2005 Jan). NGC:004135	-	position statement -
a 6 t i	Diabetes care in the school and day care setting . 1998 (revised 2004 Jan). NGC:003432	-	guideline withdrawn / superseded
o 7 n	Diabetes nutrition recommendations for health care institutions . 1996 Aug (reviewed 1997; republished 2004 Jan). NGC:003416	-	guideline withdrawn / superseded
f 8 o r	Dyslipidemia management in adults with diabetes . 1997 Nov (revised 2004 Jan). 4 pages. NGC:003420	-	guideline withdrawn / superseded
t 9 h e	Nephropathy in diabetes . 1996 Nov (revised 2001 Oct; republished 2004 Jan). 5 pages. NGC:003424	-	guideline withdrawn / superseded
l 0 t	Nutrition principles and recommendations in diabetes . 2001 Oct (republished 2004 Jan). 11 pages. NGC:003414	-	guideline withdrawn / superseded
u 1 d y	Preconception care of women with diabetes . 1995 (revised 2000; republished 2004 Jan). 3 pages. NGC:003423	-	guideline withdrawn / superseded
l 2 f	Prevention or delay of type 2 diabetes . 2003 Jan (republished 2004 Jan). 8 pages. NGC:003415	-	guideline withdrawn / superseded
l 3 i	Retinopathy in diabetes . 1997 Nov (revised 1998; republished 2004 Jan). 4 pages. NGC:003425	-	guideline withdrawn / superseded
a 14 e	Tests of glycemia in diabetes . 1996 Nov (revised 2000; republished 2004 Jan). 3 pages. NGC:003427	-	guideline withdrawn / superseded
t 15 s	Screening for type 2 diabetes . 2000 Oct (republished 2004 Jan). 4 pages. NGC:003412	-	guideline withdrawn / superseded
, 16 E	Smoking and diabetes . 1999 Oct (revised 2004 Jan). 2 pages. NGC:003422	-	guideline withdrawn / superseded
A 17 D	Retinopathy in diabetes . 1997 Nov (revised 1998; republished 2004 Jan). 4 pages. NGC:003425	-	guideline withdrawn / superseded

(<http://212.144.4.93/easd/>)

links to organisations and resources

- **Federation of European Nurses in Diabetes, FEND** - (<http://www.fend.org/>)
links to organisations and resources
- **Primary Care Diabetes EUROPE, PCDEurope** - (<http://www.pcdeurope.org>)
Website: guidelines (type 2 DM): 1, developed by the Dutch College of GP's (see further) and endorsed by PCD Europe
- **CDC**
 - Accepted: 1

No	Guideline	ACCEPTED	REJECTED
1	Prevention and treatment of complications of diabetes mellitus : a guide for primary care practitioners- National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) of the Centers for Disease Control (CDC), USA http://wonder.cdc.gov/wonder/prevguid/p0000063/p0000063.asp	-	Document from 1991
2	Improving Diabetes Care - CDC Task Force on Community Preventive Services www.cdc.gov/diabetes/projects/community.htm	+	-
3	CDC Statement On Results Of Diabetes Prevention Program: http://www.cdc.gov/diabetes/news/docs/dpp.htm	-	not addressing diabetes care

- **NATIONAL ORGANISATIONS**

-

- **Belgium**

- Accepted: 2

No	Guideline	ACCEPTED	REJECTED
1	http://www.ssmg.be/new/index.php?Page=91 - http://www.ssmg.be/new/	+(in French)	-
2	http://www.wvvh.be/	+(in Dutch)	-

- **Canada**

- Accepted: 12

No	Guideline	ACCEPTED	REJECTED
1	Screening for type 2 diabetes mellitus to prevent vascular complications: updated recommendations from the Canadian Task Force on Preventive Health Care - 1994 (revised 2005). NGC:004089 www.guideline.gov/summary/summary.aspx?doc_id=6523	-	not addressing diabetes care
2	Diabetes care , 01 Jan 2004, Guidelines and Protocols Advisory Committee (BC)	+	-
3	Clinical practice guidelines for the prevention and management of diabetes in Canada - Canadian Diabetes Association 2003 http://www.diabetes.ca/cpg2003/chapters.aspx	+	-
4	Clinical practice guidelines for the prevention and management of hypoglycemia in diabetes- Canadian Diabetes Association 2001 - Canadian Diabetes Association	+	-
5	Evidence-based practical management of type 2 diabetes 2001, Society of Rural Physicians of Canada	+	-
6	Hypertension : therapeutic guide 2002 : Chapter 15. Hypertension and diabetes, Sept 2002, Quebec Hypertension Society	+	-
7	Report of the Canadian Hypertension Society Consensus Conference - Canadian Medical Association 2005 - http://www.hypertension.ca/recommend_body2.asp	+	-
8	Screening for gestational diabetes mellitus , 2002, Society of Obstetricians and Gynaecologists of Canada	-	not addressing diabetes care
9	Risk reduction for type 2 diabetes in Aboriginal children in Canada , 2005, Canadian Paediatric Society	-	not relevant to Belgian situation
10	Assessment and management of foot ulcers for people with diabetes . Registered Nurses Association of Ontario - Professional Association. 2005. NGC:004216	+	-
11	Reducing foot complications for people with diabetes . Registered Nurses Association of Ontario - Professional Association. 2004. NGC:003635	+	-
12	Best practice guideline for the subcutaneous administration of insulin in adults with type 2 diabetes . Registered Nurses Association of Ontario - Professional Association. 2004. NGC:003847	+	-
13	Manitoba diabetes care recommendations, 2002 www.gov.mb.ca/health/diabetes/documents/carerec/mdcr.pdf	+	-
14	Guidelines for perinatal care : obstetric guideline 10B. Diabetes mellitus and pregnancy type 1 & 2 , 2001, British Columbia Reproductive Care Program	+	-
15	Guidelines for perinatal care : obstetric guideline 10A. Gestational diabetes , 2001, British Columbia Reproductive Care Program	-	not addressing diabetes care
16	Diabetes care flow sheet for patients with diabetes , 2000, Alberta Clinical Practice Guidelines Program	+	-

- Denmark
 - Accepted: 1

No	Guideline	ACCEPTED	REJECTED
1	http://dsam.dk/bibliotek/files/0231.pdf - Denmark: Danish College of General Practitioners	+	-

- Estonia
 - [Estonian Diabetes Association](#): no website in english – no guideline found.
 -
- France
 - Accepted: 20

No	Guideline	ACCEPTED	REJECTED
1	Stratégie de prise en charge du patient diabétique de type 2 à l'exclusion de la prise en charge des complications - http://www.anaes.fr/HAS/has.nsf/HomePage?ReadForm	+	-
2	Suivi du patient diabétique de type 2 à l'exclusion du suivi des complications - http://www.anaes.fr/HAS/has.nsf/HomePage?ReadForm	+	-
3	Rapport du Haut Comité de la Santé Publique sur les Diabètes : Prévention, dispositifs de soin et éducation du patient - 1998	-	No guideline – not addressing diabetes care
4	Circulaire de la Direction Générale de la Santé - 1999	-	No guideline – Framework DM care in France
5	Traitement médicamenteux du diabète de type 2 (diabète non insulino-dépendant) - Agence Française De Sécurité Sanitaire Des Produits De Santé (AFSSAPS)	+	-
6	Prise en charge du patient diabétique vu par le cardiologue (en commun avec le SFC, Société française de cardiologie) - http://www.alfediam.org/	+	-
7	Dyslipidémie du diabétique - http://www.alfediam.org/	+	-
8	Mise à l'insuline du diabétique non insulino-dépendant (diabétique de type 2) - http://www.alfediam.org/	+	-
9	Nutrition et Diabète - http://www.alfediam.org/	+	-
10	Hypertension artérielle et diabète: Recommandations - http://www.alfediam.org/	+	-
11	Dépistage, surveillance et traitement de la rétinopathie diabétique - http://www.alfediam.org/	+	-
12	Le pied diabétique - http://www.alfediam.org/	+	-
13	Neuropathie autonome chez le diabétique - http://www.alfediam.org/	+	-
14	L'hypoglycémie du patient diabétique - http://www.alfediam.org/	+	-
15	Neuropathie diabétique périphérique - http://www.alfediam.org/	+	-

16	Activité physique et Diabète - http://www.alfediam.org/	+	-
17	Artériopathie des membres inférieurs chez le diabétique - http://www.alfediam.org/	+	-
18	"Recommandations pour le diagnostic, la prévention et le traitement de l'obésité" de l'ALFEDIAM, l'AFERO et la SNDLF - http://www.alfediam.org/	+	-
19	Alimentation du diabétique de type 2 - http://www.alfediam.org/	+	-
20	Identification of myocardial ischemia in the diabetic patient. Joint ALFEDIAM and SFC recommendations. Dépistage de l'ischémie silencieuse chez les patients diabétiques. Recommandations conjointe de l'ALFEDIAM et de la SFC. Joint ALFEDIAM and SFC recommendations	-	No formal guideline statements
21	Diabète et Anesthésie : prise en charge du diabétique en période opératoire - http://www.alfediam.org/	-	not addressing diabetes care
22	Auto-surveillance glycémique chez le diabétique - http://www.alfediam.org/	+	-
23	Coronaires et Diabète - http://www.alfediam.org/	+	-
24	Prise en charge des patients traités par pompes à insuline portable - http://www.alfediam.org/	-	not addressing diabetes care
25	Education diététique du diabétique de type 2 - http://www.alfediam.org/	+	-

- Germany
 - Accepted: 25

No	Guideline	ACCEPTED	REJECTED
1	Diabetes mellitus Typ 2 (Drug Commission of the German Medical Association) - http://www.akdae.de/35/10Hefte/85_Diabetes_2002_1Auflage.pdf - AQuMed / AEZQ (DE) - Agency for Quality in Medicine	+	-
2	Practice Guidelines Diabetes (Saxonian Guideline Group) - http://www.imib.med.tu-dresden.de/diabetes/leitlinien/index.htm - AQuMed / AEZQ (DE)	+	-
3	Guideline Clearingreport Diabetes Type 2 2001 (AZQ)	-	Comparison of 17 GL
Evidenzbasierte Diabetes-Leitlinien DDG - http://www.deutsche-diabetes-gesellschaft.de/ + IGKE			
4	Definition, Klassifikation und Diagnostik des Diabetes mellitus - http://www.deutsche-diabetes-gesellschaft.de/	+	-
5	Diagnostik, Therapie und Verlaufskontrolle der Neuropathie bei Diabetes mellitus Typ 1 und Typ 2 - http://www.deutsche-diabetes-gesellschaft.de/	+	-
6	Diagnostik und Therapie der Hypertonie bei Diabetes mellitus - http://www.deutsche-diabetes-gesellschaft.de/	+	-
7	Diagnostik, Therapie und Verlaufskontrolle der diabetischen Nephropathie - http://www.deutsche-diabetes-gesellschaft.de/	+	-
8	Diagnostik, Therapie und Verlaufskontrolle der diabetischen Retinopathie und Makulopathie - http://www.deutsche-diabetes-gesellschaft.de/	+	-

9	gesellschaft.de/ Diagnostik und Therapie von Herzerkrankungen bei Diabetes mellitus- http://www.deutsche-diabetes-gesellschaft.de/	+	-
10	Antihyperglykämische Therapie des Diabetes mellitus Typ 2- http://www.deutsche-diabetes-gesellschaft.de/	+	-
11	Prävention und Therapie der Adipositas- http://www.deutsche-diabetes-gesellschaft.de/	+	-
12	Psychosoziales und Diabetes mellitus- http://www.deutsche-diabetes-gesellschaft.de/	+	-
13	Diagnostik, Therapie, Verlaufskontrolle und Prävention des diabetischen Fußsyndroms- http://www.deutsche-diabetes-gesellschaft.de/	+	-
14	Diagnostik, Therapie und Verlaufskontrolle der Neuropathie bei Diabetes mellitus Typ 1 und Typ 2- http://www.deutsche-diabetes-gesellschaft.de/	+	-
Praxis-Leitlinien - http://www.deutsche-diabetes-gesellschaft.de/ + IGKE			
15	Definition, Klassifikation und Diagnostik des Diabetes mellitus - http://www.deutsche-diabetes-gesellschaft.de/	-	Not addressing diabetes care
16	Diabetische Neuropathie - http://www.deutsche-diabetes-gesellschaft.de/	+	-
17	Hypertonie und Diabetes mellitus - http://www.deutsche-diabetes-gesellschaft.de/	+	-
18	Diabetische Nephropathie - http://www.deutsche-diabetes-gesellschaft.de/	+	-
19	Diabetische Retinopathie - http://www.deutsche-diabetes-gesellschaft.de/	+	-
20	Herz und Diabetes mellitus - http://www.deutsche-diabetes-gesellschaft.de/	+	-
21	Therapie des Diabetes mellitus Typ 2 - http://www.deutsche-diabetes-gesellschaft.de/	+	-
22	Adipositas und Diabetes mellitus - http://www.deutsche-diabetes-gesellschaft.de/	-	Not addressing diabetes care
23	Psychosoziales und Diabetes mellitus - http://www.deutsche-diabetes-gesellschaft.de/	+	-
24	Diabetisches Fußsyndrom - http://www.deutsche-diabetes-gesellschaft.de/	+	-
25	Diagnose und therapie der sensomotorischen diabetischen neuropathie. praxisleitlinie (DDG)	+	-
26	Diabetes mellitus im Kindes- und Jugendalter- http://www.deutsche-diabetes-gesellschaft.de/	+	-
27	Nationale Versorgungsleitlinie Diabetes mellitus Typ 2 - http://www.leitlinien.de/ - Hier geht es zur Kurzfassung der Versorgungsleitlinie Typ-2-Diabetes (1. Aufl., Mai 2002)	+	-
28	Epidemiologie und verlauf des diabetes mellitus in Deutschland (DDG) - AWMF (DE) (http://www.uni-duesseldorf.de/AWMF/III/057-003.pdf)	-	not addressing diabetes care
29	Recommendations for Disease Management Programmes on Typ 2 Diabetes (http://cms.g-ba.de/cms/upload/pdf/aktuelles/beschluesse/2005-01-18-dmp-dia2.pdf) - GBA (DE) - Federal Joint Committee	+	-

- Spain

- Accepted: 6

No	Guideline	ACCEPTED	REJECTED
1	2003. Servicio Andaluz de Salud. Procesos Asistenciales y Guías rápidas. Diabetes Mellitus Tipo 2 - Federación Española de Asociaciones de Educadores en Diabetes	+	-
2	2002. Asociación Gallega de Medicina Familiar y Comunitaria (AGAMFEC). Manejo de la Diabetes Mellitus tipo 2 - Federación Española de Asociaciones de Educadores en Diabetes	+	-
3	1999. Catalan association of Diabetes (ACD). Protocols of performance in diabetes mellitus . (http://www.acdiabetis.org/acd/cas/pdf/cap7.pdf)	+	-
4	Spanish society of Angiología and Cirugía Vascular (SEAVC) Consensus of the diabetic SEACV on pie	+	-
5	COMBO (2003) - Descarga - Sociedad Española de Diabetes - URL: http://www.sediabetes.org	+	-
6	FMC- Protocolo DM2 en AP (2000) - Descarga - Sociedad Española de Diabetes - URL: http://www.sediabetes.org	+	-

- The Netherlands

- Accepted: 7

No	Guideline	ACCEPTED	REJECTED
1	http://www.diabetesfederatie.nl/Adobe/vol_1tm4_CBO.pdf - CBO	+	-
2	Diabetes Mellitus type 2 - NHG	+	-
3	Deel I tm 10 samengevat (NB nog niet geactualiseerd) – (http://www.diabetesfederatie.nl/Adobe/Richtlijnen%20en%20Adviezen%20-%202000.pdf) - http://www.diabetesfederatie.nl 01 - Hart- en Vaatziekten bij diabetes mellitus. * 02 - Diabetische retinopathie. * 03 - Diabetische voet. * 04 - Diabetische nefropathie. * * = CBO guideline 04a - Addendum Diabetische nefropathie 05 - Zelfcontrole van het bloedglucosegehalte bij diabetes mellitus. 06 - Diabetes mellitus en zwangerschap. 07 - Sport en bewegen bij diabetes mellitus. 08 - Voedingsrichtlijnen bij diabetes mellitus. 09 - Diabeteseducatie. (Samenvatting actuele richtlijn)- (http://www.diabetesfederatie.nl/Adobe/09[1].diabeteseducatie.pdf)	+	-
4	Diabetische Neuropathie - http://www.diabetesfederatie.nl	+	-
5	Richtlijn voor medicamenteuze behandeling van diabetes mellitus type 2 – (http://www.diabetesfederatie.nl/Adobe/NDFRLRxNOV04.pdf)	+	-
6	Framework type 2 DM (medical treatment DM)	-	not a guideline

	http://www.diabetes.nl/raamwerktype2.pdf		
7	Psychosociale problematiek bij diabetes mellitus www.diabetesfederatie.nl/Adobe/vol_10_Psychosoc%20Zorg.PDF	+	-
8	Kinderen en tieners met diabetes www.diabetesfederatie.nl/Adobe/11.Kinderen12feb04.PDF	+	-
9	EADV Richtlijn "De uitvoering van de zelfcontrole" - http://www.eadv.nl/uploaded/FILES/documenten/protocollen/200400585%20EADV%20richtlijn%20zelfcontrole.pdf	-	not a guideline

- UK
 - Accepted: 27

No	Guideline	ACCEPTED	REJECTED
1	Type 2 diabetes - blood glucose – NICE	+	-
2	Type 2 diabetes - footcare – NICE	+	-
3	Type 2 diabetes - management of blood pressure and blood lipids – NICE	+	-
4	Type 2 diabetes - renal disease – NICE	+	-
5	Type 2 diabetes - retinopathy – NICE	+	-
6	Guidance on the use of patient-education models for diabetes – NICE	-	not a guideline
7	Type 2 diabetes: prevention and management of foot problems - Publisher: NICE 2004	+	-
8	Guidance on the use of continuous subcutaneous insulin infusion for diabetes - Publisher: NICE 2003	-	not a guideline
9	Guidance on the use of glitazones for the treatment of type 2 diabetes - Publisher: NICE 2003	-	not a guideline
10	Guidance on the use of long-acting insulin analogues for the treatment of diabetes - insulin glargine Publisher: NICE 2002	-	not a guideline
11	Guidance on the use of orlistat for the treatment of obesity in adults - Publisher: NICE - 2001	-	not a guideline
12	Guidance on the use of surgery to aid weight reduction for people with morbid obesity - Publisher: NICE 2002	-	not a guideline
13	Guidance on the use of surgery to aid weight reduction for people with morbid obesity - Publisher: NICE 2002	-	not a guideline
14	Guidance on the use of patient-education models for diabetes - Publisher: NICE 2003	-	not a guideline
15	Pancreatic islet cell transplantation - Publisher: NICE 2003	-	not a guideline
16	Guidance on the use of sibutramine for the treatment of obesity in adults - Publisher: NICE 2001	-	not a guideline
17	Management of diabetes – SIGN	+	-
18	Hypertension in older people - SIGN	+	-
19	The care of patients with chronic leg ulcer Publisher: SIGN 1998	-	not addressing diabetes care
20	Recommendations for the management of diabetes in primary care – Diabetes UK http://www.diabetes.org.uk/infocentre/carerec/primary.htm	+	-

21	Care recommendation: physical activity and diabetes – Diabetes UK 2003 http://www.diabetes.org.uk/infocentre/carerec/physical.doc	+	-
22	Care recommendation: preconception care of women with diabetes - Diabetes UK 2002 http://www.diabetes.org.uk/infocentre/carerec/preconcept.htm	+	-
23	Care recommendations for the management of pregnant women with diabetes (including gestational diabetes) Diabetes UK 2004 http://www.diabetes.org.uk/infocentre/carerec/preg4.doc	+	-
24	Position statement: General Practitioners with a special interest in diabetes (GPwSIs) - Diabetes UK 2003 http://www.diabetes.org.uk/infocentre/state/downloads/Gps_Special_Interest_3204E.doc	-	not a guideline
25	Position statement: integrated care - putting the patient first - Diabetes UK 2002 http://www.diabetes.org.uk/infocentre/state/intecare.htm	-	not a guideline
26	Position statement: prisons - care of people with diabetes Diabetes UK 2001 http://www.diabetes.org.uk/infocentre/state/downloads/prisons.doc	-	not a guideline
27	Position statement: registers, confidentiality and consent Diabetes UK 2002 http://www.diabetes.org.uk/infocentre/state/downloads/registers.doc	-	not a guideline
28	Position statement: stem cell research and diabetes Diabetes UK 2003 http://www.diabetes.org.uk/infocentre/state/stemcell.htm	-	not a guideline
29	Guidelines of practice for residents with diabetes in care homes - Diabetes UK 1999 http://www.diabetes.org.uk/infocentre/reports/residents.doc	+	-
30	Position statement: early identification of people with type 2 diabetes - Diabetes UK 2002 http://www.diabetes.org.uk/infocentre/state/downloads/earlyid.doc	-	not a guideline
31	Position statement: home monitoring of blood glucose levels - Diabetes UK 2003 http://www.diabetes.org.uk/infocentre/state/monitoring.htm	-	not a guideline
32	Position statement: insulin pump therapy Diabetes UK 2003 http://www.diabetes.org.uk/infocentre/state/pump.htm	-	not a guideline
33	Position statement: joint statement on 'diabetic foods' from the Food Standards Agency and Diabetes UK Diabetes UK 2002 http://www.diabetes.org.uk/infocentre/state/diabetic_foods.htm	-	not a guideline
34	Position statement: United Kingdom prospective diabetes study (UKPDS) - Implications for the care of people with Type 2 diabetes - Diabetes UK 1999 http://www.diabetes.org.uk/infocentre/state/type2.htm	-	not a guideline
35	The implementation of nutritional advice for people with diabetes - Diabetes UK 2003 http://www.diabetes.org.uk/infocentre/carerec/nutrition.pdf	-	not a guideline
36	Diabetes Type 1 and 2 – foot – PRODIGY 2003 http://www.prodigy.nhs.uk/guidance.asp?gt=Diabetes%20-%20foot%20disease	+	-
37	Diabetes type 1 and 2 – hypertension – PRODIGY 2003 http://www.prodigy.nhs.uk/guidance.asp?gt=Diabetes%20-%20hypertension	+	-

	%20hypertension		
38	Diabetes type 2 – blood glucose management – PRODIGY 2003 http://www.prodigy.nhs.uk/guidance.asp?gt=Diabetes%20-%20glycaemic%20control	+	-
39	Diabetes type 2 – lipid management – PRODIGY 2003 http://www.prodigy.nhs.uk/guidance.asp?gt=Diabetes%20-%20lipid%20management	+	-
40	Diabetes type 2 – renal disease – PRODIGY 2003 http://www.prodigy.nhs.uk/guidance.asp?gt=Diabetes%20-%20renal%20disease	+	-
41	Leg ulcer - venous - PRODIGY 2004 http://www.prodigy.nhs.uk/guidance.asp?gt=Leg%20ulcer%20-%20venous	-	not addressing diabetes care
42	Diabetes type 2 - retinopathy (PRODIGY Guidance) (http://www.prodigy.nhs.uk/guidance.asp?gt=Diabetes%20-%20retinopathy) - SCHIN (GB) - Sowerby Centre for Health Informatics at Newcastle	+	-
43	Obesity - PRODIGY 2003 http://www.prodigy.nhs.uk/guidance.asp?gt=Obesity	-	not addressing diabetes care
44	National service framework for diabetes : delivery strategy Publisher: Department of Health 2003 www.dh.gov.uk/assetRoot/04/03/28/23/04032823.pdf	-	not a guideline
45	National service framework for diabetes : standards Publisher: Department of Health 2001 www.dh.gov.uk/assetRoot/04/05/89/38/04058938.pdf	+	-
46	Guidelines for the appointment of General Practitioners with Special Interests in the delivery of Clinical Services: Diabetes - UK Department of Health 2003 www.dh.gov.uk/assetRoot/04/08/28/75/04082875.pdf	-	not addressing diabetes type 2 care
47	Paediatric diabetes : RCN guidance for newly appointed nurse specialists - Royal College of Nursing 2004 www.rcn.org.uk/publications/pdf/paediatricdiabetes.pdf	-	not addressing diabetes care
48	Starting insulin treatment in adults with type 2 diabetes Royal College of Nursing 2004 http://www.rcn.org.uk/publications/pdf/Starting%20insulin%20in%20adults%20with%20type%20diabetes.pdf	+	-
49	Adolescent transition care : guidance for nursing staff Royal College of Nursing 2004 http://www.rcn.org.uk/publications/pdf/Starting%20insulin%20in%20adults%20with%20type%20diabetes.pdf	-	not addressing diabetes type 2 care
50	Guidelines for the assessment and management of leg ulceration- CREST 1998	-	not addressing diabetes care
51	Management of Diabetes in Pregnancy - CREST 2001 www.crestni.org.uk/publications/diabetes_main_doc.pdf	+	-
52	SHARP Guidelines for the diagnosis of diabetes mellitus SHARP 2001 http://www.dundee.ac.uk/sharp/diabetes.htm	-	not addressing diabetes care
53	Diabetes mellitus: an update for healthcare professionals British Medical Association 2004 www.bma.org.uk/ap.nsf/Content/Diabetes/\$file/diabetes.pdf	+	-
54	The National Screening Committee's Policy on screening for diabetes in adults - 2005	-	not addressing

			diabetes care
55	Practice guidance on the care of people with diabetes (3rd edition) - Royal Pharmaceutical Society 2004 http://www.rpsgb.org.uk/pdfs/diabguid3.pdf	-	not a guideline
56	Guidelines for the management of diabetic ketoacidosis in children and adolescents - British Society of Paediatric Endocrinology and Diabetes 2004 http://www.bsped.org.uk/professional/guidelines/docs/BSPEDDKAApr04.pdf	+	-
57	Glycaemic emergencies - Emergency Care Specialist Library, Joint Royal Colleges Ambulance Liaison Committee 2004 - Portable Document file / PDF .	+	-
58	Framework for optometric referrals – College of Optometricians, UK http://www.college-optometrists.org/professional/framework.pdf	+	-
59	Guidance for optometrists in relation to diabetic retinopathy screening schemes – Association of Optometrists, UK - http://www.assoc-optometrists.org/uploaded_files/pdf/guidance_to_optometrists_private_screening_final3.pdf	-	not a guideline
60	Guidelines for management of hypertension: report of the fourth working party of the British Hypertension Society, 2004 - British Hypertension Society 2004 http://www.bhsoc.org/pdfs/BHS_IV_Guidelines.pdf	+	-

1.3 Levels of Evidence used in the different guidelines

Be-WvH-VDV	
Level of evidence	
1	<p>At least 2 independently performed studies with similar results, of the following type:</p> <ul style="list-style-type: none"> * high quality randomized controlled trial * independent and blind comparative study of a diagnostic test with a good quality reference test (meaning: in a group of consecutive patients where the diagnostic as well as the reference test has been performed) <p>A good quality prospective cohort study with at least 80% follow-up</p> <p>A systematic review or meta-analysis of these kind of studies, with a high level of consistency</p> <p>=> "studies that have demonstrated that..."</p>
2	<p>At least 2 independently performed studies with similar results, of the following type:</p> <ul style="list-style-type: none"> * moderate quality randomized controlled trial * independent and blind comparative study of moderate quality of a diagnostic test with a reference test (meaning: only performed in some patients of a group of consecutive patients, or if the reference test has not been performed in everybody) <p>A moderate quality retrospective cohort study or a patient-control study</p> <p>A systematic review or meta-analysis of these kind of studies, with a high level of consistency</p> <p>=> "studies where it is likely that..."</p>
3	<p>Absence of comparative research of good quality:</p> <ul style="list-style-type: none"> * no good quality randomized controlled trials * only one study of moderate quality and no meta-analyses of such studies available * conflicting results of randomized controlled trials or meta-analyses <p>Consensus of at least two experts</p> <p>Guideline or conclusion after review of the available literature</p> <p>Consensus within a group of authors</p> <p>=> "there is an indication that..." - "the working group is of opinion that..."</p>
Ca-CDA	
level of evidence	Studies of diagnosis
1	<p>i. Independent interpretation of test results (without knowledge of the result of the diagnostic or gold standard)</p> <p>ii. Independent interpretation of the diagnostic standard (without knowledge of the test result)</p>

	iii. Selection of people suspected (but not known) to have the disorder iv. Reproducible description of both the test and diagnostic standard v. At least 50 patients with and 50 patients without the disorder
2	Meets 4 of the Level I criteria
3	Meets 3 of the Level I criteria
4	Meets 1 or 2 of the Level I criteria
level of evidence	Studies of treatment and prevention
IA	Systematic overview or meta-analysis of high-quality randomized, controlled trials Appropriately designed randomized, controlled trial with adequate power to answer the question
IB	Nonrandomized clinical trial or cohort study with indisputable results
2	Randomized, controlled trial or systematic overview that does not meet Level I criteria
3	Nonrandomized clinical trial or cohort study
4	Other
level of evidence	Studies of prognosis
I	a) Inception cohort of patients with the condition of interest, but free of the outcome of interest b) Reproducible inclusion/exclusion criteria c) Follow-up of at least 80% of subjects d) Statistical adjustment for extraneous prognostic factors (confounders) e) Reproducible description of outcome measures
2	Level 2 Meets criterion a) above, plus 3 of the other 4 criteria
3	Level 3 Meets criterion a) above, plus 2 of the other criteria
4	Level 4 Meets criterion a) above, plus 1 of the other criteria

Ca-RNAO	~ UK-NICE
level of evidence	
Ia	Evidence obtained from meta-analysis or systematic review of randomized controlled trials
Ib	Evidence obtained from at least one randomized controlled trial
IIa	Evidence obtained from at least one well-designed controlled study without randomization
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study, without randomization
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

Dk-DSAM	~ UK-SIGN
Skemaet, "Levels of Evidence and Recommendation", er udarbejdet af National Health Service Research and Development Programme, Centre for Evidence-Based Medicine i Oxford i 1998 (www.cebm.net).	
level of evidence	
1a	Systematisk review eller metaanalyse af homogene randomiserede kontrollerede forsøg
1b	Randomiserede kontrollerede forsøg
1c	Absolut effekt (f.eks. insulin til type 1-diabetes-patienter)
2a	Systematisk review af homogene kohortestudier
2b	Kohortestudie
2c	Databasestudier
3a	Systematisk review af case-kontrol-undersøgelser
3b	Case-kontrol-undersøgelser
4	Opgørelser, kasuistikker
5	Ekspertmening uden eksplicit kritisk evaluering, eller baseret på patofysiologi, laboratorieforskning eller tommelfingerregel
GCP	Anbefalet af skrivegruppen som god klinisk praksis

Fr-ANAES	
level of evidence	
1	Essais comparatifs randomisés de forte puissance Méta-analyse d'essais comparatifs randomisés Analyse de décision basée sur des études bien menées
2	Essais comparatifs randomisés de faible puissance Études comparatives non randomisées bien menées Études de cohorte
3	Études cas-témoin
4	Études comparatives comportant des biais importants Études rétrospectives Séries de cas

Fr-AFSSAPS	Agence Francaise De Sécurité Sanitaire Des Produits De Santé
level of evidence	

I	* more than one higher quality randomized controlled trial * meta-analyses
II	more than one lower quality randomized controlled trial
III	* non randomized CT * cohort studies
IV	* controlled before and after studies * case studies
V	uncontrolled trials - patients series

Fr-ALFEDIAM	
level of evidence	~ Fr-ANAES

De-DDG	Deutsche Diabetes Gesellschaft
level of evidence	~UK-NICE (mentioned in articles/references, not guideline)

De-FDS	Fachkommission Diabetes Sachsen
level of evidence	~UK-NICE (mentioned in articles/references, not guideline)

De-NVL	BAEK, AKDAE, DDG, FDS, DGIM, AWMF, AZQ
level of evidence	~ UK-NICE
I a	Evidenz aufgrund von Metaanalysen randomisierter, kontrollierter Studien
I b	Evidenz aufgrund mindestens einer randomisierten, kontrollierten Studie
II a	Evidenz aufgrund mindestens einer gut angelegten, kontrollierten Studie ohne Randomisierung
II b	Evidenz aufgrund mindestens einer gut angelegten, quasi-experimentellen Studie
III	Evidenz aufgrund gut angelegter, nicht experimenteller deskriptiver Studien (z.B.. Vergleichsstudien, Korrelationsstudien, Fall-Kontrollstudien)
IV	Evidenz aufgrund von Berichten/Meinungen von Expertenkreisen, Konsensus-Konferenzen und /oder klinischer Erfahrung anerkannter Autoritäten

Es-SEACV	
These data have been valued from the own experience of the work group, resisted and guaranteed by the consultation of a total of 406 bibliographical documents.	

The Degree of Recommendation of Actuación Clínica (GRAC) has been made based on *the Level of Evidence* that the Work group has valued in the consulted documentation, in agreement with the methodical one which he is exposed in Table I, and with a minimum of five bibliographical appointments in each Level.

level of evidence	
1	Information of Clinical Tests Randomizados with low index of positive and negative results false
2	Information of Clinical Tests Randomizados with high index of errors
3	Information of Clinical Tests nonRandomizados
4	Information of Retrospective Clinical Tests
5	Information of Personal Clinical Experiences
6	Studies of nonclinical investigation

Es-SEACV	~ UK-NICE
level of evidence	
I a	meta-análisis de ensayos clínicos aleatorizados
I b	al menos un ensayo clínico aleatorizado
II a	al menos un ensayo clínico no aleatorizado
II b	al menos un ensayo clínico no aleatorizado
III	estudios no experimentales: comparativos, casos-controles, de correlación ...
IV	opiniones de comités de expertos o autores de prestigio

UK-NICE	
level of evidence	
Ia	evidence from meta-analysis of randomized controlled trials
Ib	evidence from at least one randomized controlled trial
IIa	evidence from at least one controlled study without randomisation
IIb	evidence from at least one other type of quasi-experimental study
III	evidence from non-experimental descriptive studies, such as comparative studies, correlation studies and case-control studies
IV	IV evidence from expert committee reports or opinions and/or clinical experience of respected authorities

UK-SIGN	
level of evidence	
I++	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias

1+	Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias
1-	Meta-analyses, systematic reviews, or RCTs with a high risk of bias
2++	* High quality systematic reviews of case control or cohort studies * High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2+	Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2-	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, e.g. case reports, case series
4	Expert opinion

UK-NSF	
level of evidence	
	http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/Diabetes/fs/en
1	Meta-analyses, systematic reviews of randomised controlled trials, or randomised controlled trials
2	Systematic reviews of case-control or cohort studies, or case-control or cohort studie
3	Non-analytic studies, eg case reports, case series
4	Expert opinion (in the absence of any of the above)

UK-prodigy	
level of evidence	~UK-NICE

UK-BHS	
level of evidence	~UK-NICE

USA - ADA	
Level of evidence	
A	Clear evidence from well-conducted, generalizable, randomized controlled trials that are adequately powered, including: * Evidence from a well-conducted multicenter trial * Evidence from a meta-analysis that incorporated quality ratings in the analysis * Compelling nonexperimental evidence, i.e., "all or none" rule developed by the Center for Evidence Based Medicine at Oxford*

	<p>Supportive evidence from well-conducted randomized controlled trials that are adequately powered, including:</p> <ul style="list-style-type: none"> * Evidence from a well-conducted trial at one or more institutions * Evidence from a meta-analysis that incorporated quality ratings in the analysis
B	<p>Supportive evidence from well-conducted cohort studies, including:</p> <ul style="list-style-type: none"> * Evidence from a well-conducted prospective cohort study or registry * Evidence from a well-conducted meta-analysis of cohort studies <p>Supportive evidence from a well-conducted case-control study</p>
C	<p>Supportive evidence from poorly controlled or uncontrolled studies, including:</p> <ul style="list-style-type: none"> * Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results * Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls) * Evidence from case series or case reports <p>Conflicting evidence with the weight of evidence supporting the recommendation</p>
E	Expert consensus or clinical experience

1.4 Inventory of 64 potential quality indicators

List of all 64 potential quality indicators (including the division into process (P) and outcome (O) indicators, but without further indicator specifications [see matching excel file]).

#	POTENTIAL QUALITY INDICATORS	P / O
1	Patients should have a target blood glucose concentration	O
2	Patients should have a target HbA1c concentration	O
3	Patients should have a regular measurement of their HbA1c concentration	P
4	Patients should have a full examination at diagnosis	P
5	Patients should have (at least) annual disease review	P
6	patients should be screening for diabetic nephropathy at diagnosis	P
7	Patients should have an assessment of their lipid profile (fasting if possible) at diagnosis (as part of the screening for cardiovascular risk factors)	P
8	Patients should be screened for diabetic retinopathy within 6 months after diagnosis	P
9	Patients should receive lifestyle advice	P
10	Patients should receive regular lifestyle control / assesment	P
11	Patients should receive advice on balanced nutrition and/or diet	P
12	Patients should have a regular assessment of weight	P
13	Patients should receive advice on physical activity	P
14	Patients should receive smoke cessation counselling	P
15	Patients' smoking status should be monitored	P
16	Patients who don't reach their target HbA1c under non-pharmacological treatment, should receive OAD mono-therapy	P
17	Patients who don't reach their target HbA1c under optimal OAD mono-treatment, should receive OAD combination therapy	P
18	Patients should undergo fundoscopy before treatment switch from OAD to insuline	P
19	Patients who don't reach their target HbA1c under optimal OAD combination therapy, should receive (combined OAD and) insulin treatment	P
20	Efforts to avoid severe hypoglycemia should be made	P
21	Efforts to avoid hyperglycemia should be made	P
22	Insulin therapy should be considered in certain circumstances	P
23	Patients on insulin therapy should receive education on blood glucose monitoring and self-management	P
24	Patients on insulin therapy should have a yearly control of the injection site	P
25	Patients should have a target blood pressure	O
26	Patients should have a regular blood pressure control (prevention CVD, nephro, retinopathy...)	P
27	Patients with hypertension should receive appropriate antihypertensive treatment	P
28	Patients should have target lipid values	O
29	Patients should have a regular lipid profile control	P
30	Patients with an adverse lipid profile should receive appropriate (medical) therapy	P
31	Patients should have a regular screening for cardiovascular risk factors and disease (+/- risk classification)	P
32	patients with certain cardiovascular risk should receive appropriate (medical) treatment	P
33	Patients with cardiovascular disease should be on lipid lowering therapy	P

34	Patients should receive intensive insulin treatment following an acute MI	P
35	Long term treatment should be considered after an AMI (such as beta-blocking agents, ACE-I, lipid lowering drugs, and anticoagulation therapy)	P
36	Patients with CVD should receive appropriate treatment	P
37	(risk) Classification of diabetic nephropathy	O
38	Patients should be regularly screened for diabetic nephropathy	P
39	Patients with (at least) microalbuminuria should receive appropriate medical treatment	P
40	Patients on ACE-inhibitor or angiotensinII R-antagonist treatment, should have their creatinine and potassium regularly checked	P
41	Patients with a poor renal function, should be referred to a specialist	P
42	Patients with a low creatinine clearance should receive a shunt for dialysis and get on a list for transplantation	P
43	Patients should receive appropriate antibiotic treatment for urinary infections	P
44	Patients should have an eye risk (factor) classification	O
45	Patients should have a regular screening for retinopathy (interval depending on eye risk classification)	P
46	Patients should undergo further examination if funduscopy shows aberrations	P
47	Patients with diabetic retinopathy should receive appropriate treatment (depending on eye risk - problem: conservative treatment, lasercoagulation, vitrectomy, cataract extraction)	P
48	Patients should first undergo funduscopy if quick metabolic control is needed	P
49	Patients should have a regular screening for diabetic neuropathy	P
50	Diabetic neuropathy should be managed and treated accordingly	P
51	Patients should have a diabetic foot risk profile	O
52	Patients should have a regular diabetic foot exam (interval depending on foot risk/problem)	P
53	Patients should receive foot care education	P
54	Patients with diabetic foot / Charcot foot should receive appropriate treatment (pressure release, revascularisation, antibiotics, resection of necrotic tissue, amputation, ...)	P
55	If available, the diagnosis of Charcot's foot should be supported by thermography	P
56	Diabetic foot care teams should be multidisciplinary	P
57	Health care professionals should be aware of potential effects of life events on stress and self-care behaviour	P
58	Patients should be regularly screened for psycho-social problems	P
59	Patients should be aware and/or treated for psycho-social problems	P
60	Patients should receive diabetes education on an ongoing basis	P
61	If the need/purpose is clear and agreed with the patient, and in conjunction with appropriate therapy as part of integrated self-care, patients may or should perform self-monitoring of blood glucose (SMBG)	P
62	Diabetes care should be shared care	P
63	Patients should be properly vaccinated	P
64	Contraception / (pre-) pregnancy management should be provided to female patients (if necessary)	P

1.5 Reduction process to obtain the final list of 29 indicators: one illustration

Starting point: potential quality indicator with at least 1 further indicator specification with a LoE = I (A) assignment

Example: “Patients should have a target HbA1c concentration”

I. All data on this indicator

- Mentioned in 32 guidelines
- 33 further indicator specifications

“ PATIENTS SHOULD HAVE A TARGET HbA1c CONCENTRATION ”				
Number of guidelines	Guideline: country code-organisation	Number of further indicator specifications	Further indicator specifications	Assigned Level of Evidence
1	NI-NHG	1	target glyHg < 7.0% - acceptable if 7-8.5%	-
2	NI-CBO	2	target glyHb < 7.0%	-
3	NI-NDF	3	target glyHb < 7.0%	-
4	UK-SIGN	4	target HbA1c ≤ 7.0%	I++
5	UK-NICE	5	target HbA1c between 6.5-7.5% (~ risk of micro- and macrovascular complications)	III
6	Fr-ANAES	6	individualized target HbA1c ≤ 6.5% (depending on disease, age, comorbidity, psychosocial context)	-
7	IDF	7	target HbA1c ≤ 6.5%	-
8	USA-ADA	8	target HbA1c < 7.0%	B
9	Be-WvH-VDV	9	target HbA1c < 7.0%	-
10	Be-SSMG	10	target glyHg < 7.0% - acceptable if 7-8.5%	-
11	Fr-AFSSAPS	11	target HbA1c < 6.5%	I
12	Fr-ALFEDIAM-SFC	12	target HbA1c ≤ 6.5%	-
13	Fr-ALFEDIAM	13	target HbA1c between 6.5-7.5%, individualised for young (<7y) and older (>70y) patients, taking into account the risk-benefit ratio	-
14	De-NVL	14	target HbA1c ≤ 6.5%	I++
15	De-FDS	15	target HbA1c ≤ 6.5%	per article
16	De-DDG-IGKE	16	target HbA1c < 7.0%	Ib, IIb

17	De-DDG-praxis	17	target HbA1c set $\leq 6.5\%$ with intervention if $> 7.0\%$	-
18	Dk-DSAM	18	target HbA1c $\leq 6.5\%$ (target value might differ for individual cases)	-
19	Es-ACD	19	target HbA1c $< 6.5\%$	-
20	Es-SED, SEMFYC	20	target HbA1c $< 7.0\%$ (but individualised targets might be necessary)	-
21	Es-AGAMFEC	21	target HbA1c $< 7.0\%$	-
22	Es-GEDAPS	22	target HbA1c $< 7.0\%$ (but individualised targets might be necessary)	-
23	Es-FEAEDS	23	target HbA1c $< 7.0\%$	-
24	Ca-CDA	24	individualized target HbA1c $\leq 7.0\%$ in order to reduce the risk of microvascular complications	Ia
		25	individualized target HbA1c $\leq 7.0\%$ in order to reduce the risk of macrovascular complications	3
25	Ca-BCMA	26	target HbA1c $\leq 7.0\%$	-
26	Ca-SRPC	27	target HbA1c $< 8.0\%$ - with tighter glycemic control in patients where hypoglycemic reactions are less of a concern	-
27	Ca-MDCR	28	target HbA1c $< 7.0\%$	-
28	Ca-AlbertaCPG	29	target HbA1c $< 7.0\%$	-
29	UK-DiabetesUK	30	target HbA1c $< 6.5\%$	-
30	UK-PRODIGY	31	target HbA1c between 6.5-7.5%, based on the risk of micro- and macrovascular complications	III
31	UK-BMA	32	target HbA1c $\leq 7.0\%$	-
32	UK-BHS	33	target HbA1c $< 7.0\%$	I

2. Evidence driven approach

METHOD	
QI-LoE=I	amount of quality indicator specifications with a level of evidence of I from all the guidelines presenting with levels of evidence, mentioning that indicator
QI-LoE	amount of quality indicator specifications with a level of evidence from all the guidelines presenting with levels of evidence, mentioning that indicator
ratio (QI-LoE=I / QI-LoE) = ...	
I	all further specifications of the indicator got a LoE=I assigned
≥ 0.5	at least 50% of the further specifications of the indicator got a LoE=I assigned

To facilitate this calculation all specifications without a Level of Evidence were removed.
As such only the strictly evidence-based information of this indicator remains.

Number of guidelines	Guideline: country code-organisation	Number of further indicator specifications	Outcome QI: target values / process QI: specifications	Assigned Level of Evidence
1	UK-SIGN	1	target HbA1c ≤ 7.0%	I ++
2	UK-NICE	2	target HbA1c between 6.5-7.5% (~ risk of micro- and macrovascular complications)	III
3	USA-ADA	3	target HbA1c < 7.0%	B
4	Fr-AFSSAPS	4	target HbA1c < 6.5%	I
5	De-NVL	5	target HbA1c ≤ 6.5%	I ++
6	De-DDG-IGKE	6	target HbA1c < 7.0%	Ib, IIb
7	Ca-CDA	7	individualized target HbA1c ≤ 7.0% in order to reduce the risk of microvascular complications	Ia
		8	individualized target HbA1c ≤ 7.0% in order to reduce the risk of macrovascular complications	3
8	UK-PRODIGY	9	target HbA1c between 6.5-7.5%, based on the risk of micro- and macrovascular complications	III
9	UK-BHS	10	target HbA1c < 7.0%	I

- Mentioned in 9 guidelines with LoE
- 10 further indicator specifications with LoE
- QI-LoE=I : 6

→

$$\text{ratio (QI-LoE=I / QI-LoE)} = 6 / 10 = 0.60 \Rightarrow \geq 0.50 : \text{QI KEPT}$$

- QI-LoE : 10

1.6 Ranking of indicators using levels of evidence: two examples

Explanation of exercise 1

This exercise tries to reconcile evidence-based data and the not evidence-based importance guidelines seem to give to potential indicators by e.g. the times they (not) mention or (not) further specify these potential indicators.

For each potential indicator in the list the arbitrary ratio [(QI-LoE=I / QI-LoE) / mentioned in # GL.] was made

with:

Ratio (QI-LoE=I / QI-LoE) \geq 50% :

(meaning: those potential indicators rated with at least 50% “best” evidence),

with:

QI-LoE=I

amount of specifications the quality indicator got assigned to (from all the guidelines presenting with levels of evidence) with level of evidence of I

QI-LoE

amount of specifications the quality indicator got assigned to (from all the guidelines presenting with levels of evidence)

Mentioned in # GL:

number of guidelines that mentioned the potential indicator

The resulting value reflects the “importance” of the indicator: “the lower the score, or in how many guidelines the potential indicator was rated with a level of evidence of I, the better”.

The potential indicators in the table were then ranked according to this value.

In order to demonstrate the fact that it all remains very arbitrarily, another but similar exercise was performed (one potential indicator is highlighted in yellow in order to follow in throughout the 2 exercises).

Explanation of exercise 2

This exercise also tries to reconcile evidence-based data and the not evidence-based importance guidelines seem to give to potential indicators by e.g. the times they (not) mention or (not) further specify these potential indicators.

This time for each potential indicator in the list another arbitrary ratio $[(QI-LoE=I / QI-LoE) / \text{mentioned in \# GL.}]$ was made

with:

Ratio $(QI-LoE=I / QI-LoE) \geq 50\%$:

(meaning: those potential indicators rated with at least 50% “best” evidence),

with:

$QI-LoE=I$

amount of specifications the quality indicator got assigned to (from all the guidelines presenting with levels of evidence) with level of evidence of I

$QI-LoE$

amount of specifications the quality indicator got assigned to (from all the guidelines presenting with levels of evidence)

Mentioned in # GL with LoE:

number of guidelines presenting with levels of evidence, that mentioned the potential indicator

The resulting value again reflects the “importance” of the indicator: “the lower the score, or in how many guidelines the potential indicator was rated with a level of evidence of I, the better”.

The potential indicators in the table were then ranked according to this value.

Appendix part 2. Care models for type 2 diabetes mellitus patients

Part 2.1. Evidence tables on diabetes care models in hospitals, primary care, outpatient and community settings (1993- 2005)

CARE MODELS PRIMARY CARE, OUTPATIENT AND COMMUNITY SETTINGS

Study I	Hurwitz 1993
<p>Title: Prompting the clinical care of non-insulin dependent (type II) diabetic patients in an inner city area: one model of community care.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT (randomised by patient) ▪ SELECTION: ▪ RANDOMISATION PATIENTS: not clear ▪ RANDOMISATION CAREGIVERS: not clear ▪ BASELINE CHARACTERISTICS: done ▪ FOLLOW-UP: providers: N/A - patients: DONE BLINDED ASSESSMENT PATIENTS: DONE ▪ BLINDED ASSESSMENT CAREGIVERS: DONE
Participants	<p>Two hospital outpatient clinics, 38 general practices and 11 optometrists in the catchment area of a district general hospital in Islington (UK)</p> <p>Of 415 eligible patients registered at the hospital 181 agreed to take part and were included in the study (Type 2 diabetes)</p> <p>providers - ?</p> <p>physicians</p> <p>patients - 181</p> <p>practices - 38 general</p> <p>practices and 2 hospital outpatient clinics</p> <p>no unit of analysis error</p>
Interventions	<p>I1: Educational meetings</p> <p>I2: ---</p> <p>I3: Arrangements for follow-up</p> <p>I4: Changes in medical record system/patient tracking system</p> <p>Control group: usual care in hospital clinic</p>

Length of intervention:
2½ years

Outcomes	<p>PATIENT</p> <ul style="list-style-type: none"> - Weight - Blood pressure - Urinary albumin value - Glycated haemoglobin value - Numbers admitted to hospital for a diabetes related reason - Number of deaths - Satisfaction <p>PROCESS:</p> <ul style="list-style-type: none"> - Follow up for retinal screening - Plasma glucose estimations - Glycated haemoglobin estimations - Continuity of care - Last recorded random plasma glucose concentration - Foot examination - Examination of visual acuity and retinoscopy through dilated pupils <p>PATIENT: +</p> <p>PROCES: +</p>
Results	<p>14 hospital patients failed to receive a single review in the clinic as compared with three patients in the prompted group (chi 2 = 6.1, df = 1; p = 0.013). Follow up for retinal screening was better in prompted patients than in controls; two prompted patients defaulted as against 12 controls (chi 2 = 6.9, df = 1; p = 0.008). Three measures per patient yearly were more frequent in prompted patients: tests for albuminuria (median 3.0 v 2.3; p = 0.03), plasma glucose estimations (3.1 v 2.5; p = 0.003), and glycated haemoglobin estimations (2.4 v 0.9; p < 0.001). Continuity of care was better in the prompted group (3.2 v 2.2 reviews by each doctor seen; p < 0.001). The study ended with no significant differences between the groups in last recorded random plasma glucose concentration, glycated haemoglobin value, numbers admitted to hospital for a diabetes related reason, and number of deaths. Questionnaires revealed a high level of patient, general practitioner, and optometrist satisfaction.</p> <p>Conclusions: Six monthly prompting of non-insulin treated diabetic patients for care by inner city general practitioners and by optometrists is effective and acceptable.</p>
Comments	<p>Local guidelines -directed at monitoring & targets</p>

Study 2	Litzelman 1993
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Title: "Reduction of lower extremity clinical abnormalities in patients with non-insulin dependent diabetes mellitus."

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT (randomised by practice team)
- SELECTION:
- RANDOMISATION PATIENTS: not clear
- RANDOMISATION CAREGIVERS: not clear
- BASELINE CHARACTERISTICS: done
- FOLLOW-UP:
 - providers: NOT CLEAR
 - patients: NOT DONE
- BLINDED ASSESSMENT PATIENTS: DONE
- BLINDED ASSESSMENT CAREGIVERS

Participants

Academic general medicine practice of the Regenstrief Health Center in Indianapolis, Indiana (US).
 The practice is subdivided in 4 practice teams.
 Only patients that were seen at least two times in the preceding year by the same provider were included. Patients of investigators involved in the protocol were also excluded. Of 728 eligible patients, 395 patients entered the study and 352 completed the study (Type 2 diabetes).
 providers - ?
 (physicians supported
 by nurses (education))
 patients - 395
 practices – 1

Interventions

- I1: Distribution of educational materials
 I2: Patient education sessions, behavioral contracts
 I3: Reminders for patients
 I4: ---

Control group: usual care

Length of intervention:
1 year

Outcomes

PATIENT:

- Serious foot lesions
- All foot lesions
- Dry or cracked skin
- Ingrown nails
- Fungal nail infection
- Fungal skin infection
- Interdigit maceration
- Appropriate self-foot-care behaviors

PROCESS:

- Percentage of patients with documentation:
- Ulcers
- Pulse examination done
- Dry or cracked skin
- Calluses or corns
- Fungal infection (foot or nail)
- Ingrown nails
- Improperly trimmed nails
- Foot or leg cellulitis
- Foot deformities
- Sensory examination done
- Referral to the podiatry clinic

PATIENT: +

PROCESS: +

Results

Patients receiving the intervention were less likely than control patients to have serious foot lesions (baseline prevalence, 2.9%; odds ratio, 0.41 [95% CI, 0.16 to 1.00]; $P = 0.05$) and other dermatologic abnormalities. Also, they were more likely to report appropriate self-foot-care behaviors, to have foot examinations during office visits (68% compared with 28%; $P < 0.001$), and to receive foot-care education from health care providers (42% compared with 18%; $P < 0.001$). Physicians assigned to intervention patients were more likely than physicians assigned to control patients to examine patients' feet for ulcers, pulses, and abnormal dermatologic conditions and to refer patients to the podiatry clinic (10.6% compared with 5.0%; $P = 0.04$).

Conclusions: An intervention designed to reduce risk factors for lower extremity amputations positively affected patient self-foot-care behavior as well as the foot care given by health care providers and reduced the prevalence of lower extremity clinical disease in patients with diabetes.

Comments Local guidelines
-directed at foot-care practice for assessment, diagnostic work-up, treatment and referral recommendations
-targets: physicians' documentation of the presence of lower extremity clinical abnormalities and the prevalence of lower extremity clinical abnormalities

Study 3	Mazze 1994
<p>Title: Staged diabetes management. Toward an integrated model of diabetes care.</p>	
<p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT (randomised by patient) ▪ SELECTION: ▪ RANDOMISATION PATIENTS: not clear ▪ RANDOMISATION GAREGIVERS: not clear ▪ BASELINE CHARACTERISTICS: done ▪ FOLLOW-UP: <ul style="list-style-type: none"> - providers: NOT CLEAR - patients: NOT CLEAR ▪ BLINDED ASSESSMENT PATIENTS ▪ BLINDED ASSESSMENT CAREGIVERS
Participants	<p>A university family practice clinic in Minneapolis (USA). 8 family practitioners were included. 50% of 33 patients scheduled for visits were randomly selected for the study with between one and five patients being seen by a single physician. A second group was randomly selected for the intervention group (Type 1 and Type 2 diabetes) providers - 8 family practitioners patients - 26 practices - 1 family practice clinic</p>
Interventions	<p>I1: Distribution of educational materials + educational meetings + local consensus processes. (= staged diabetes management) I2: --- I3: --- I4: Reminders</p> <p>Control group: usual care Length of intervention: 6 months</p>
Outcomes	<p>PATIENT:</p> <p style="padding-left: 40px;">-HbA1c</p> <p>PROCESS:</p> <p style="padding-left: 40px;">-Visits</p>

- Renal evaluation
- Retinal evaluation
- Education
- Health survey

Results

PATIENT: +

PROCES: +

Descriptive results on use and effects of staged diabetes management.

Comments

A data-based approach to diabetes management (Staged Diabetes Management) was developed consistent with national practice standards. Local consensus was reached on the Staged Diabetes Management guidelines

-directed at monitoring and treatment

-targets: compliance with guidelines

Study 4 Naji 1994

Title: Integrated care for diabetes: clinical, psychosocial, and economic evaluation. Diabetes Integrated Care Evaluation Team.

Level of evidence: IIa (Evidence from at least one controlled study without randomization)

- Methods**
- RCT (pragmatic randomized trial, randomised by patient)
 - SELECTION:
 - RANDOMISATION PATIENTS: not clear
 - RANDOMISATION CAREGIVERS
 - BASELINE CHARACTERISTICS Baseline: DONE for glycated haemoglobin, Creatinine, BMI, blood pressure
NOT CLEAR for Diabetes Health, process measures
 - FOLLOW-UP:
 - providers: N/A
 - patients: DONE
 - BLINDED ASSESSMENT PATIENTS: Blinded assessment:
DONE for glycated haemoglobin, Creatinine, Diabetes Health, process measures
NOT CLEAR for blood pressure , BMI
 - BLINDED ASSESSMENT CAREGIVERS

Participants A hospital clinic and general practice groups in Grampian (UK).
Adult patients attending
the clinic for at least one year and registered with any of the
three general practices (Type 2 diabetes)
providers - ?
(GPs + clinic staff involved in diabetes care)
patients - 274
practices - 1 clinic +
3 general practices

Interventions I1: Distribution of educational materials
I2: Distribution of educational materials (?)
I3: Arrangements for follow-up
I4: Changes in medical record system, reminders

Control group:
Received reminders for routine appointments at the clinic
(arrangements for follow-up)

Length of intervention:
2 years

Outcomes PATIENT:

- Glycated haemoglobin
- BMI
- Creatinine
- Systolic blood pressure
- Diastolic blood pressure Diabetes health questionnaire

PROCESS:

- Routine diabetic care visits
- Glycated haemoglobin
- Blood pressure
- Creatinine
- Visual acuity
- Funduscopy
- Peripheral pulses Neurological examination
- Feet
- % patients that had seen a dietician
- % patients that had seen a chiropodist

COSTS:

- Annual costs per patient

PATIENT: -

PROCESS: +

Results

A higher proportion of patients defaulted from conventional care (14 (10%)) than from integrated care (4 (3%)), 95% confidence interval of difference 2% to 13%). After two years no significant differences were found between the groups in metabolic control, psychosocial status, knowledge, beliefs about control, satisfaction with treatment, unscheduled admissions, or disruption of normal activities. Integrated care was as effective for insulin dependent as non-insulin dependent patients. Patients in integrated care had more visits and higher frequencies of examination. Costs to patients were lower in integrated care (mean 1.70 pounds) than in conventional care (8 pounds). 88% of patients who experienced integrated care wished to continue with it.

Conclusions: This model of integrated care for diabetes was at least as effective as conventional hospital clinic care.

Comments

Not clear if the guidelines that the practices received were national or local developed

- directed at monitoring and treatment
- targets: metabolic control and frequency of measurement and examination during routine visits

Study 5 Feder 1995

Title: Do clinical guidelines introduced with practice based education improve care of asthmatic and diabetic patients? A randomized controlled trial in general practices in East London.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT (randomised by patient)
- SELECTION:
- RANDOMISATION PATIENTS: not clear
- RANDOMISATION GAREGIVERS
- BASELINE CHARACTERISTICS: DONE for HbA1
- FOLLOW-UP:
- providers: N/A
- - patients: asthmatic and diabetic patients. NOT CLEAR
- BLINDED ASSESSMENT PATIENTS: DONE for HbA1, diabetes-specific quality of life, psychological status NOT CLEAR for hospitalisation/emergency room visits
- BLINDED ASSESSMENT CAREGIVERS

Participants

24 inner city, non-training general practices in East London.

patients - 310

practices - 24

Interventions

I1: Guidelines (each practice receiving one set of guidelines, including prompts) & educational meetings (3)

I2: ---

I3: ---

I4: ---

Control group: usual care

Length of intervention:

1 year

Outcomes

PATIENT:
NONE

PROCESS:

Recording of:

- Blood glucose concentration
- Weight
- Blood pressure
- Smoking habit
- Funduscopy
- Feet examination

	PATIENT: -
Results	<p>PROCESS: +</p> <p>In practices receiving diabetes guidelines, significant improvements in recording were seen for all diabetes variables. Both groups of practices showed improved recording of review of inhaler technique, smoking habit, and review of asthma symptoms. In practices receiving asthma guidelines, further improvement was seen only in recording of review of inhaler technique and quality of prescribing in asthma. Sizes of disease registers were unchanged. The use of structured prompts was associated with improved recording of four of seven variables on diabetes and all six variables on asthma.</p> <p>Conclusions: Local guidelines disseminated via practice based education improve the management of diabetes and possibly of asthma in inner city, non-training practices. The use of simple prompts may enhance this improvement.</p>
Comments	<p>- Local developed algorithms by general practitioners -directed at recording</p> <hr/>

Study 6 Nilasena 1995

Title: A computer-generated reminder system improves physician compliance with diabetes preventive care guidelines.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT (incomplete block design, randomised by provider)
- SELECTION:
 - RANDOMISATION PATIENTS
 - RANDOMISATION CAREGIVERS
 - BASELINE CHARACTERISTICS
- FOLLOW-UP:
 - providers: NOT CLEAR
 - patients: N/A
- BLINDED ASSESSMENT PATIENTS
 - BLINDED ASSESSMENT CAREGIVERS

Randomisation concealment: NOT CLEAR

Blinded assessment: NOT CLEAR

Baseline: DONE

Reliable outcomes: NOT CLEAR

Protection against contamination: NOT CLEAR

no unit of analysis error

Participants

Outpatient clinics at the University of Utah and Salt Lake Veterans Affairs Hospital (US).

Internal medicine residents.

Patients who had been treated at one of the two sites within one year prior to the study (Type 1 and Type 2 diabetes).

providers - 35 of 36

patients - 164

practices - 2 clinics

Interventions

I1: -

I2: Distribution of educational materials & reminders

I3: -

I4: Changes in medical record systems

Control group: usual care

Length of intervention:

6 months

Outcomes

PATIENT:

NONE

PROCESS:

Compliance score

	PATIENT: -
	PROCESS: +
Results	<p>After a six month study period, compliance with the recommended care significantly improved in both the intervention group that received patient-specific reminders about the guidelines (38.0% at baseline, 54.9% at follow-up) and the control group that received a nonspecific report (34.6% at baseline, 51.0% at follow-up). There was no significant difference between the two groups. Both clinic sites showed similar improvement over baseline levels of compliance. Residents who completed encounter forms used by the system showed a significantly greater improvement in compliance than those who did not complete encounter forms (19.7% vs. 7.6%, $p = 0.006$). The improvements in guideline compliance were seen in all areas of diabetes preventive care studied, and significant improvements were seen with recommended items from the medical history, physical exam, laboratory testing, referrals, and patient education. The use of encounter forms by the providers significantly improved documented compliance with the guidelines in almost all categories of preventive care.</p> <p>Conclusions: The results suggest that computerized reminder systems improve compliance with recommended care more by facilitating the documentation of clinical findings and the ordering of recommended procedures than by providing the clinician with patient-specific information about guideline compliance status.</p>
Comments	<p>National guidelines (selection of ADA-guidelines was used)</p> <ul style="list-style-type: none">-directed at monitoring-targets:glycaemic control and renal-, foot-, eye-, macrovascular-, and neurologic care

Study 7 **Marrero 1995**

Title: Using telecommunication technology to manage children with diabetes: the Computer-Linked Outpatient Clinic (CLOC) Study.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT (randomised by patient)
- SELECTION:
- RANDOMISATION PATIENTS: not clear
- RANDOMISATION CAREGIVERS
- BASELINE CHARACTERISTICS: done for HbA1C. NOT CLEAR for diabetes-specific quality of life, psychological status
- FOLLOW-UP:
- providers: N/A
- patients: NOT CLEAR
- BLINDED ASSESSMENT PATIENTS: DONE for HbA1C, diabetes-specific quality of life, psychological status
- BLINDED ASSESSMENT CAREGIVERS

Participants

Paediatric diabetes clinic, Indianapolis (US)
 Recruitment was conducted during routine visits in which patients and their families were approached (Type 1 diabetes)
 providers - ? (nurse practitioners)
 patients - 106
 practices - 1 clinic

Interventions

I1: --
 I2: Distribution of educational materials (?)
 I3: Skill mix changes: nurse practitioners reviewed data on self-monitoring of blood glucose and made insulin adjustments + case management + changes in facilities & equipment
 I4: Patient-mediated interventions: Telecommunication system to assist in outpatient management. Changes in medical record systems.

Control group: usual care

Length of intervention:
 1 year

Outcomes

PATIENT:

- HbA1
- Hospitalisation/Emergency Room visits
- Psychological status Diabetes-specific quality of life

PROCESS:

NONE

Results

PATIENT: -

PROCESS: -

There were no significant between-group differences for metabolic control, rates of hospitalization or emergency-room visits, psychological status, general family functioning, quality of life, or parent-child responsibility. A significant decrease was noted in nursing time-on-task for experimental subjects.

Comments

Local developed algorithms
-directed at monitoring and treatment
-targets: glycaemic control

Study 8 Pieber 1995

Title: Evaluation of a structured teaching and treatment programme for type 2 diabetes in general practice in a rural area of Austria.

Level of evidence: IIa (Evidence from at least one controlled study without randomization)

Methods

- CBA
- Characteristics of studies using second site as control:
NOT DONE
Blinded assessment: DONE
Baseline: DONE
- SELECTION:
- FOLLOW-UP:
- providers: DONE
- patients: DONE

Participants

General practices in a rural area in Austria.
Patients with type 2 diabetes attending the general practices were included (Type 2 diabetes)
providers - 14 GPs
patients - 94
practices – 14

Interventions

I1: Distribution of educational materials + educational meetings (?)
I2: Patient education by GP's & office staff
I3: --
I4: --

Length of intervention:
6 months

Outcomes
PATIENT:

- HbA1c
- Cholesterol
- Triglycerides
- BMI
- Body weight
- Systolic blood pressure
- Diastolic blood pressure
- Treatment without OHG
- Daily dosage of OHG (tablets per patient per day)
- Treatment with sulphonylurea (tablets per patient per day)
- Foot care:
- Callus formation:
- Interdigital cracks, interdigital

-Margins of the toenails were cut back, or ingrown toe nails were cut out.

PROCESS:
NONE

PATIENT: +

Results

PROCESS: -

After 6 months the weight reduction in the intervention group was 2.6 kg (1.6-3.7 kg, $p < 0.001$) and the difference in HbA1c between the groups was 0.92% (0.23-1.61%, $p < 0.01$) at follow-up. Systolic (-16.6 mmHg) and diastolic (-11.1 mmHg) blood pressure, serum triglycerides (-0.63 mmol l-l), and serum cholesterol (-0.40 mmol l-l) were reduced significantly in the intervention group ($p < 0.006$). The number of patients with callus formation and poor nail care decreased significantly after participating in the teaching programme ($p < 0.001$). In the control group no reduction in body weight, metabolic control or in risk factors for diabetic foot complications were observed. Calculated health care costs per patient and year decreased in the intervention group (-33 pounds) and increased in the control group (+ 30 pounds) mainly due to changes in prescription of oral hypoglycaemic agents in both groups.

Comments

A Diabetes Treatment and Teaching Programme was used developed and evaluated in Germany
-directed at treatment and education
-targets: metabolic control and risk factors including foot status

Study 9 Weinberger 1995

Title: A nurse-coordinated intervention for primary care patients with non-insulin-dependent diabetes mellitus: impact on glycemic control and health-related quality of life.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

- Methods**
- RCT (blocked randomisation scheme in a 3:1 ratio, to increase the power to detect also differences across 3 study nurses (intervention strategy). Randomisation by patient)
 - SELECTION:
 - RANDOMISATION PATIENTS: not clear
 - RANDOMISATION CAREGIVERS:
 - BASELINE CHARACTERISTICS: done
 - FOLLOW-UP:
 - providers: N/A
 - patients: DONE
 - BLINDED ASSESSMENT PATIENTS: DONE
 - BLINDED ASSESSMENT CAREGIVERS: DONE

Participants Veterans Affairs general medical clinic (US).
 Patients that were currently using an oral hypoglycemic agent or insulin and received primary care from the General Medical Clinic (GMC) and had at least one GMC visit during the previous year and had a pending GMC appointment and kept a scheduled GMC appointment during a six-month enrolment period in 1991 (Type 2 diabetes).
 providers - ?
 patients - 275
 practices - 1 general medical clinic

Interventions I1: --
 I2: patient mediated interventions: nurses attempted to telephone patients to facilitate compliance, monitor patients' health status, facilitate resolution of identified problems, facilitate access to primary care
 Patient education by phone
 I3: Arrangements for follow-up
 I4: --

 Control group: usual care

 Length of intervention:
 1 year

Outcomes PATIENT:

 -Glycohemoglobin

- Fasting blood glucose
- Health-related quality of life:
- Physical functioning
- Social functioning
- Physical role functioning
- Emotional role functioning
- Mental health
- Vitality
- Bodily pain
- General health perceptions

- In the subgroup of hyperlipidemic patients (total cholesterol ≥ 200 mg/dl): Seen by dietician
- % taking lipid-lowering medications
- Total cholesterol
- Triglycerides
- LDL cholesterol
- HDL cholesterol

In the subgroup of obese patients (weight at study enrolment $\geq 120\%$ of ideal body weight):
 Change in weight
 Seen by dietician

PROCESS:
 NONE

PATIENT: +

Results

PROCESS: -

At one year, between-group differences favored intervention patients for FBS (174.1 mg/dL vs 193.1 mg/dL, $p = 0.011$) and GHb (10.5% vs 11.1%, $p = 0.046$). Statistically significant differences were not observed for either SF-36 scores ($p = 0.66$) or diabetes-related symptoms ($p = 0.23$).

Conclusions: The intervention, designed to be a pragmatic, low-intensity adjunct to care delivered by physicians, modestly improved glycemic control but not HRQOL or diabetes-related symptoms.

Comments

Guidelines not specified in the paper

Study 10 Jaber 1996

Title: Evaluation of a pharmaceutical care model on diabetes management.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

- Methods**
- RCT (randomised by patient)
 - SELECTION:
 - RANDOMISATION PATIENTS: not clear
 - RANDOMISATION CAREGIVERS: not clear
 - BASELINE CHARACTERISTICS: DONE for fasting plasma glucose, glycated haemoglobin, serum Creatinine, BMI microalbumin/Creatinine ratio, total body weight NOT CLEAR for the other outcomes
 - FOLLOW-UP:
 - providers: N/A
 - patients: DONE
 - BLINDED ASSESSMENT PATIENTS: DONE for laboratory outcomes, health related quality of life NOT CLEAR for blood pressure, weight, patient compliance
 - BLINDED ASSESSMENT CAREGIVERS

Participants A university-affiliated general internal medicine outpatient clinic (US).
 Intervention group received care by a pharmacist, the control group by physicians.
 Urban African-American patients attending the clinic. Of 156 eligible patients 45 were randomised and 39 completed the study (Type 2 diabetes).
 providers - ?
 (pharmacist + physicians)
 patients - 45
 practices - 1 outpatient clinic

Interventions I1: --
 I2: Patient education on glycaemic control and self-monitoring of blood glucose
 I3: Revision of professional roles (all diabetes-related management aspects were solely provided by a pharmacist)
 I4: --

 Control group: usual care by physician

 Length of intervention:
 4 months

Outcomes	<p>PATIENT:</p> <ul style="list-style-type: none"> -Fasting plasma glucose -Glycated haemoglobin -Blood pressure -Body weight -Serum lipid measurements -Renal function parameters -Quality of life <p>PROCESS:</p> <p>NONE</p> <p>PATIENT: +</p> <p>PROCESS: -</p>
Results	<p>Thirty-nine patients (17 intervention, 22 control) completed the study. The intervention group consisted of 12 women and 5 men with a mean \pm SD age of 59 \pm 12 years, total body weight (TBW) of 93 \pm 22 kg, body mass index (BMI) of 34 \pm 7 kg/m², and duration of NIDDM 6.8 \pm 6.5 years. The control group consisted of 15 women and 7 men with a mean age of 65 \pm 12 years, TBW of 88 \pm 19 kg, BMI of 33 \pm 7 kg/m², and a duration of NIDDM of 6.2 \pm 4.8 y. Significant improvement in glycated hemoglobin ($p = 0.003$) and fasting plasma glucose ($p = 0.015$) was achieved in the intervention group. No change in glycemia was observed in the control subjects. Statistically significant differences in the final glycated hemoglobin ($p = 0.003$) and fasting plasma glucose ($p = 0.022$) concentrations were noted between groups. No significant changes in blood pressure control, lipid profile, renal function parameters, weight, or quality-of-life measures were noted within or between groups.</p>
Comments	<p>Conclusions: The data demonstrate the effectiveness of pharmaceutical care in the reduction of hyperglycemia associated with NIDDM in a group of urban African-American patients.</p> <p>Care was provided consistent with, but broader than that described by Helper and Strand (reference 16 in study). The guidelines are not specified.</p> <ul style="list-style-type: none"> -directed at treatment -targets: glycaemic control secondary targets: blood pressure, body weight serum lipid measurements, renal function parameters, quality of life

Study II Legorreta 1996

Title: effect of a comprehensive nurse-managed diabetes program: An HMO prospective study.

Level of evidence: IIa (Evidence from at least one controlled study without randomization)

- Methods**
- CBA
 - Characteristics of studies using second site as control: NOT CLEAR
 - Baseline: DONE for site A, NOT DONE for site B
 - Reliable outcomes: DONE
 - Protection against contamination: DONE
-

Participants Two large medical groups that contract to provide health care to HMO members in California (US)

Site A was a typical participating medical group (PMG); site B was an independent physician association (IPA). For the PMG provider a single, separate site was chosen as control. For the IPA provider, data were collected from 13 nonexperimental physician office sites. At the experimental sites, approximately 15 patients were randomly selected each month for 6 months. In addition all patients with new-onset diabetes were included. In the control group from the randomly generated list, the patients whose charts provided glycated haemoglobin levels were selected. After the first 6 months primary care providers in the intervention group were allowed to assign patients for inclusion (Type 1 and Type 2 diabetes)

providers - ?

physicians+nurses/ physician assistant

patients

- Site A: 205

- Site B: 195

practices ?

Interventions I1: Distribution of educational materials + educational meetings

I2: Distribution of educational materials + arrangements for follow-up

I3: Clinical multidisciplinary teams: nurse or physician assistant, endocrinologist and staff assistant.

Skill mix changes (nurse treating patients)

I4: Changes in medical record systems

Control group: usual care

Length of intervention:
18 months

Outcomes PATIENT:

- Glycated haemoglobin

PROCESS:
NONE

Results

PATIENT: +

PROCESS: -

At site A, improvements were observed in patients' glycated hemoglobin levels (9,6% at baseline, compared with 8,0% at endpoint) and low density lipoprotein cholesterol levels. Referral for a yearly ophthalmologic examination was 100%. At site B, glycated hemoglobin levels also fell (from 10,3% to 9%) but remained above desirable standards of diabetic control.

Conclusions: the study showed that nurses, following protocols, aided by computers, and overseen by physicians, can provide high-quality diabetes care in an outpatient setting

Comments Nurses followed detailed clinical protocols.
-directed at monitoring and treatment
-target: glycaemic control

Study 12 O'Connor 1996

Title: Continuous quality improvement can improve glycemic control for HMO patients with diabetes.

Level of evidence: IIa (Evidence from at least one controlled study without randomization)

Methods CBA
 Characteristics of studies using second site as control: NOT CLEAR
 Baseline: DONE
 Reliable outcomes: DONE

Participants Two primary care clinics at a staff model HMO in Minneapolis (US).
 Family physicians + trained resource nurses.
 Patients enrolled at both clinics. Attention was focused on patients who were most in need of change and who were ready to change (Type 1 and Type 2 diabetes).
 providers - ?
 (physicians + nurses)
 patients - 267
 practices - 2 clinics

Interventions I1: Local consensus procedures + audit
 I2: Patient education + outreach to targeted patients
 I3: Skill mix changes: nurses more actively assist in providing diabetes care
 I4: Feed-back

Control group: usual care

Length of intervention:
 18 months

Outcomes PATIENT:
 -HbA1c

 PROCESS:
 -Number of outpatient visits
 -At least 1 HbA1c-test

Results PATIENT: +
 PROCESS: +

The mean HbA1c value at the intervention clinic fell from 8.9% at baseline to 8.4% at 12 months and to 7.9% at 18 months. The mean HbA1c value at the comparison clinic was 8.9% at baseline, 8.9% at 12 months, and 8.8% at 18 months (difference between clinics, $t = 4.13$, $P < .001$). Differences after the intervention in the proportion of patients at the comparison clinic ($n = 121$) vs the intervention clinic ($n = 122$) with HbA1c values of 8% or less (40% vs 51%), between 8% and 10% (33% vs 37%), and 10% or greater (27% vs 12%) were unlikely due to chance ($\chi^2 = 9.7$, 2 df, $P = .008$). The intervention was not associated with increased utilization of outpatient visits or outpatient charges.

Conclusions: Involvement of nurses, physicians, and managers in a CQI process can improve patients' glycemic control in some health maintenance organization primary care settings, without increasing utilization or charges. Health maintenance organizations should consider CQI as one possible method to improve diabetes outcomes.

Comments Guidelines not specified in the paper

Study I3 Ward 1996

Title: Educational feed-back in the management of type 2 diabetes in general practice.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

- Methods**
- RCT incomplete block design, randomised by provider)
 - SELECTION:
 - RANDOMISATION PATIENTS: not clear
 - RANDOMISATION GAREGIVERS: not clear
 - BASELINE CHARACTERISTICS: not clear
 - FOLLOW-UP:
 - providers: DONE
 - patients: N/A
 - BLINDED ASSESSMENT PATIENTS: NOT DONE
 - BLINDED ASSESSMENT CAREGIVERS: NOT DONE

Participants General practitioners in the Perth metropolitan region (Australia) who participated in a previous study (Kamien 1994). In that study 42% of the GPs approached (393 of 600 GPs in the district) finally recruited patients into the study; the next five consenting patients with type 2 diabetes that consulted the GP after he had completed a questionnaire.
 Patients that were recruited in the previous study were also used in this study. (Type 2 diabetes).
 139 of 160 providers asked to participate in this study, were included
 providers- 139
 patients - 386
 practices- ?

Interventions I1: Audit
 I2: Distribution of educational materials
 I3: Educational outreach visits (interview by academic GP or nurse
 I4: Feed-back
 Control group: received recommended standard of Adequate Competent Care score and postal feedback

Length of intervention:
 8 months

Outcomes PATIENT:
 NONE

PROCESS:
 -History recorded

- Duration of known diabetes
- Dietary inquiry and advice
- Alcohol intake inquiry and advice
- Exercise inquiry and advice
- Smoking inquiry and advice
- Impotence/vaginitis inquiry and advice

- Annual physical examination
- Blood pressure
- Eye examination (or referral to ophthalmologist)
- Body weight

- Feet examined*
- Pulses
- Sensation
- Nails
- Reflexes

- Examination of:*
- HbA1
- Blood glucose
- Cholesterol
- Triglyceride
- Creatinine
- Urinalysis
- Glucose
- Protein
- Nitrite
- Modified ACC score

Results

PATIENT: -

PROCESS: +

Comments A local recommended standard was formulated based on information obtained in a previous study

Study I4 De Sonnaville 1997

Title: Sustained good glycaemic control in NIDDM patients by implementation of structured care in general practice: 2 year follow-up study.

Level of evidence: IIa (evidence from at least one controlled study without randomization)

Methods

- CBA
- Characteristics of studies using second site as control: NOT DONE
- Baseline: NOT DONE for fasting glucose, systolic blood pressure
DONE for HbA1c, triglycerides, HDL cholesterol, serum cholesterol, BMI, diastolic blood pressure
NOT CLEAR-> wellbeing, treatment satisfaction
Reliable outcomes: DONE for HbA1c, fasting glucose, HDL cholesterol, serum cholesterol, triglycerides
NOT CLEAR-> BMI, wellbeing, treatment satisfaction
Protection against contamination: DONE

Participants

22 of 29 eligible GPs in the western part of Amsterdam (The Netherlands).
GPs were requested to enrol all their known and newly diagnosed NIDDM patients. Of the 570 eligible patient in the intervention group 167 did not participate. Two-year follow-up data were available of 350 of 459 patients. In the control group follow-up data were available of 68 of 102 participants (Type 2 diabetes)
providers - 22 physicians
patients - 561
practices - ?

Interventions

I1: GP was supported by a laboratory with facilities to visit patients at home, a computerised patient register and recall system, a diabetes nurse educator and a podiatrist)
I2: Patient education
I3: Clinical multidisciplinary team + formal integration of services, arrangements for follow-up + communication and case discussion between distant health professionals/changes to the site/setting of service delivery
I4: Changes in medical record system

Control group: usual care

Length of intervention:
2 years

Outcomes	<p>PATIENT:</p> <ul style="list-style-type: none"> -Fasting glucose -HbA1c -BMI -Blood glucose lowering therapy -Total cholesterol -HDL-cholesterol -Triglycerides -Systolic blood pressure -Diastolic blood pressure <p>PROCESS: NONE</p> <p>PATIENT: +</p> <p>PROCESS: -</p>
Results	<p>Mean HbA1c (reference 4.3-6.1%) fell from 7.4 to 7.0% in SG and rose from 7.4 to 7.6% in CG during follow-up ($p = 0.004$). The percentage of patients with poor control (HbA1c > 8.5%) shifted from 21.4 to 11.7% in SG, but from 23.5 to 27.9% in CG ($p = 0.008$). Good control (HbA1c < 7.0%) was achieved in 54.3% (SG; at entry 43.4%) and 44.1% (CG; at entry 54.4%) ($p = 0.013$). Insulin therapy was started in 29.7% (SG) and 8.8% (CG) of the patients ($p = 0.000$) with low risk of severe hypoglycaemia (0.019/patient year). Mean levels of total and HDL-cholesterol (SG), triglycerides (SG) and diastolic blood pressure (SG + CG) and the percentage of smokers (SG) declined significantly, but the prevalence of these risk factors remained high. General well-being (SG) did not change during intensified therapy. Treatment satisfaction (SG) tended to improve.</p>
	<p>Conclusions:</p> <p>Implementation of structured care, including education and therapeutic advice, results in sustained good glycaemic control in the majority of NIDDM patients in primary care, with low risk of hypoglycaemia. Lowering cardiovascular risk requires more than reporting results and referral to guidelines.</p>
Comments	<p>National guidelines (Dutch GP Guidelines) based upon the guidelines of the European NIDDM Policy Group</p> <ul style="list-style-type: none"> -directed at monitoring and treatment -targets: glycaemic control and cardiovascular risk factors

Study 15 Lobach 1997

Title: Computerized decision support based on a clinical practice guideline improves compliance with care standards.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT (randomised by provider)
- SELECTION:
- RANDOMISATION PATIENTS: not clear
- RANDOMISATION CAREGIVERS
- BASELINE CHARACTERISTICS: done
- FOLLOW-UP:
 - providers: NOT DONE
 - patients: NOT CLEAR
- BLINDED ASSESSMENT PATIENTS: DONE
- BLINDED ASSESSMENT CAREGIVERS: DONE

Participants

Primary care clinic at Duke University Medical Center (North Carolina, US)
 20 family physicians, 1 general internist, 2 nurse practitioners, 2 physician's assistants, 33 family medicine residents were randomised. 30 were included because they met predefined criteria for minimum exposure to diabetic patient care.
 359 charts were included with 884 encounters in which diabetes was addressed (not clear which type of diabetes)
 providers - 30 primary care clinicians
 patients - 359
 encounters - 884
 practices - 1 primary care clinic

Interventions

I1: Local consensus processes+ audit
 I2: ---
 I3: ---
 I4: Feed-back & reminders

Control group:
 usual care

Length of intervention:
 6 months

Outcomes

PATIENT:
 NONE

PROCESS:

- Compliance rate overall
- Compliance rate with regard to specific guidelines on:

-
- Foot examination
 - Complete physical examination
 - Chronic glycemia monitoring
 - Urine protein determination
 - Cholesterol level
 - Ophthalmologic examination
 - Influenza vaccination
 - Pneumococcal vaccination

PATIENT: -

Results

PROCESS: +

Availability of patient management recommendations generated by the decision support system resulted in a two-fold increase in clinician compliance with care guidelines for diabetes mellitus ($P = 0.01$). Median compliance for the group receiving the recommendations was 32.0% versus 15.6% for the control group.

Conclusions: Decision support based on a clinical practice guideline is an effective tool for assisting clinicians in the management of diabetic patients. This decision support system provides a model for how a clinical practice guideline can be integrated into the care process by computer to assist clinicians in managing a specific disease through helping them comply with care standards. Use of decision support systems based on clinical practice guidelines could ultimately improve the quality of medical care.

National guidelines (ADA-guidelines), adapted through a consensus building process

- directed at monitoring and treatment
- targets: compliance with guidelines

Study 16 Aubert 1998

Title: Nurse case management to improve glycemic control in diabetic patients in a health maintenance organization. A randomized, controlled trial.

Level of evidence: 1b (Evidence from at least one randomized controlled trial)

- Methods**
- RCT (randomisation was based on a 1:1 allocation ratio and block size of three, randomised by patient)
 - SELECTION:
 - RANDOMISATION PATIENTS: done
 - RANDOMISATION CAREGIVERS: done
 - BASELINE CHARACTERISTICS: done
 - FOLLOW-UP:
 - providers: N/A
 - patients: NOT DONE
 - BLINDED ASSESSMENT PATIENTS
 - BLINDED ASSESSMENT CAREGIVERS

Participants Two of the largest clinics within the Jacksonville Health Care Group, which provides primary care services for the Prudential HealthCare HMO plan of Jacksonville, Florida (US).
A nurse case manager was the primary care provider under the direction of a board-certified family medicine physician and an endocrinologist who were still responsible for all diabetes management decisions for patients in the intervention group.
 Patients visiting the clinic (Type 1 and Type 2 diabetes)
 providers - ? (nurse)
 patients - 138
 practices – 2

Interventions I1: Distribution of educational materials (detailed management algorithms)
 I2: Patient education + follow-up calls every two weeks.
 Patients who were taking insulin received weekly calls.
 I3: Revision of professional roles (nurse case management+ arrangements for follow-up
 I4: ---

Control group: usual care (patients in the control group were encouraged to discuss enrolment in the diabetes education class with their physicians)

Length of intervention:
 1 year

Outcomes PATIENT:

- HbA1c
- Mean fasting blood glucose
- Insulin dose
- Systolic blood pressure Diastolic blood pressure
- Weight
- Serum cholesterol
- Serum triglycerides
- Serum HDL-cholesterol
- Serum LDL-cholesterol
- Self-reported health status score

PROCESS:

- Renal assessment:
- Dipstick test
- Quantitative protein/microalbumin

PATIENT: +

PROCESS: -

Results

72% of patients completed follow-up. Patients in the nurse case management group had mean decreases of 1.7 percentage points in HbA1c values and 43 mg/dL (2.38 mmol/L) in fasting glucose levels; patients in the usual care group had decreases of 0.6 percentage points in HbA1c values and 15 mg/dL (0.83 mmol/L) in fasting glucose levels ($P < 0.01$). Self-reported health status improved in the nurse case management group ($P = 0.02$). The nurse case management intervention was not associated with statistically significant changes in medication type or dose, body weight, blood pressure, or lipids or with adverse events.

Conclusions: A nurse case manager with considerable management responsibility can, in association with primary care physicians and an endocrinologist, help improve glycemic control in diabetic patients in a group-model HMO.

Comments

Algorithms locally developed by a multidisciplinary team
 -directed at adjustments in medication, meal planning and reinforcement of exercise
 -target: improvement of glycaemic control and monitoring of renal complications

Study 17 Kinmonth 1998

Title: Randomised controlled trial of patient centred care of diabetes in general practice: Impact on current well-being and future disease risk.

Level of evidence: 1b (Evidence from at least one randomized controlled trial)

- Methods**
- RCT (pragmatic parallel group design, randomisation by practices)
 - SELECTION:
 - RANDOMISATION PATIENTS: done
 - RANDOMISATION CAREGIVERS: done
 - BASELINE CHARACTERISTICS: done for BMI, blood pressure. NOT CLEAR HbA1c, total cholesterol, triglyceride, urinary albumin/Creatinine
 - FOLLOW-UP:
 - providers: DONE
 - patients: NOT DONE
 - BLINDED ASSESSMENT PATIENTS: DONE
 - BLINDED ASSESSMENT CAREGIVERS: DONE
-

Participants 41 practices of 245 eligible practices in a health region in southern England. 245/467 of all practice teams were eligible. 360 of 522 patients were eligible for inclusion. 250 patients completed the study (Type 2 diabetes).
 providers - 43 doctors supported by 64 nurses
 patients - 360
 practices – 41

Interventions I1: Distribution of educational materials & educational meetings (training in patient-centred care)
 I2: Patient education (booklet for patients)
 I3: ---
 I4: ---

Control group:
 received no training in patient centred care but were also offered special support sessions focusing on use of guidelines and materials
 Length of intervention:
 1 year

Outcomes PATIENT:

-HbA1c

- Total cholesterol
- Triglyceride
- BMI
- Systolic blood pressure
- Diastolic blood pressure
- Urinary albumin/Creatinine
- Quality of life
- Depressed Wellbeing
- Wellbeing overall
- Subscales
- Depression
- Anxiety
- Energy
- Positive wellbeing

PROCESS:
NONE

PATIENT: +

PROCESS: -

Results

Compared with patients in the C group, those in the intervention group reported better communication with the doctors (odds ratio 2.8; 95% confidence interval 1.8 to 4.3) and greater treatment satisfaction (1.6; 1.1 to 2.5) and wellbeing (difference in means (d) 2.8; 0.4 to 5.2). However, their body mass index was significantly higher (d=2.0; 0.3 to 3.8), as were triglyceride concentrations (d=0.4 mmol/l; 0.07 to 0.73 mmol/l), whereas knowledge scores were lower (d=-2.74; -0.23 to -5.25). Differences in lifestyle and glycaemic control were not significant.

Conclusions: The findings suggest greater attention to the consultation process than to preventive care among trained practitioners; those committed to achieving the benefits of patient centred consulting should not lose the focus on disease management.

Comments

National guidelines
-directed at monitoring and treatment
-targets: clinical, social and psychological outcomes

Study 18 Peters 1998

Title: Application of a diabetes managed care program.

Level of evidence: IIa (Evidence from at least one controlled study without randomization)

Methods	<ul style="list-style-type: none"> ▪ CBA ▪ Characteristics of studies using second site as control: NOT DONE <ul style="list-style-type: none"> year NOT DONE after three years NOT CLEAR for blood pressure, compliance with ADA guidelines Baseline: NOT DONE Reliable outcomes: DONE for HbA1c, Creatinine, cholesterol level NOT CLEAR for blood pressure, compliance with ADA guidelines
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Participants	<p>Cedars Sinai Medical Center (US) + a local group model Health Maintenance Organisation (HMO) as control group.</p> <p>Main providers were nurses using specific detailed protocols.</p> <p>Patients referred by their GP at the new implemented Comprehensive Diabetes Care Service at the clinic. A subset of patients who had attended a diabetes education course was included in this study (Type 1 and Type 2 diabetes).</p> <p>providers - ? (nurse practitioners)</p> <p>patients - 164</p> <p>practices - one</p> <p>medical centre and one HMO</p>
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Interventions	<p>I1: Distribution of educational materials + audit</p> <p>I2: Diabetes education course</p> <p>I3: Revision of professional roles: nurses provided diabetes care based on protocols + arrangements for follow-up</p> <p>I4: Feed-back + changes in medical record systems</p> <p>Control group: usual care</p> <p>Length of intervention: 3 years</p>
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Outcomes	<p>PATIENT:</p> <ul style="list-style-type: none"> -HbA1c -Total median cholesterol concentrations in the subgroup of patients with an initial total cholesterol level >6.2 mmol/l <p>PROCESS:</p> <ul style="list-style-type: none"> -Compliance with ADA guidelines: -HbA1c levels -Lipid panels -Foot exams -Ophthalmology referrals
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PATIENT: +

PROCESS: +

Results

Initial HbA1c levels were higher in the CDCS group than in the GMH group (median of 11.9 vs. 10.0%). In the CDCS patients, HbA1c levels not only fell significantly but were also significantly lower ($P < 0.05$) than in the GMH patients during the 2nd and 3rd year of follow-up care. There were no significant changes in HbA1c levels in the GMH patients. When CDCS patients were divided into compliant and noncompliant patients, the median HbA1c levels in compliant patients was 8.2%, compared with 11.5% in the noncompliant group. The CDCS patients who needed treatment for hypercholesterolemia were more likely to have a lowering of their cholesterol levels than the GMH patients. All process measures, such as yearly measurement of HbA1c levels, lipid levels, and foot and retinal exams, occurred much more frequently in the CDCS patients.

Conclusions: The system developed and implemented for managing diabetes improved both outcome and process measures. The comparison group, followed at another managed care setting, received the care consistent with the average (suboptimal) quality of care provided to patients with diabetes in the U.S.

Comments

Protocols were used based on national (ADA-guidelines)
-directed at monitoring and treatment
-targets: glycaemic control, lipid management, foot exams and ophthalmology referrals

Study 19	Pill 1998
<p>Title: A randomized controlled trial of an intervention designed to improve the care given in general practice to type II diabetic patients: patient outcomes and professional ability to change behavior.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT: a randomized controlled trial within general practices as the basis for randomization and a before and after design for measures of patients outcomes. ▪ SELECTION: ▪ RANDOMISATION PATIENTS: population of the 29 practices that had been committed for at least 2 years to an annual peer review clinical audit of diabetic care ▪ RANDOMISATION CAREGIVERS: unit of randomization was the practice South Glamorgan (29 of the 33 practices participated) ▪ BASELINE CHARACTERISTICS PATIENTS ▪ FOLLOW-UP: ▪ BLINDED ASSESSMENT PATIENTS: done ▪ BLINDED ASSESSMENT CAREGIVERS: results -> done ▪ EQUAL TREATMENT INTERVENTION/CONTROL GROUP
Participants	<p>Practices: 29 of the 33 practices participated intervention group: 15 control group: 14 Nurse specialist Clinical psychologist</p> <p>Research nurse</p> <p>Patients: Inclusion: aged 19-70 years, diagnosed > 1 year, glycosylated Hb > 9%, life expectancy at least 3 years -> 190 patients (from 252 were included/83%) Intervention group: 95 Control group: 95</p>
Interventions	<p>Intervention group</p> <p>I1 training practitioners + nurses -> diabetic care, support research nurse</p> <p>I2 2 training sessions 3h., newsletters every 3-4months,</p> <p>I3 group meeting, regular visits</p> <p>I4 ---</p>

	Control group: usual care + the standard British Diabetic Association leaflets.
	3 years
Outcomes	<p>PATIENT: Glyco-Hb BMI Blood pressure Clinical complications Medication use Presence of other conditions and lifestyle behaviors Smoking and alcohol use Attendance rates at the surgery</p> <p>PROCESS: Clinical competence Control clinicians -> interview</p>
Results	<p>PATIENT: Clinical data: Glyco-Hb lower in the intervention group There was no significant difference over time in the number of complications experienced, in demand on primary care services or in the numbers in each group. There was no difference over time in smoking or alcohol consumption levels.</p> <p>Attitude and satisfaction There was no significant difference between the groups over time on any of the measures for attitudes and satisfaction, except for the scale that measured satisfaction with recent consultations and treatment received (range 1-15)</p> <p>Health status no significant difference</p> <p>The trial was unable to demonstrate significant biochemical or functional improvements.</p> <p>PROCESS: Higher levels of engagement among the nurses</p>

Study 20 Rith-Najarian 1998

Title: Reducing lower-extremity amputations due to diabetes. Application of the staged diabetes management approach in a primary care setting.

Level of evidence: III (Evidence from non-experimental descriptive studies, such as comparative studies, correlation studies and case –control studies)

Methods

- ITS
- Intervention independent of other changes: DONE
- Sufficient data points to enable reliable statistical inference: NOT DONE
- Formal test of trend: N/A Intervention unlikely to affect data collection: DONE
- Completeness of data set: DONE
- Reliable outcomes: NOT CLEAR

Participants

Rural primary care clinic in northern Minnesota (US).
 A foot-care team was formed consisting of a family physician, two clinic nurses, a home care nurse, a nutritionist and a registrar.
 Patients were American Indians identified through surveillance having diabetes. They were entered into a diabetes registry and followed thereafter (not clear which type of diabetes).
 Provider - 1 physician
 + 3 nurses (+nutritionist+registrar)
 patients - 449
 practices - 1

Interventions

I1: --
 I2: Distribution of educational materials + reminders
 I3: Clinical multidisciplinary team
 I4: ---

Control group: N/A

Length of intervention:
 3 years

Outcomes

PATIENT:

- Lower-extremity amputation (LEA)
- First LEA
- Major LEA (defined as either a "below the knee amputation" or an "above the knee amputation")

PROCESS:
 NONE

	PATIENT: +
Results	<p>PROCESS: -</p> <p>A total of 639 individuals contributed 4322 diabetic person-years during the three periods of observation. Patient sex distribution, mean age, and mean duration of diabetes were similar in the three periods. The average annual LEA incidence was 29/1000 diabetic person-years for the standard care period (n = 42), 21/1000 for the public health period (n = 33), and 15/1000 for the SDM period (n = 20), an overall 48% reduction (P = .016). Overall, the incidence of a first amputation declined from 21/1000 to 6/1000 (P < .0001).</p> <p>Conclusions:</p> <p>The customization and systematic implementation of practice guidelines by local primary care providers was associated with improved diabetic foot care outcomes. SDM has relevance to primary care organizations seeking to improve outcomes for patients with diabetes.</p>
Comments	<p>Local guidelines</p> <p>-directed at diagnosis, treatment, monitoring and risk factor assessment</p> <p>-targets: to reduce lower-extremity amputations</p>

Study 21 Taplin 1998

Title: Putting population-based care into practice: real option or rhetoric?

Level of evidence: IIa (evidence from at least one controlled study without randomization)

Methods

- CBA
- Characteristics of studies using second site as control: NOT CLEAR
- Follow up:
 - providers: NOT CLEAR
 - patients: NOT CLEAR
- Blinded assessment: DONE
- Baseline: DONE
- Reliable outcomes: DONE
- Protection against contamination: DONE for comparison with surrounding practices

unit of analysis error

Participants

6 primary care facilities within the Group Health Cooperative of Puget Sound, a consumer-governed health maintenance organisation (HMO), Seattle (US).

In one practice the intervention was implemented, 5 practices served as control group.

In the intervention group were 2 physicians who shared 2 registered nurses, a licensed practical nurse and a family nurse practitioner. In the control group it is not clear.

Patients attending the practices for breast cancer screening, colon cancer screening, warfarin control or diabetic care (not clear which type of diabetes)

providers - ?

(physicians supported by nurses)

patients - ? (the number of patients that visited the practice for diabetes care is not reported separately. In total 9754 patients were included for studying compliance with guidelines for the different areas practices - 6

Interventions

I1: Distribution of educational materials + local consensus processes + audit + marketing

I2: ---

I3: Establishing a team (and after that regular team meetings to discuss and achieve clinical goals). Clinical multidisciplinary teams (physicians, nurses, clinic manager, a clinic pharmacist and a trained facilitator (a registered nurse with a masters degree in public health and training in the application of total quality management tools) attended the group meetings

I4: Feed-back & reminders + changes in medical record systems

	Length of intervention: 2 years
<hr/>	
Outcomes	PATIENT: NONE PROCESS: Compliance with guideline for diabetic eye care
Results	PATIENT: - PROCESS: - There was no significant improvement in warfarin control or diabetic eye examinations, though absolute increases occurred.
Comments	It is mentioned that guidelines were partly based on existing recommendations, but these are not specified

Study 22	Woodcock 1998
<p>Title: 'Diabetes care from diagnosis: effects of training in patient-centered care on beliefs, attitudes and behavior of primary care professionals'</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT ▪ SELECTION: 43 practices were randomized to Training (22 practices) or Comparison (21 practices, after stratification. ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTSdone ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Training (intervention) group: 23 GP + 30 nurses -> were trained in groups during March and April 1994.</p> <p>One year recruitment of patients with newly diagnosed Type 2 diabetes & baseline measures & age 30-70 years, start spring 1994.</p>
Interventions	<p>Intervention group:</p> <p>I1 training interventions/ nurses educational skills I2 education/ patient centered approach I3 6 and 12 month nurse training and review I4 ---</p> <p>Control group: usual care</p> <p>Length of intervention:</p>
Outcomes	<p>PATIENT:</p> <p>- Patient confidence in practitioners</p> <p>PROCESS</p>
Results	<p>PATIENT:</p> <p>Confidence in practitioners is higher, a nurse encourages patients to ask questions, they encourages patient to think through and solve their own problems, and the patient is taken more seriously.</p> <p>Patients reported that important aspect of diabetes care were</p>

	delivered more if their nurses has been trained in patient centered consulting

Study 23 Benjamin 1999

Title: Implementing practice guidelines for diabetes care using problem-based learning. A prospective controlled trial using firm systems.

Level of evidence: IIa (evidence from at least one controlled study without randomisation)

Methods

- CBA
- Characteristics of studies using second site as control: NOT DONE
- Follow up:
 - providers: NOT CLEAR
 - patients: NOT DONE
- Blinded assessment: DONE for HbA1c, NOT CLEAR for process measures
- Baseline: DONE for HbA1c, NOT DONE for eye exam, urine test for albumin/protein
- Reliable outcomes: DONE for HbA1c, NOT CLEAR for process outcomes
- Protection against contamination: DONE

Participants

Outpatient clinics of Baystate Medical Center, Springfield (US). This Medical Center has a "firm" system that is an academic group practice that includes attending physicians, residents, nurses, a nutritionist and patients. The firm system creates two group practices that are essentially parallel groups of providers and patients. Patients are predominantly minority patients of Hispanic and African-American descent. (Type 2 diabetes)
 providers - ?
 (physicians, residents, nurses, nutritionist)
 patients - 144
 practices - 2 firms

Interventions

I1: distribution of educational materials (guidelines) + educational meetings + local consensus processes + audit
 I2: ---
 I3: ---
 I4: Feedback

Control group: usual care

Length of intervention: 15 months

Outcomes

PATIENT:

- HbA1c

PROCESS:

-
- Compliance with standards of care:
 - Annual urine test for albumin/protein
 - Annual cholesterol determination
 - Annual diabetes education
 - Annual dilated retinal exam
 - Annual influenza vaccinations
 - Annual nutrition education

PATIENT: +

PROCESS: +

Results

At 9 months, there was a mean -0.90% within-subject change in HbA1c in the intervention group, with no significant changes in the control group. The 15-month mean within-subject change in HbA1c of -0.62% in the intervention group was also significant. Among intervention patients, those with the poorest glycemic control at baseline realized the greatest benefit in improvement of HbA1c. The intervention group also exhibited significant changes in physician adherence with American Diabetes Association standards of care.

Clinical practice guidelines are an effective way of improving the processes and outcomes of care for patients with diabetes. Problem-based learning is a useful strategy to gain physician support for clinical practice guidelines. More intensive interventions are needed to maintain treatment gains.

Comments

Guidelines were locally developed by residents and faculty
-directed at adjustments in treatment and monitoring
-target: improvement of glycaemic control and compliance with recommended standards

Study 24 **Branger 1999**

Title: Shared care for diabetes: Supporting communication between primary and secondary care.

Level of evidence: IIa (Evidence from at least one controlled study without randomization)

Methods

- CBA
Characteristics of studies using second site as control:
NOT DONE
- Baseline: DONE for patient contacts NOT CLEAR for recorded parameters per patient, letters send from GP to consultant and vice versa
Reliable outcomes: DONE
Protection against contamination: NOT CLEAR

Participants

32 general practitioners in the Apeldoorn region (The Netherlands) that were working with the computer based patient record and with electronic data interchange (EDI). In addition one internal medicine consultant participated. Patients treated by the GP (Type 1 and Type 2 diabetes).
providers - 32 general practitioners + 1 internal medicine consultant
patients - 275
practices - 1 hospital and ? practices

Interventions

I1: ---
I2: ---
I3: ---
I4: Changes in medical record systems

Control group: usual care without electronic data interchange between different care providers

Length of intervention:
1 year

Outcomes

PATIENT:
NONE

PROCESS:

- Patient contacts with GP
- Patient contacts with internal medicine consultant
- Letters from GP to consultant and vice versa
- Recorded items per patient:
- Kidney function:
- Creatinine level
- Proteinuria

- Eye condition:
- Assessment ophthalmologist

- Insulin control
- Glucose level
- HbA1c level
- Fructosamine level

- Other
- Blood pressure
- Cholesterol level
- Triglyceride level
- Weight

PATIENT: -

PROCESS: +

Results

Intervention GPs received more messages per year (1.6 per patient) than control GPs (0.5 per patient, $P < 0.05$). Significant higher availability ($P < 0.05$) was achieved for data on HBA1C levels, fructosamine levels, blood pressure measurements, cholesterol levels, triglyceride levels and weight measurements. Intervention patients showed a slight but significant decrease of HBA1C levels in the second semester of 1994 (from 7.0 to 6.8, $P = 0.03$), control patients also showed a slightly decreased group mean, but this change was not significant (from 6.6 to 6.5, $P = 0.52$). The magnitudes of these mean differences, however, were not significantly different (intervention group: 0.21; control group: 0.12, $P = 0.68$).

Conclusions: The electronic communication network for exchanging consultation outcomes significantly increased frequency of communication and the availability of data to the general practitioner on diagnostic procedures performed in the hospital, thus providing more complete information about the care that patients are receiving. A large-scale experiment over a longer period of time is needed to assess the effects of improved communication on quality of care.

Comments

Guidelines not specified in the paper

Study 25 Halbert 1999

Title: Effect of multiple patient reminders in improving diabetic retinopathy screening”.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT (design not clear randomised by patient)
- SELECTION:
- RANDOMISATION PATIENTS: not clear
- RANDOMISATION CAREGIVERS
- BASELINE CHARACTERISTICS: not clear
- FOLLOW-UP:
- providers: N/A
- patients: NOT CLEAR
- BLINDED ASSESSMENT PATIENTS: DONE
- BLINDED ASSESSMENT CAREGIVERS: DONE

Participants

Diabetic patients who were enrolled in a large network-based Health Maintenance Organisation (HMO) in California (US) and the medical groups that treated the identified diabetic patients (Type 1 and Type 2 diabetes)

providers - ?

patients - 19,523

practices - 1 Health Maintenance Organisation, the number of medical group is not clear

Interventions I1: Guidelines + a list of their diabetes patients with their diabetic retinopathy screening exam status

I2: Patients without a record of diabetic retinopathy exam received educational materials

I3: Arrangements for follow-up

I4: ---

Control group: as in the intervention group, they received guidelines, a list of their diabetes patients with their diabetic retinopathy screening exam status and patients without a record of diabetic retinopathy exam received educational materials. In contrast with the patients in the intervention group who received multiple reminders, the patients received a single reminder

Outcomes	<p>PATIENT: NONE</p> <p>PROCESS:</p> <p>- Rates of retinal examination</p>
	PATIENT: -
	PROCESS: +
Results	<p>The study cohort comprised 19,523 diabetic members, which were randomized into single (n = 9,614) and multiple (n = 9,909) intervention groups. There was an increase in monthly DRE rates after the intervention in August 1996 for both intervention groups. After the second reminder was sent to the multiple intervention group, the percentage of diabetic members receiving DRE was higher than the single intervention group. Rates before and after the third intervention were not significantly different, nor were monthly differences found. There was a significant difference in overall annual DRE rates between the groups (P = 0.023).</p> <p>Conclusions: Multiple patient reminders are more effective than single reminders in improving DRE rates in a managed care setting. However, the improvement noted was clinically small and appeared only after the second reminder; no incremental improvement was seen with additional reminders. Resources used for multiple reminders aimed at diabetic retinopathy might better be spent on other approaches to reducing complications of diabetes.</p>
Comments	<p>National guidelines (ADA guidelines)</p> <p>-directed at monitoring</p> <p>-target: retinopathy screening</p>

Study 26 Sadur 1999

Title: Diabetes management in a Health Maintenance organization

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT (randomised by patient)
- SELECTION:
- RANDOMISATION PATIENTS: done
- RANDOMISATION CAREGIVERS
- BASELINE CHARACTERISTICS: done
- FOLLOW-UP:
- providers: N/A
- patients: DONE

- BLINDED ASSESSMENT PATIENTS: DONE
- BLINDED ASSESSMENT CAREGIVERS: DONE

Participants

Pleasanton facility of the Kaiser Permanente medical care Program, Northern California (US).
 Providers were primary physicians who were temporarily replaced by a multidisciplinary team in the intervention group.
 Patients that had had a recent Hb A1c >8.5% or not had an HbA1c concentration measured during the previous year. 70% of the eligible patients agreed to participate (Type 1 and Type 2 diabetes)
 providers - ?
 physicians + 1 dietitian
 + 1 behaviorist + pharmacist + 1 diabetes nurse educator + 2 diabetologists)
 patients - 185
 practices - 1 HMO-setting

Interventions I1: ---

I2: Patient education

I3: Clinical multidisciplinary teams + case management

I4: ---

Control group: usual care

Length of intervention:

6 months

Outcomes

PATIENT:

-HbA1c

-Inpatient and outpatient services

(self-reported measures are not included in the review)

PROCESS:
NONE

PATIENT: +

Results

PROCESS: -

After the intervention, HbA1c levels declined by 1.3% in the intervention subjects versus 0.2% in the control subjects ($P < 0.0001$). Several self-care practices and several measures of self-efficacy improved significantly in the intervention group. Satisfaction with the program was high. Both hospital ($P = 0.04$) and outpatient ($P < 0.01$) utilization were significantly lower for intervention subjects after the program.

Conclusions: A 6-month cluster visit group model of care for adults with diabetes improved glycemic control, self-efficacy, and patient satisfaction and resulted in a reduction in health care utilization after the program.

Comments Guidelines not specified in the paper

Study 27 Piette, 1999

Title: Use of automated telephone disease management calls in an ethnically diverse sample of low-income patients with diabetes.

Level of evidence: IIb

Methods

- RCT (randomised by patient)
- SELECTION:
- RANDOMISATION PATIENTS
- RANDOMISATION CAREGIVERS
- BASELINE CHARACTERISTICS
- FOLLOW-UP:
- BLINDED ASSESSMENT PATIENTS
- BLINDED ASSESSMENT CAREGIVERS

Participants

Patients: 252, diabetes not specified
Six outpatient clinics

Interventions

I1: --
I2: Patients received ATDM calls for 12 months and responded to queries using their touch-tone telephones.
I3: --
I4: --

Control group:

Length of intervention:
1 year

Outcomes

PATIENT:
- (Self-monitored) blood glucose levels

PROCESS:

Results

PATIENT: -

PROCESS: +

Half of all patients completed at least 77% of their attempted assessments, and one-fourth completed at least 91%. Half of all patients reported SMBG levels during at least 86% of their assessments. Patients completed assessments and

reported glucose levels consistently over the year. Health status indicators were the most important determinants of assessment completion rates, while socioeconomic factors were more strongly associated with patients' likelihood of reporting SMBG data during assessments. Patients' responses within assessments were consistent, and the information they provided during their initial assessments identified groups with poor glycemic control and other health problems.

Comments

Study 28 Tai 1999

Title: Evaluation of general practice computer templates. Lessons from a pilot randomised controlled trial.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

- Methods**
- RCT (2x2 balanced design randomised by practice)
 - SELECTION:
 - RANDOMISATION PATIENTS: not clear
 - RANDOMISATION CAREGIVERS: not clear
 - BASELINE CHARACTERISTICS: not clear
 - FOLLOW-UP:
 - BLINDED ASSESSMENT PATIENTS: done
 - BLINDED ASSESSMENT CAREGIVERS: done

Participants General practitioner tutors from two medical schools who practised locally in North London (UK) and used an EMIS (Egton medical Information Services) computer system.
 Patients who gave consent for access to records (not clear which type of diabetes).
 providers - 17 general practitioners and 11 practice nurses
 patients - 167
 practices - 6

Interventions I1: --
 I2: Reminders
 I3: --
 I4: Changes in medical record systems (use of computer templates)

Control group: using new computer templates for asthma

Length of intervention:
 1 year

Outcomes PATIENT:
 NONE

PROCESS:
 Use of diabetes templates

Results PATIENT: -

PROCESS: -

Comments National guidelines (developed by the British Diabetes Association)
 -directed at monitoring
 -targets: glycaemic control,
 lipid profile, serum creatinine, current medication

Study 29	Thompson 1999
<p>Title: Insulin adjustment by a diabetes nurse educator improves glucose control in insulin-requiring diabetic patients, a randomized trial.</p>	
<p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT a prospective randomized trial ▪ SELECTION: a prospective randomized trial involving diabetic patients who had poor glucose control ▪ RANDOMISATION PATIENTS: randomly assigned to receive standard care or to have regular telephone contact ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: no statistically significant difference between the 2 groups in terms of HbA1c level for standard care and for the intervention group, age, sex, type or duration of diabetes ▪ FOLLOW-UP: ▪ BLINDED ASSESSMENT PATIENTS: done ▪ BLINDED ASSESSMENT CAREGIVERS: done for nurse educator + laboratory
Participants	<p>46 patients receiving insulin and endocrinologist-directed care, had undergone education, were able to monitor glucose level and HbA1c $\geq 8,5\%$ Intervention group: 23 patients Control group: 23 patients</p> <p>Endocrinologist Diabetes nurse educator Physician laboratory</p>
Interventions	<p>I1: -- I2: -- I3: regular phone contacts with the nurse, average 3 call a week each lasting 15 minutes. Insulin adjustment were recommended during most calls. I4: general guidelines for insulin adjustment.</p> <p>Control group: usual care + continuing there usual contacts with the endocrinologist</p> <p>Length of intervention: 6 months</p>
Outcomes	PATIENT

- HbA1c level
- The proportions of patients in each group who experienced a 10% reduction in HbA1c levels over the study
- Telephone contact

PROCESS

PATIENT:

Results

At the baseline there was no significant difference between the two groups. After 6 months, the mean HbA1c level in the standard care group was 0,0089 (0,010) which was not significantly different from the mean level at the baseline. However, the mean HbA1c level in the intervention group had fallen to 0,0078 (0,008), which was significantly lower than both level at the baseline for that group ($p < 0,0001$) and the level for the standard care group at 6 months ($p < 0,01$)

PROCESS: ---

Conclusions: Insulin adjustment by a diabetes nurse educator was an effective method of improving glucose control over a 6 month period in insulin – requiring patients. The patient reported that the key factor in their improvement was the frequent contact whit a caring and knowledgeable diabetes educator.

Study 30	Ovhed 2000
<p>Title: A comparison of two different team models for treatment of diabetes mellitus in primary care</p> <p>Level of evidence: IIa (evidence from at least one controlled study without randomisation)</p>	
Methods	<ul style="list-style-type: none"> ▪ CBA ▪ SELECTION: 2 settings with diabetes type 2 non insulin dependent, ▪ RANDOMISATION PATIENTS: not done ▪ RANDOMISATION CAREGIVERS: not done ▪ BASELINE CHARACTERISTICS PATIENTS: / ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS / ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>Setting 1: 152 patients</p> <p>Setting 2: 242</p> <p>Setting 1:</p> <p>5 GP</p> <p>2 nurses -> education rol</p> <p>Setting 2:</p> <p>GP</p> <p>Nurse as assistant of GP</p>
Interventions	<p>Setting I:</p> <p>I1: ---</p> <p>I2: education from a nurse</p> <p>I3: 3 visits a year to a nurse and 1 visit to GP, annual checkup</p> <p>I4: ---</p> <p>Setting 2</p> <p>I1: ---</p> <p>I2: ---</p> <p>I3: one year visit GP, nurse as a assistant of doctor- no responsibility to the patients</p> <p>I4: a computerized patient register</p> <p>Length of intervention:</p> <p>1 year</p>
Outcomes	PATIENT

	<ul style="list-style-type: none"> -Blood pressure -Lipids -HbA1c -BMI -Smoking status -Foot care -Eye examination -Self management
	PROCESS

Results	PATIENT +
	PROCES /

Study 31	Olivarius 2001
<p>Title: Randomized controlled trial of structured personal care of type 2 diabetes mellitus.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT Pragmatic, open, controlled trial with randomization of practices to structured personal care or routine care ▪ SELECTION: ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: not clear ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS done ▪ BLINDED ASSESSMENT CAREGIVERS /
Participants	<p>Included all patient aged 40 or older with newly diagnosed diabetes between 1 March 1989 and 28 February 1991 based on hyperglycemic symptoms or raised blood glucose values measured in general practice (registered general practitioner) -> glucose concentration 7.0 /8.0 mmol/l</p> <p>874 (90%) patients aged 40 years who had diabetes diagnosed in 1989-1991 and survived until 6 years follow up.</p> <p>Danish general practitioners Excluding single-handed practices with a doctor aged 60 year Danish practices: 311 with 474 general practitioners (243 intervention group and 231 comparison group)</p> <p>Structured care: 247 GP -> 459 patients Routine care: 231 GP -> 415 patients</p>
Interventions	<p>Intervention group:</p> <ul style="list-style-type: none"> I1 medical education I2 educational and surveillance support I3 follow up every three months , annual screening for diabetic complications I4 a month before the annual screening of the patients, GP received a questionnaire as support / clinical guidelines (diet, smoking, persistent hyperglycemia, hypertension and hyperlipidaemia) + annual half day seminar / the doctors received annual descriptive feedback reports on individual patients <p>Control group: usual care</p> <p>Length of intervention: 6 years follow up</p>
Outcomes	PATIENT

	<ul style="list-style-type: none"> - plasma glucose concentration - glycated hemoglobin - systolic blood pressure - cholesterol concentration. <p>PROCESS</p> <ul style="list-style-type: none"> - number of follow-up consultations
Results	<p>PATIENT: Risk factors were significantly lower for interventions patients for: Plasma glucose concentration, glycated hemoglobin, systolic blood pressure and cholesterol concentration.</p> <p>In primary care, individualized goals with educational and surveillance support may for at least 6 years risk factors of patients with type 2 diabetes to a level that has been shown to reduce diabetic complications but without weight gain</p> <p>PROCESS: Doctors arranged more follow-up consultations</p>

Study 32	Piette 2001
<p>Title: Impact of automated calls with nurse follow-up on diabetes treatment outcomes in a department of veterans affairs health care system</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<p>RCT</p> <ul style="list-style-type: none"> ▪ RCT ▪ SELECTION: ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS done ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>A total of 272 VA patients with diabetes hypoglycemic medication were randomized -></p> <p>Intervention patients: 146</p> <p>Control patients: 146</p>
Interventions	<p>Intervention group:</p> <p>I1: ---</p> <p>I2 automated telephone calls, each assessment is during 5-8min./ telephone nurse follow-up, each week – as a nurse educator -></p> <p>I3 weekly telephone nurse + had the ability to schedule clinic appointments</p> <p>I4 the nurse communicated with primary care providers using an established protocol created by a research team/ remind care givers for preventive care (screening diabetes complications)</p> <p>Control group: usual care</p> <p>Length of intervention: 12 months</p>
Outcomes	<p>PATIENT:</p> <ul style="list-style-type: none"> - HbA1c - Cholesterol tests - glucose self monitoring - foot inspections - satisfaction <p>Intervention patients reported more frequent glucose self monitoring and foot inspections than patients receiving usual care and were more likely to be seen in podiatry and diabetes specialty clinics.</p> <p>More improvements in: cholesterol test, HbA1c</p>

	<p>Greater satisfaction in the intervention group</p> <p>PROCESS:</p> <p>---</p> <p>Conclusions: The intervention improved the quality of VA diabetes care.</p>

Study 33	Vrijhoef 2001
<p>Title: Substitution model with central role for nurse specialist is justified in the care for stable type 2 diabetic outpatients.</p> <p>Level of evidence: IIa (evidence from at least one controlled study without randomization)</p>	
Methods	<ul style="list-style-type: none"> ▪ NON EQUIVALENT CONTROL GROUP DESIGN ▪ BASELINE CHARACTERISTICS PATIENTS: done
Participants	<p>82 GP's/ 121 outpatient Type 2 diabetes</p> <p>Intervention group: 22 GP's, 74 patients Control group: 29 GP's, 47 patients</p> <p>Nurse specialist in GP's practice + internist in hospital</p>
Interventions	<p>Intervention group:</p> <p>I1 --- I2 --- I3 : nurse specialist active in general practice I4 ---</p> <p>Control group:</p> <p>Length of intervention: 12 months</p>
Outcomes	<p>PATIENT:</p> <ul style="list-style-type: none"> - clinical status: HbA1C, total cholesterol, HDL cholesterol & triglycerides, BMI, systolic BP, diastolic BP - health status: physical fitness, feelings, daily & social activities, change in health & overall health - self-care behaviour - knowledge of diabetes - patient satisfaction - consultation with care providers <p>PROCESS: ---</p>
Results	<p>PATIENT:</p> <p>Changes between means of HbA1C level in the intervention group were statistically significant. In the control group changes between</p>

	<p>means of of HbA1C were also statistically significant. Total cholesterol declined by 0.5 mmol/l and mean HDL-cholesterol increased by 0.1 mmol/L. Both changes were statistically significant.</p> <p>PROCES:</p> <p>--</p>

Study 34	Wagner 2001
<p>Title: Chronic care clinics for diabetes in primary care: a system wide randomized trial</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT randomized to interventions and control groups in a large –staff model health maintenance organization (HMO) ▪ SELECTION: Patients selected at random from an automated diabetes registry (15) ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: done ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS / ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>All diabetic patients 30 years of age participating practice -> randomly 36 (receiving insulin or hypoglycemic therapy)</p> <p>Exclude patients: terminally ill, demented or psychotic, or not able to participate in the study</p> <p>Total patients: 1001 eligible patients</p> <p>Most of the physicians in the practices involved were family physicians</p> <p>Chronic care clinics: 14</p> <p>Usual care: 21</p> <p>Physician</p> <p>Nurse</p> <p>Clinical pharmacist</p>
Interventions	<p>Intervention group:</p> <p>I1 --</p> <p>I2 self-management: one on one counseling with the practice nurse, group sessions conducted by the practice nurse/ group education/ peer support meeting</p> <p>I3 into groups of 6-10 were invited to chronic care clinics with interval of 3- 6 months</p> <p>I4 worksheets individual patient data and plans</p> <p>Control group: usual care</p> <p>Length of intervention: 24 months</p>
Outcomes	<p>PATIENT:</p> <ul style="list-style-type: none"> - Satisfaction - HbA1c level

	<p>PROCESS:</p> <ul style="list-style-type: none"> - Number of preventive procedures & education sessions - Number of primary care sessions -
Results	<p>PATIENT: +</p> <p>Intervention group demonstrated better outcomes:</p> <p>Diabetes care satisfaction</p> <p>HbA1c level – clinical test</p> <p>PROCESS: +</p> <p>intervention group received more recommended preventive procedures and helpful education -> periodic primary care sessions improved the process of diabetes care</p>

Study 35	Smith 2002
<p>Title: The North Dublin randomized controlled trial of structures diabetes shared care.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT A cluster randomized controlled trial ▪ SELECTION: ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: not clear ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS done ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>30 general practitioners in North Dublin nurse specialist</p> <p>183 patients with type 2 diabetes (measures biophysical outcomes, psychological measures and process outcomes)</p> <p>Intervention group: 15 practices -> 96 patient recruit Control group: 15 practices -> 87 patients recruit</p>
Interventions	<p>Intervention group</p> <p>I1 educational skills to type 2 diabetes -GP</p> <p>I2 professional education/ appointment of a community – based diabetes nurse specialist</p> <p>I3 annual review-screening</p> <p>I4 structured record cards and communication across prim-sec care interface / fast track referral system initiated by primary care team as needed/3 monthly routine reviews, carried out by GP and practice nurse.</p> <p>Control group: usual care</p> <p>Length of intervention: 18 months</p>
Outcomes	<p>PATIENT</p> <ul style="list-style-type: none"> -Biophysical outcomes -HbA1c -Blood pressure MI -psychological outcomes <p>PROCES</p> <ul style="list-style-type: none"> - Process outcomes

Results	<p>PATIENT: Significant improvements in diabetes care delivery and psychological outcomes. No significant improvements in biomedical outcomes</p> <p>PROCESS: Significant improvements in information exchange between primary and secondary care interface. Process data collection revealed a significant increase in diabetes care – related activity for participating patients with an increase in structured annual reviews and fewer patients defaulting from care</p>

Study 36	Gary 2003
<p>Title: Randomized controlled trial of the effects of nurse case manager and community health worker interventions on risk factors for diabetes related complications in urban African Americans.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT a randomized controlled trial with 4 parallel arms ▪ SELECTION: randomly assigned on primary care – based interventions, type 2 diabetes ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: similar on sex and clinic site ▪ FOLLOW-UP: patients done ▪ BLINDED ASSESSMENT PATIENTS: not clear ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>186 patients (complete 149)</p> <p>Control group: 34 patients</p> <p>I group 1: Nurse case manager: 38 patients</p> <p>I group 2: community health worker: 41 patient</p> <p>I group 3: nurse case manager + community health worker team: 36 patients</p> <p>Physician</p> <p>Nurse case manager-> educator</p> <p>Community health worker (CHW)</p>
Interventions	<p>Intervention group 1:</p> <p>I1: ---</p> <p>I2: patient education</p> <p>I3: coordinated care according to ADA Clinical Practice Recommendations, VCM intervention 45min face to face visits, counseling, follow-up patients, referrals, advising regimen changes and implementing changes under physician's order</p> <p>I4: physician feedback</p> <p>Intervention group 2</p> <p>I1:---</p> <p>I2: CWH-> education</p> <p>I3:home visits 3times a year by CHW 45-60min and /or telephone contacts, monitor participants and family behavior, treatment recommendations</p> <p>I4: physician feedback</p>

	<p>Intervention group 3: Preceed-proceed behavioral model: combination of CWH and nurse case manager</p> <p>I1: I2:self care practices I3: patient counseling I4:physician reminders</p> <p>Control group: usual care</p> <p>Length of intervention: 2 years</p>
Outcomes	<p>PATIENT</p> <ul style="list-style-type: none"> -HbA1c -Cholesterol levels -Blood pressure -BMI -Face to face interventions -Phone interventions -Leisure time physical activity index -Dietary risk factor <p>PROCESS</p> <p>---</p>
Results	<p>PATIENT</p> <p>The 2 years follow-up visits was completed by 149 patients (84%). Compared to the usual care group, the NMC group and the CHW group had modest declines in HbA1c over 2 years, and the combined NCM/CHW group had a greater decline in HbA1c level (0,8% p= 0,137).</p> <p>The combined group NCM/CHW showed improvements in triglycerides (-35,5mg/dl ; P=0,041) and diastolic pressure, compared to the usual care group.</p> <p>PROCESS</p> <p>---</p> <p>Combined NCM/CHW interventions may improve diabetic control with type 2 diabetes. Although results were clinically important, they did not reach statistical significance.</p>
Comments	<p>This approach deserves further attention s a means to reduce the excess risk factors of diabetic complications</p>

Study 37	Katon, 2003
Title: Improving primary care treatment of depression among patients with	

diabetes mellitus: the design of the pathways study.	
Level of evidence: : 1b (Evidence from at least one randomized controlled trial)	
Methods	<ul style="list-style-type: none"> ▪ RCT ▪ SELECTION: ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: FOLLOW-UP: ▪ BLINDED ASSESSMENT PATIENTS: done ▪ BLINDED ASSESSMENT CAREGIVERS:
Participants	<p>N=330 (n= 165, intervention & control group). Care managers (3 nurses specialized in depression) added to primary care, working at 9 group health cooperative primary care clinics.</p> <p>Psychiatrist, psychologist, family physician</p>
Interventions	<p>I1: --- I2: Self-Management: patient education I3: Delivery systems design: collaborative care intervention. Care manager added to primary care. Care manager works with both patient and primary care physician and helps with developing a shared definition of the problem, patient education and support. I4: --</p> <p>Length of intervention: 2 years</p>
Outcomes	<p>PATIENT:</p> <p>-depressive symptoms -HbA1C</p> <p>PROCESS:</p> <p>--</p>
Results	<p>PATIENT: ongoing study</p> <p>PROCESS: ongoing study</p>

Study 38	Maislos 2003
<p>Title: Multidisciplinary approach to patients with poorly controlled type 2 diabetes mellitus: a prospective, randomized study.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT A prospective randomized study ▪ SELECTION: ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: statistically similar ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS / ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>2 primary care clinics of the Western Negev were randomly selected as control group and intervention group.</p> <p>All patients from both clinics with HbA1c > 10% were studied.(excluding)</p> <p>Intervention group: 48 patients</p> <p>Control group: 34 patients</p> <p>Interdisciplinary team: diabetologist, dietician, diabetes nurse educator</p>
Interventions	<p>Intervention group</p> <p>I1 ---</p> <p>I2 patient education (changing lifestyle)</p> <p>I3 interdisciplinary approach-> first visit diabetologist, dietician, diabetes nurse educator</p> <p>/ regular follow-up visits</p> <p>I4 treatment protocol, to reach targets</p> <p>Control group: usual care</p> <p>Length of intervention:</p>
Outcomes	<p>PATIENT</p> <p style="padding-left: 40px;">-HbA1c level</p> <p style="padding-left: 40px;">-Plasma glucose</p> <p>PROCESS: ---</p>
Results	<p>PATIENT:</p> <p>Significant improvements in plasma glucose and HbA1c in the intervention group, but not in the control group</p> <p>Patients from the intervention clinic showed significant improvement in the endpoints compared to patients from the</p>

	control group
Notes	

Study 39	Middleton, 2003
<p>Title: The effect of case management on glycemic control in patients with type 2 diabetes.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
	<p>RCT</p> <p>Baseline: done</p>
Participants	<p>30 patients serving as their own control group. Group A was made up of baseline HbA1C data obtained when the patients entered the CM. Group B represented outcome HbA1C data obtained 120 days after commencement of CM.</p> <p>-Type 2 diabetes</p> <p>-Study conducted inside medical CM</p> <p>Registered nurses (case managers)</p>
Interventions	<p>Intervention group:</p> <p>I1 ---</p> <p>I2 Patient support: patient education</p> <p>I3 Systems delivery design: nurse case manager implementing diabetes protocol</p> <p>I4 ---</p> <p>Control group:</p> <p>Length of intervention: 2 years</p>
Outcomes	<p>PATIENT:</p> <p>-improved glycemic control (HbA1C)</p> <p>PROCESS:</p>
Results	<p>PATIENT: +</p> <p>PROCES: -</p> <p>A statistically significant difference in the average</p>

	glycosylated hemoglobin value was maintained after baseline between the 2 groups ($T=3.95$; $DF=58$, $p<0.05$). The mean HbA1C in group A was 9.9% and the mean for group B was 7.6%.
Comments	ADA clinical practice recommendations used

Study 40	Renders 2003
<p>Title: Quality of care for patients with type 2 diabetes mellitus – a long term comparison of two quality improvement programmes in the Netherlands.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT A retrospective comparison of data derived from two non randomized trials ▪ SELECTION: done ▪ RANDOMISATION PATIENTS: ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS PATIENTS: / ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS: done ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>The first programme (401 patients) focused on improving the skills and knowledge of GP with regard to type 2 diabetes, and supported them in making organizational changes in their practice</p> <p>In the second programme they implemented centralized shared diabetes care.</p>
Interventions	<p>First programme</p> <p>I1 educational skills to type 2 diabetes -GP</p> <p>I2 ---</p> <p>I3 ---</p> <p>I4 supported them in making organizational changes in their practice</p> <p>Second programme</p> <p>I1 receiving therapy advice</p> <p>I2 self-management/ received structured diabetes education</p> <p>I3 follow-up visits</p> <p>I4 ---</p> <p>Length of intervention: 3, 5 years of follow-up</p>
Outcomes	<p>PATIENT</p> <p>HbA1cLevel</p> <p>PROCESS</p> <p>Supporting a diabetes service</p>

Results	<p>PATIENT: HbA1c was improved whit who was supported by diabetes service</p> <p>PROCESS: A diabetes service, providing GP's advice and patient education, resulted in better glycaemia control over 3,5 years than an intervention aimed at improving the skills of GP in combination whit organizational changes in general practice.</p>
Notes	

Study 41	Williams 2003
<p>Title: Promoting glycemic control through diabetes self-mangement: evaluating a patient activation intervention.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT a randomized controlled trial of 232 patients with type 2 diabetes ▪ SELECTION: ▪ RANDOMISATION PATIENTS: patients were randomly assigned to receive either activation or education intervention ▪ RANDOMISATION CAREGIVERS:/ ▪ BASELINE CHARACTERISTICS: not done ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS: done ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>Inclusion criteria: type 2 diabetes, HbA1c at least 1 point above the upper end of the lab reference range, life expectancy > 1 year, ability to read and speak English.</p> <p>Patients: 232</p> <p>Activation group: 120</p> <p>Education group: 112</p> <p>A multidisciplinary diabetes team:</p> <p>Endocrinologist</p> <p>Diabetes nurse educator</p> <p>Dietician</p>
Interventions	<p>Activation group:</p> <p>I1: education</p> <p>I2: nurse educator -> 20min sessions to identify and clarify questions about diabetes care, education patients, exercise in training and stimulating in their care –control of diabetes</p> <p>I3: use of disciplinary teams-> nurse educator, dietician, 3months visits</p> <p>I4: ---</p> <p>Education group:</p> <p>I1: ---</p> <p>I2: nurse educator-> 20min sessions answering questions + video tapes about preventing long-term complications, diabetes and exercise in training and diabetes foot and skin care</p> <p>I3: 3 appointments for questions</p>

	Length of intervention: 12 months
Outcomes	<p>PATIENT Patient demographics Clinical data Active involvement via ratings of taped interactions between patients and providers HbA1c level</p> <p>PROCESS ---</p>
Results	<p>PATIENT Patients in activation were rated as more actively involved in discussions of diabetes self-management. No effect of the activation group was found on the HbA1c level. No significant difference in clinical data, but you can say that the activation group is more involved, more questions and improvement in glycemic control</p> <p>PROCESS ---</p> <p>The primary hypothesis that activation patients prior their medical appointments would improve glycemic control was not supported. It did increase patient's active involvement in the visits. But the effect of the activation intervention on glycemic control and its medication by rated active involvement were not. Reasons: the unexpected improvement of education patients', nurse educator not so effective in the activation group</p>

Study 42 **Greisinger, 2004**

Title: Diabetes care management participation in a primary care setting and subsequent hospitalization risk.

Level of evidence: III (Evidence from non-experimental descriptive studies, such as comparative studies, correlation studies and case-control studies)

Methods

- Retrospective cohort study of patients with diabetes
 - Descriptive statistics
 - The aim of study is to examine the association between participation in a diabetes management program in a primary care setting and the risk for hospitalization
 - STUDY POPULATION: 10 980
 - Patients were required to remain enrolled in the clinic system and to receive medical care for the 15 months
 - Comparison group, utilized information in the years 2001-2002.
-

Participants

Patients:
10980 patients

Diabetes care coordinator
Diabetes educator
Physician

Interventions

I1: --
I2: Self-management (educational sessions)
I3: Delivery systems design (Comprehensive Diabetes care management program including certified diabetes educator visits, diabetes education classes, monthly reports to primary care physicians, biannual quality of care reports to primary care physicians, a diabetes education letter for patients, a diabetes eye exam letter for patients and a brochure outlining the diabetes educational resources at the clinic).
I4: Feed-back on physician performance (monthly reports are sent on abnormal values of HBA1C, microalbumin and low density lipo-protein). Biannual quality of care reports comprise the number of patients undergoing required tests and comparing their results to their peers.

Length of intervention: (cross-sectional data)

Outcomes
PATIENT

- Hospitalization
- HbA1c level
- Blood glucose levels
- Physician office visits
- Diabetes educator visits
- Physical exam
- Co morbidities

PROCESS:
NONE

PATIENT: +

Results

PROCESS: -

Patients participating in some type of primary care diabetes management were 16% less likely to have an incidence of hospitalization. When individual educational components of the diabetes care management program were examined, diabetes education sessions were more beneficial than certified diabetes educator visits in reducing the incidence of hospitalization. Patients with controlled blood glucose levels and a diabetes education session seemed to have the most significant reduction in hospitalization risk (odds ratio 0.62; 95% CI: 0.40,0.95).

Study 43	Krein 2004
<p>Title: Case management for patients with poorly controlled diabetes: a randomized trial.</p> <p>Level of evidence: 1b (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT A randomized controlled trial at 2 departments ▪ SELECTION: Veteran Affairs Medical centers involving 246 veterans with diabetes, type 2 diabetes ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: done ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS not clear ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>246 randomizes patients whit HbA1c 7,5 %</p> <p>intervention – case manager group: 123 patients</p> <p>control group: 123 patients</p> <p>2 nurse practitioners case managers worked with patients and their primary care provider, monitoring and coordinating care for the intervention group</p>
Interventions	<p>Intervention group</p> <p>I1 collaborative goal setting</p> <p>I2 patient education by nurse case manager</p> <p>I3 telephone contacts nurse case manager/ regular follow-up visits</p> <p>I4 treatment protocol, to reach targets</p> <p>Control group: usual care + educational material:</p> <p>18 months</p>
Outcomes	<p>PATIENT</p> <ul style="list-style-type: none"> - HbA1c - Cholesterol level - Blood pressure - Satisfaction <p>PROCESS: NONE</p>
Results	<p>PATIENT:</p> <p>There was a little difference between the groups in mean exit HbA1c level.</p>

	<p>There was no significant difference that the intervention resulted in improvements in low density cholesterol level, blood pressure or greater intensification in medication therapy. Intervention patients were significant more satisfied with their diabetes care.</p> <p>PROCESS:</p> <p>---</p> <p>Organizational factors and program structure are likely determinants of the effectiveness of case management.</p>

Study 44	Choe 2005
<p>Title: Proactive case management of high risk patients with type 2 diabetes by a clinical pharmacist.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT trial randomization in a university affiliated primary care internal medicine clinic ▪ SELECTION: ▪ RANDOMISATION PATIENTS: patients were randomly assigned -> 80 ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: were similar in age, sex , mean HbA1c and current treatment ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS: not clear ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>80 patients with poorly controlled type 2 diabetes</p> <p>Intervention group: 41</p> <p>Control group: 39</p> <p>Clinical pharmacist</p> <p>Primary care providers</p>
Interventions	<p>Activation group:</p> <p>I1: clin pharmacist-> assist primary care providers</p> <p>I2: clinical pharmacist->self management diabetes, education, reinforcement of diabetes complications</p> <p>I3: clinic visits, telephone follow-up</p> <p>I4: ---</p> <p>Control group: usual care based on I</p> <p>Length of intervention:</p> <p>12 months</p>
Outcomes	<p>PATIENT</p> <ul style="list-style-type: none"> - HbA1c level - Lipoproteine measures - Retinal examination - Urine micro albumin testing - Monofilament screening for diabetic neuropathy <p>PROCESS</p> <p>---</p>

Results	<p>PATIENT Intervention group greater reduction HbA1c level than control group (2,1% vs 0,9% p 0,3) Also for lipoproteins measures and retinal examinations. More frequent foot screening (92,3% vs 62,9%)</p> <p>PROCESS:---</p>
Comments	<p>Proactive diabetes case management by a pharmacist improved glycemic control and diabetes process of care measures. This approach integrated with and based in the primary care setting, was an effective and efficient approach to improving care, especially for patients with poorly glycemic control.</p>

Study 45	Long 2005
<p>Title: Acceptability and satisfaction with a telecare approach to the management of type 2 diabetes.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT trial randomization from 47 general practices in Northwest England ▪ SELECTION: ▪ RANDOMISATION PATIENTS: patients were randomly assigned a 2:1 ratio to the intervention and control group ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: not done ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS: not clear ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>468 patients</p> <p>Intervention group: 311</p> <p>Control group: 157</p> <p>Physician</p> <p>Nurse specialist – telecarer</p>
Interventions	<p>Activation group:</p> <p>I1: ---</p> <p>I2: Patients received calls, scheduled for 20min related to their level of blood glucose control</p> <p>I3: visits physician</p> <p>I4: ---</p> <p>Control group: usual care</p> <p>Length of intervention:</p> <p>12 months</p>
Outcomes	<p>PATIENT</p> <p>Satisfaction with treatment</p> <p>PROCESS</p> <p>---</p>

Results	<p>PATIENT Persons receiving the intervention continued to report high levels of satisfaction with their treatment. >90% agreed telecarer approach was acceptable Increased feeling of well-being.</p> <p>PROCESS ---</p>
Comments	<p>If patient-centered care service to be achieved, then user perceptions of the acceptability and satisfaction are essential. A combination of methodological approaches needs to be used and tailored to the intervention, ideally incorporating validated measures used in other studies, designed instruments and including indepth interviews with participants.</p> <p>These processes include listening to and focusing on the concerns of the patients, individualized problems solving and continuity of care over time.</p>

Study 46	Rothmann 2005
<p>Title: A randomized trial of primary care-based disease management program to improve cardiovascular risk factors and glycated hemoglobin levels in patients with diabetes.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT trial randomization of 217 patients and poor glycemic control ▪ SELECTION: ▪ RANDOMISATION PATIENTS: not clear ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: not done ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS: not clear ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>217 patients -> HbA1c level 8% + were conducted at an academic general practice from febr. 2001 – april 2003</p> <p>Intervention group: 105</p> <p>Control group: 112</p> <p>Clinical pharmacist Diabetes care coordinator Physician</p>
Interventions	<p>Intervention group:</p> <p>I1: ---</p> <p>I2: nurse educator-> education, training glucose control + complications</p> <p>I3: clin pharmacist + practitioner-> evidence based treatment, pro active management of clinical parameters. Pharmacist telephone call every 2-4 weeks with each patient.</p> <p>I4: database -> patient outcomes and proactively improve care</p> <p>Control group: usual care based on local guidelines, supported by education program</p> <p>Length of intervention: 12 months</p>
Outcomes	<p>PATIENT</p> <p>-Blood pressure</p>

	<ul style="list-style-type: none"> -HbA1c level -Cholesterol level -Aspirin use satisfaction -Diabetes knowledge -Use of clinical services <p>PROCESS</p> <p>Time spent by the disease management team in direct contact with their patients or in activities related to patient care</p>
Results	<p>PATIENT</p> <p>All the patients had an improvement , but the intervention group had significantly greater improvement than the control group (95% confidence interval) for systolic blood pressure, HbA1c level.</p> <p>Changes in cholesterol level were not significant.</p> <p>91% aspirin use with intervention group and 56% among controls-> significant ($p < 0,0001$)</p> <p>-> reduce cardiovascular complications</p> <p>Intervention patients greater diabetes knowledge.</p> <p>PROCESS</p>
Comments	<p>This comprehensive disease management program reduced cardiovascular risk factors and HbA1c levels among vulnerable patients with type 2 diabetes and poor glycemic control.</p>

Study 47	Taylor 2005
<p>Title: Promoting health in type 2 diabetes: nurse-physician collaboration in primary care.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methodology	<ul style="list-style-type: none"> ▪ RCT ▪ SELECTION: ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS: not done ▪ BASELINE CHARACTERISTICS PATIENTS: / ▪ FOLLOW-UP: ▪ BLINDED ASSESSMENT PATIENTS: done ▪ BLINDED ASSESSMENT CAREGIVERS:/
Participants	<p>Patients:</p> <p>40 patients from 1 family practice clinic with type 2 diabetes were randomly assigned to control and experimental group. All subject were living in their own house + life expectancy > 1 year</p> <p>Intervention group: 20</p> <p>Control group: 20</p> <p>Physician</p> <p>Nurse</p> <p>Nurse/ exercise specialist</p> <p>Nutritionist</p>
Interventions	<p>I1: ---</p> <p>I2: consultation with a specialist and/or nutritionist -> connecting, empowering, doing for and finding meaning (4 action components)</p> <p>I3: standard care + home visits nurse</p> <p>I4: ---</p> <p>Control group: usual care</p> <p>Length of intervention: 3 months</p>
Outcomes	<p>PATIENT</p> <p>Clinical indicators: HbA1c, blood pressure, cholesterol</p> <p>Functional outcomes: measures of diabetes activity</p> <p>Quality of life indicators</p> <p>Self – management practices</p>

	<p>PROCESS</p> <p>---</p>
Results	<p>PATIENT</p> <p>No significant difference for the clinical indicators A trend of improvement in functional outcomes, self management in the intervention group, no significant.</p> <p>PROCESS</p> <p>---</p>
Comments	<p>The purpose of this study-> results using for a larger study, was small It suggest that a nurse-physician collaboration in primary care have positive outcomes in type 2 diabetes, although there was no significant difference from those in the control group -> small study, individual patients</p>

Study 48	Young 2005
<p>Title: Pro-active call center treatment support (PACCTS) to improve glucose control in type 2 diabetes.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Metho	<ul style="list-style-type: none"> ▪ RCT trial randomization from general practices in Salford ▪ SELECTION: ▪ RANDOMISATION PATIENTS: patients were randomly assigned ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: not done ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS: not clear ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>591 patients, type 2 diabetes + >1 year diagnosed</p> <p>Intervention group: 394</p> <p>Control group: 197</p> <p>Physician</p> <p>Nurse specialist – telecarer</p>
Interventions	<p>Activation group:</p> <p>I1: ---</p> <p>I2: Patients received calls, scheduled for 20min related to their level of blood glucose control</p> <p>I3: visits physician</p> <p>I4: ---</p> <p>Control group: usual care based on local guidelines, supported by education program</p> <p>Length of intervention:</p> <p>12 months</p>
Outcomes	<p>PATIENT</p> <p>HbA1c level</p> <p>Proportion of patients reducing HbA1c by at least 1%</p> <p>PROCESS</p> <p>---</p>

Results	<p>PATIENT: +</p> <p>Compared with usual care HbA1c improved by 0,31% overall in the intervention group.</p> <p>For patients with baseline HbA1c >7% , the improvement increased with 0,49%, whereas in patients with HbA1c <7% were no changes.</p> <p>The difference in proportion was also here significantly for patients with HbA1c >7%</p> <p>PROCESS: -</p> <p>---</p>
Comments	Further research should extend the validity of findings to rural communities and other ethnic groups, as well as to smoking and blood pressure control

Reference table care models primary care

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CARE MODELS IN HOSPITALS

Study 49	Gaede, 1999
<p>Title: Intensified multifactorial intervention in patients with type 2 diabetes mellitus and microalbuminuria: The Steno type 2 randomised study.</p> <p>Level of evidence: Ib (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ Randomised, open parallel trial ▪ RANDOMISATION PATIENTS: DONE ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: FOLLOW-UP: providers: N/A Patients: DONE ▪ BLINDED ASSESSMENT PATIENTS: DONE ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients type 2 DM</p> <p>N= 160 (standard treatment: 80)/ intensive treatment: 80)</p>
Interventions	<p>Intensive multifactorial intervention with behaviour modification and the stepwise introduction of pharmacological therapy.</p> <p>I1: ---</p> <p>I2: Self-management (individualized diabetic dietary advice)</p> <p>I3: Delivery systems design (Diabetes team, including physician, nurse and dietician).</p> <p>I4: ---</p> <p>Length of intervention: 4 years</p>
Outcomes	<p>PATIENT: Development of nephropathy, median albumin excretion rate > 300 mg per 24h in at least one of the two-yearly examinations.</p> <p>PROCESS</p> <p>---</p>
Results	PATIENT: +

PROCESS: Not measured

Patients in the intensive group had significantly lower rates of progression to nephropathy (odds ratio 0.27, 95% CI 0.10-0.75), progression of retinopathy (0.45) and progression of autonomic neuropathy (0.32) than those in the standard group (receiving care by general practitioners).

Study 50**Davies, 2001**

Title: Evaluation of a hospital diabetes specialist nursing service: A randomized controlled trial.

Level of evidence: : 1b (Evidence from at least one randomized controlled trial)

Methods

- RCT a prospective , open, randomized trial
- SELECTION: DSN care in the in-patient treatment of adults with diabetes.
- RANDOMISATION PATIENTS: sequential, unselected referrals of in-patients to the DSN service (type 1-2) were randomized prior to clinical review into two groups.
- RANDOMISATION CAREGIVERS:/
- BASELINE CHARACTERISTICS PATIENTS:
- FOLLOW-UP:
- BLINDED ASSESSMENT PATIENTS: done
- BLINDED ASSESSMENT CAREGIVERS: not clear

Participants

300 patients
 Intervention group: 148 patients (prim measure 148 – second 67 patients)
 Control group: 152 patients (prim measure 152 – second 66 patients)

 Specialist nursing

Interventions

I1: --
 I2: --
 I3: DSN (diabetes specialist nursing service) in a university hospital, including individual structured patient education appropriate to need and practical management advice including verbal and written case-note feedback to ward-based medical and nursing staff.
 I4: --

 Length of intervention:

Outcomes

PATIENT
 -Length of stay
 -Pattern of readmission
 -Diabetes related quality of life
 -Diabetes knowledge
 -Satisfaction with treatment
 -GP and community care contacts --

Following discharge

PROCESS

PATIENT: +

PROCESS: -

Results

Median length of stay was lower in the intervention group (11.0 vs. 8.0 days, $P < 0.01$). Readmission rates were the same in the two groups (25%), and mean time to readmission was similar in the two groups, although slightly less in the control group (278 vs. 283 days, $p = 0.80$). The cost per patient for nursing input was 38.94 pounds. However, when the reduced length of stay was accounted for, the intervention produced a mean cost per admission of 436 pounds lower than that of the control group ($P = 0.19$). Patients in the intervention group were more knowledgeable regarding their diabetes and more satisfied with care.

Conclusions: Diabetes specialist nurses are potentially cost saving by reducing hospital length of stay. There was no evidence of an adverse effect of reduced length of stay on re-admissions, use of community resources, or patient perception of quality of care

Study 51**Roman, 2001**

Title: Windows of opportunity to improve diabetes care when patients with diabetes are hospitalized for other conditions.

Level of evidence: IIb (Evidence from at least one other type of quasi-experimental design)

Methods

- Pre post quasi experimental design
- SELECTION Patients:
- BASELINE CHARACTERISTICS PATIENTS: no significant difference in terms of age, sex, race, educational level, duration of diabetes or treatment between patients surveyed before and after introduction of type 2 clinical path
- Pre intervention sample: 328-> were hospitalized before any exposure to the quality improvement interventions
- Post intervention sample: 336 -> were hospitalized after the quality improvement interventions were considered fully implemented

Participants

Patient survey sample -> 446 patients

Medical and surgical cardiac care units

Interventions

I1: ---

I2: ---

I3: a) Management algorithms including the revision of the hospital's capillary blood glucose monitoring (CBGM) form into a chart with color-coded columns for defined glucose ranges, providing immediate visual input about trends in glucose control. b) interdisciplinary clinical path for management of type 2 diabetes as secondary diagnosis. The path gave recommendations on when and how to initiate or adjust standing insulin or oral diabetic agent regimens based on glucose levels, and it provided staff with elements of patient self-care instructions to provide to patients before discharge.

I4: ---

Length of intervention:
3 years

Outcomes

PATIENT

- Patient characteristics
- Glucose control
- Nosocomial infections
- Patient survey data
- Diabetes self-care information and instruction
- Diabetes knowledge

PROCESS

PATIENT: +

PROCESS: -

Results

The frequency of patients with severe hyperglycemia (at least one glucose level > 400mg/dl) and prolonged hyperglycemia (at least three consecutive glucose levels > 250 mg/dl) decreased from 12 and 17% preintervention to 6.6 and 10% post-intervention ($p=0.017$, and $P=0.013$, respectively). Patient-reported receipt of self-care instruction varied from 44 to 69% on nine survey items preintervention. Postintervention linear regression slopes for receipt of self-care instruction were all greater than preintervention slopes, but the differences did not achieve statistical significance. 40% of the patients had important knowledge deficits.

Conclusions: the interventions were associated with a decreased frequency of prolonged and severe hyperglycemia. No significant results were obtained with regard to self-care instructions.

Study 52**Shea, 2002**

Columbia University's Informatics for diabetes education and telemedicine (IDEATel Project): Rationale & design.

Level of evidence: Not applicable

Methods

- RCT
- SELECTION: a total of 1500 will be randomized in NY., have diabetes and live in a federally designated medically underserved area or HPSA's.
- RANDOMISATION PATIENTS: not clear
- RANDOMISATION CAREGIVERS: /
- BASELINE CHARACTERISTICS PATIENTS
- FOLLOW-UP: not know
- BLINDED ASSESSMENT PATIENTS
- BLINDED ASSESSMENT CAREGIVERS

Participants

Patients: 1500
Intervention group: 750 patients
Control group: 750 patients

Nurse case manager
Medicare beneficiaries

Interventions

I1: --
I2: Telephone outreach: patients using a web-based home telemedicine unit that provides synchronous videoconferencing with a project-based nurse, electronic transmission of home fingerstick glucose and blood pressure data, messaging and web access to a project website.
I3: --
I4: --

Length of intervention: Four years

Outcomes

PATIENT:
-HbA1c level
-Blood pressure
-Lipid levels
-Patient satisfaction
-Health care service utilization costs

PROCESS:

Results

PATIENT: ongoing study

PROCESS: ongoing study

Study 53	Meigs 2003
<p>Title: A controlled trial of web-based diabetes disease management. The MGH Diabetes Primary Care Improvement Project.</p> <p>Level of evidence: : 1b (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT conducted a group randomized controlled trial ▪ SELECTION: 12 interventions and 14 control staff providers in hospital based internal medicine clinic. Type 2 diabetes ▪ RANDOMISATION PATIENTS: done ▪ RANDOMISATION CAREGIVERS: done ▪ BASELINE CHARACTERISTICS PATIENTS: baseline staff provider and patient characteristics were similar comparing intervention group with the control group. ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS ▪ BLINDED ASSESSMENT CAREGIVERS: /
Participants	<p>Patients:</p> <p>Intervention group: 12 staff -> 307 patients</p> <p>Control group: 14 staff -> 291 patients</p> <p>Staff preceptor</p> <p>Staff members</p>
Interventions	<p>I1: ---</p> <p>I2: training and feedback</p> <p>I3: patients visits, The DMA (disease management application) displays interactive patient specific clinical data and links to other web-based care resources</p> <p>I4: electronic medical record, available web browsers patient care room</p> <p>Control group: usual care</p> <p>Length of intervention: 1 year</p>
Outcomes	<p>PATIENT</p> <ul style="list-style-type: none"> -HbA1c level -LDL cholesterol -Blood pressure -Eye screening

	<p>-Foot screening</p> <p>PROCESS</p> <p>---</p>
Results	<p>PATIENT</p> <p>The DMA was used for 42 % of scheduled patient visits. The number of HbA1c test obtained per year increased significantly in the intervention group compared with the control group, as did the number of LDL cholesterol tests and the proportions of patients undergoing at least one foot examination per year. Levels HbA1c decreased by 0,2 in the intervention group and increased by 0,1 in the control group (P=0,09); proportions of patients with LDL Levels < 130mg/dl increased by 20,3 % in the intervention group and 10,5 in the control group.</p> <p>PROCES</p> <p>---</p> <p>Conclusions: Web-based patient-specific decision support has the potential to improve evidence based parameters of diabetes care</p>

Study 54 **New, 2003**

Title: Specialist nurse-led intervention to treat and control hypertension and hyperlipidemia in diabetes (SPLINT).

Level of evidence: : 1b (Evidence from at least one randomized controlled trial)

Methods

- RCT a randomized controlled implementation trial
- SELECTION: Hope hospital Salford, the subjects consisted of 1047 patients presenting for annual review
- RANDOMISATION PATIENTS: individuals with diabetes were randomized to usual care or the intervention group-> this for hypertension trial as hyperlipidemia trial
- RANDOMISATION CAREGIVERS:/
- BASELINE CHARACTERISTICS PATIENTS: done -ok
- FOLLOW-UP: done
- BLINDED ASSESSMENT PATIENTS: done
- BLINDED ASSESSMENT CAREGIVERS:/

Participants

Patients 1407

Hypertension:

-> Intervention group: 506 patients

-> control group: 508 patients

Hyperlipidemia:

-> intervention group: 345 patients

-> control group: 338 patients

Specialist nurse-led clinic

Interventions

I1: ---

I2: ---

I3: Specialist-nurse led consultation to discuss targets for treatment, measuring blood pressure, discussing diet and exercise patterns, willingness to change + an individual action plan + follow-up of patient by nurse specialists every 4-6 weeks for 30-45 minutes appointments until targets were achieved.

I4: ---

Length of intervention: 1 year

Outcomes**PATIENT:**

- Primary outcome measures
- Blood pressure control
- Cholesterol values
- Mortality

PROCESS: -

PATIENT: +**Results****PROCESS: -**

Specialist-nurse led clinics were associated with a significant improvement in patients achieving the target after 1 year (odds ratio 1.37, $p=0.003$). Targets were achieved more frequently in patients enrolled in the specialist nurse-led clinic for hyperlipidemia (odds ratio 1.69, $P=0.0007$) than for hypertension (odds ratio 1.14, $P=0.37$). The intervention was associated with a reduction in all-cause mortality (OR 0.55, $p=0.02$).

Conclusions: the study provides good evidence to support the use of specialist nurse-led clinics as an effective adjunct to hospital-based care of patients with diabetes

Study 55**Reiber, 2004**

Title: 'Diabetes Quality Improvement in Department of Veterans Affairs Ambulatory care clinics'

Level of evidence: : 1b (Evidence from at least one randomized controlled trial)

Methods

- RCT (randomised by patient)
- SELECTION:
- RANDOMISATION PATIENTS: The firm was the unit of randomization. Each firm was randomized by the study statistician to intervention or control status. Then the patients via system database.
- RANDOMISATION CAREGIVERS
- BASELINE CHARACTERISTICS PATIENTS: demographic findings
- FOLLOW-UP: done
- BLINDED ASSESSMENT PATIENTS: not clear
- BLINDED ASSESSMENT CAREGIVERS

Participants

Firms: for there patients they have to be assigned to a primary care provider + at least 1 visit in the prior year

Intervention group: 7 -> 3701 patients (completed study 986 patients)

Control group: 7 -> 2020 patients (completed study 607 patients)

Group of physicians for each firm
Primary care providers

Interventions

I1: --

I2: --

I3: --

I4: Feed-back on primary care providers (of synthesized information on patients' health, function and satisfaction)

Length of intervention: Two years

Outcomes**PATIENT**

- Demographic outcomes
- HbA1c level
- Blood pressure
- Mean LDL
- Mean HDI

- Blood sugar
- Check feet
- Meal plan
- Quality Of Life
- Satisfaction

PROCESS

Results

PATIENT: -

PROCESS: -

The timely delivery to primary care providers of state-of-the-art patient feed-back reports that identified patient issues and areas for improvement did not result in significant improvements in patient outcomes between intervention and control group.

Comments

Study 56	Trento, 2004
<p>Title: A 5-year randomized controlled study of learning, problem solving ability, and quality of life modifications in people with type 2 diabetes managed by group care.</p> <p>Level of evidence: : 1b (Evidence from at least one randomized controlled trial)</p>	
Methods	<ul style="list-style-type: none"> ▪ RCT a 5 year randomized controlled clinical trial of continuing systematic education delivered by group versus individual diabetes care in a hospital based secondary care diabetes unit. ▪ RANDOMISATION PATIENTS: randomly allocated to intervention or control group ▪ RANDOMISATION CAREGIVERS: / ▪ BASELINE CHARACTERISTICS PATIENTS: not done ▪ FOLLOW-UP: done ▪ BLINDED ASSESSMENT PATIENTS: done ▪ BLINDED ASSESSMENT CAREGIVERS:/
Participants	<p>Patients:</p> <p>112 randomized patients</p> <p>Intervention group: 56 patients (completed study 42)</p> <p>Control group: 46 patients (completed study 42)</p> <p>Intervention group-> 2 physicians + educator</p> <p>Control group -> 1 physician + educator</p>
Interventions	<p>I1: --</p> <p>I2: Self-management (individual & group educational sessions)</p> <p>I3: --</p> <p>I4: --</p> <p>Length of intervention:</p>
Outcomes	<p>PATIENT</p> <ul style="list-style-type: none"> -Knowledge of diabetes -Problem solving ability -Quality of life -HbA1c level -BMI -HDL cholesterol

PROCESS

PATIENT: +

Results

PROCESS:-

Knowledge of diabetes and problem solving ability improved from year 1 with group care and worsened among control control subjects ($p < 0.001$ for both). Quality of life improved from year 2 with group care but worsened with individual care ($p < 0.001$). HBA1C level progressively increased over 5 years among control subjects (+1.7%, 95% CI 1.1-2.2) but not group care patients (+0.1%, -0.5 to 0.4), in whom BMI decreased (-1.4, 2.0 to 0.7) and HDL cholesterol increased (+ 0.14 mmol/l, 0.07-0.22).

Adults with type 2 diabetes can acquire specific knowledge and conscious behaviors if exposed to educational procedures and settings tailored to their needs.

Study 57 **Kam Yet Wong, 2005**

Title: Nurse follow-up of patients with diabetes: randomized controlled trial.

Level of evidence: : 1b (Evidence from at least one randomized controlled trial)

Methods

- RCT
- RANDOMISATION PATIENTS: done
- RANDOMISATION CAREGIVERS:
- BASELINE CHARACTERISTICS PATIENTS:
- FOLLOW-UP:
- BLINDED ASSESSMENT PATIENTS:
- BLINDED ASSESSMENT CAREGIVERS:

Participants 101 patients
 Intervention group
 Control group
 Regional hospital

Interventions I1:--
 I2:--
 I3: System delivery design: nurse-led transitional
 hospital care
 I4:--

 Length of intervention: 6 months

Outcomes **PATIENT:**

- HbA1C
- blood monitoring adherence
- exercise adherence
- hospital stay

PROCESS:

PATIENT: +

Results **PROCESS: -**

The intervention group had a greater decrease in HbA1C at 24 weeks, although statistical difference was marginal (7.6 vs. 8.1, $p=0.06$), a higher blood monitoring adherence score at both 12 weeks (5.4 vs. 3.6, $p<0.001$), and 24 weeks (5.5 vs. 3.2, $p<0.001$). The study group had a shorter hospital stay (2.2 vs. 5.9, $p<0.001$).

Study 58**Maljanian, 2005**

Title: Intensive telephone follow-up to a hospital-based disease management model for patients with diabetes mellitus.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT the study involved a repeated measures randomized controlled trial.
- RANDOMISATION PATIENTS: not clear
- RANDOMISATION CAREGIVERS
- BASELINE CHARACTERISTICS PATIENTS: not clear
- FOLLOW-UP: done
- BLINDED ASSESSMENT PATIENTS: not done
- BLINDED ASSESSMENT CAREGIVERS:/

Participants

Patients:
336 adult patients type 1 or 2 diabetes, aged ≥ 18 years,
Intervention group: 176 patients
Control group: 160 patients

Primary care provider
Physician
Nurse
Nutritionist

Interventions

I1: ---
I2: Self-management (Series of 12 weekly phone calls reinforcing base education and self-management skills including standardized inquiry to patients, adherence with self-management activities and attendance at scheduled physician office visits).
I3: Delivery systems design (the weekly phone calls were added to a diabetes disease management program including 4 hours of educational classes, individual visits with a registered nurse and a nutritionist and scheduled follow-up visits).

I4: Clinical information systems: Written feed-back on to the patient's primary care provider

Length of intervention:

Outcomes**PATIENT**

- Glycemic control
- Health-related quality of life
- Symptoms of depression
- Eye examination
- Foot examination
- Self examination of feet
- Monitoring blood sugars
- HbA1c level
- Nutritional counseling
- Flu immunization

PROCESS

- Adherence to ADA standards of care, specifically annual eye exams, physician foot exams, foot self-exams and pneumonia vaccination

PATIENT: -

Results

PROCESS: +

Adherence to ADA standards of care, specifically annual eye exams, physician foot exams, foot self-exams and pneumonia vaccination were significantly better with the added telephone intervention, but there were no differences between the groups on glycemic control & HRQOL.

Conclusions: the additional telephone intervention further improved adherence to ADA guidelines for self-care and medical care but did not affect glycemic control of HRQOL.

Study 59**Rachmani, 2005**

Title: Teaching and motivating patients to control their risk factors retards progression of cardiovascular as well as microvascular sequelae of type 2 diabetes mellitus: A randomized prospective 8 years follow-up study.

Level of evidence: Ib (Evidence from at least one randomized controlled trial)

Methods

- RCT a randomized prospective study on 141 (165) patients with diabetes type 2.
- RANDOMISATION PATIENTS: 141 patient referred for consultation were randomized to a standard consultation (control group) or to patient practice programme.
- RANDOMISATION GAREGIVERS: /
- BASELINE CHARACTERISTICS PATIENTS: no difference in any of the BASELINE CHARACTERISTICS between the two groups, using computer generated random numbers.
- FOLLOW-UP: done
- BLINDED ASSESSMENT PATIENTS: done
- BLINDED ASSESSMENT CAREGIVERS: /

Participants

Patients:
141 patients with: age 40-70 years, diabetes type 2 of <10 years duration, BMI ≤ 35kg/m², blood pressure values ≥ 140/90mmHg, LDL ≥ 3mmol/l, albumin/creatinine ratio < 22mg/mmol
Intervention group: 71 patients
Control group: 70 patients

Primary care physician
Team hospital ???
Hospital laboratory

Interventions

- I1: --
I2: Self-management (patient participation and teaching program including two hours individual consultation about ways to achieve tight control of the modifiable risk factors, a plan of lifestyle modification, a fitness programme, instruction how to measure blood pressure weekly, keep records of laboratory results and urging the physicians to change or intensify treatment if target values of blood pressure, LDL cholesterol, and HBAC were not reached).
I3: --

I4: --

Length of intervention: Follow-up period of 7.7 years.

Outcomes

PATIENT

- Modifiable risk parameters: relative risk
- Developing nephropathy
- Blood pressure
- LDL Cholesterol
- HbA1c level

PROCESS

PATIENT: +

PROCESS: -

Results

The mean follow-up was 7.7 years. The standard consultation (SC) group each attended 8 annual consultations. The intervention group initiated on average 1.2 additional consultations per annum. The relative risk over 8 years for the combined cardiovascular event index in the intervention vs. the control group was 0.65 (95% CI 0.41-0.89, $P=0.001$). Nephropathy developed in 14 vs. 7 patients in the standard consultation and intervention group, respectively, RR 0.50 (95% CI 0.28-0.85, $P=0.03$). Throughout the study, period blood pressure, LDL and HbA1c were significantly lower in the intervention vs. the standard consultation group.

Conclusions: Well-informed and motivated patients were more successful in maintaining good control of their risk factors, resulting in reduced cardiovascular risk and slower progression of microvascular disease.

Reference table care models hospital

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Appendix part 2.2. Evidence tables on six diabetes care models in hospitals, primary care, outpatient and community settings

AGGREGATED EVIDENCE TABLES SIX (6) DIABETES CARE MODELS

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
CARE MODEL 1: <i>The General practitioner model in primary care (independently working)</i>								
Naji et al 1994	-	+	-	RCT	Ila	I1: Distribution of educational materials I2: Distribution of educational materials I3: Arrangements for follow-up I4: Changes in medical record system, reminders	PATIENT: Glycated haemoglobin -BMI -Creatinine -Systolic blood pressure -Diastolic blood pressure Diabetes health questionnaire PROCESS: - Routine diabetic care visits -Glycated haemoglobin -Blood pressure -Creatinine -Visual acuity -Funduscopy -Peripheral pulses Neurological examination Feet -% patients that had seen a dietician -% patients that had seen a chiroprapist	PATIENT: + PROCESS: + A higher proportion of patients defaulted from conventional care (14 (10%)) than from integrated care (4 (3%)), 95% confidence interval of difference 2% to 13%). After two years no significant differences were found between the groups in metabolic control, psychosocial status, knowledge, beliefs about control, satisfaction with treatment, unscheduled admissions, or disruption of normal activities. Integrated care was as effective for insulin dependent as non-insulin dependent patients. Patients in

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
Mazze et al 1994	+	+	-	RCT	Ib	I1: Distribution of educational materials + educational meetings + local consensus processes. (= staged diabetes management) I2: --- I3: --- I4: Reminders	PATIENT: - HbA1c PROCESS: Visits - Renal evaluation - Retinal evaluation - Education - Health survey	integrated care had more visits and higher frequencies of examination. Costs to patients were lower in integrated care (mean 1.70 pounds) than in conventional care (8 pounds). 88% of patients who experienced integrated care wished to continue with it. PATIENT: + PROCES: +
Pieber et al 1995	-	+	-	CBA	IIa	I1: Distribution of educational materials + educational meetings I2: Patient education by GP's & office staff I3: -- I4: --	PATIENT: -HbA1c -Cholesterol -Triglycerides -BMI -Body weight -Systolic blood pressure -Diastolic blood pressure -Treatment without OHG -Daily dosage of OHG (tablets per patient per day) -Treatment with sulphonylurea (tablets per patient per day) -Foot care:	PATIENT: + PROCES: NM After 6 months the weight reduction in the intervention group was 2.6 kg (1.6-3.7 kg, $p < 0.001$) and the difference in HbA1c between the groups was 0.92% (0.23-1.61%, $p < 0.01$) at follow-up. Systolic (-16.6 mmHg) and diastolic (-11.1 mmHg) blood pressure, serum triglycerides (-0.63 mmol l-l), and serum cholesterol (-

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
Feder et al 1995	-	-	+	RCT	Ib	<p>I1: Guidelines (each practice receiving one set of guidelines, including prompts) & educational meetings (3)</p> <p>I2: ---</p> <p>I3: ---</p> <p>I4: ---</p>	<p>-Callus formation: -Interdigital cracks, interdigital -Margins of the toenails were cut back, or ingrown toe nails were cut out.</p> <p>PROCESS: NONE</p> <p>PATIENT: NONE</p> <p>PROCESS: Recording of: - Blood glucose concentration - Weight - Blood pressure - Smoking habit - Funduscopy - Feet examination</p>	<p>0.40 mmol l-l) were reduced significantly in the intervention group ($p < 0.006$). The number of patients with callus formation and poor nail care decreased significantly after participating in the teaching programme ($p < 0.001$). In the control group no reduction in body weight, metabolic control or in risk factors for diabetic foot complications were observed. Calculated health care costs per patient and year decreased in the intervention group (-33 pounds) and increased in the control group (+ 30 pounds) mainly due to changes in prescription of oral hypoglycaemic agents in both groups.</p> <p>PATIENT:</p> <p>PROCES:</p> <p>In practices receiving diabetes guidelines, significant improvements in recording were seen for all diabetes variables. Both groups of practices showed improved recording of review of inhaler technique, smoking habit, and review of asthma symptoms. In</p>

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
Ward et al 1996	-	+	-	RCT	Ib	I1: Audit I2: Distribution of educational materials I3: Educational outreach visits (interview by academic GP or nurse) I4: Feed-back	PATIENT: NONE PROCESS: -History recorded -Duration of known diabetes -Dietary inquiry and advice -Alcohol intake inquiry and advice -Exercise inquiry and advice -Smoking inquiry and advice -Impotence/vaginitis inquiry and advice -Annual physical examination -Blood pressure -Eye examination (or referral to ophthalmologist) -Body weight <i>Feet examined</i>	practices receiving asthma guidelines, further improvement was seen only in recording of review of inhaler technique and quality of prescribing in asthma. Sizes of disease registers were unchanged. The use of structured prompts was associated with improved recording of four of seven variables on diabetes and all six variables on asthma. PATIENT: NM PROCES: +

CARE MODELS	Type I DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
							<ul style="list-style-type: none"> -Pulses -Sensation -Nails -Reflexes <p><i>Examination of:</i></p> <ul style="list-style-type: none"> - HbA1C -Blood glucose -Cholesterol -Triglyceride -Creatinine -Urinalysis -Glucose -Protein -Nitrite -Modified ACC score 	
Branger et al 1999	+	+	-	CAB	Ila	I1: --- I2: --- I3: --- I4: Changes in medical record systems	PATIENT: NONE PROCESS: <ul style="list-style-type: none"> -Patient contacts with GP -Patient contacts with internal medicine consultant -Letters from GP to consultant and vice versa -Recorded items per patient: -Kidney function: -Creatinine level -Proteinuria -Eye condition: -Assessment ophthalmologist -Insulin control -Glucose level 	PATIENT: NM PROCES: + Intervention GPs received more messages per year (1.6 per patient) than control GPs (0.5 per patient, $P<0.05$). Significant higher availability ($P<0.05$) was achieved for data on HbA1C levels, fructosamine levels, blood pressure measurements, cholesterol levels, triglyceride levels and weight measurements. Intervention patients showed a slight but significant decrease of HbA1C levels in the second semester of 1994 (from 7.0 to 6.8, P

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
							-HbA1c level -Fructosamine level -Other -Blood pressure -Cholesterol level -Triglyceride level -Weight	= 0.03), control patients also showed a slightly decreased group mean, but this change was not significant (from 6.6 to 6.5, P = 0.52). The magnitudes of these mean differences, however, were not significantly different (intervention group: 0.21; control group: 0.12, P = 0.68).
Tai et al 1999	-	-	+	RCT	Ib	I1: -- I2: Reminders I3: -- I4: Changes in medical record systems (use of computer templates)	PATIENT: NONE PROCESS: Use of diabetes templates	PATIENT: - PROCESS: -
Olivarius et al 2001	-	+(Newly diagnosed)	-	RCT	Ib	I1 medical education I2 educational and surveillance support I3 follow up every three months , annual screening for diabetic complications I4 a month before the annual screening of the patients, GP received a questionnaire as support / clinical guidelines (diet, smoking, persistent hyperglycemia, hypertension and hyperlipidaemia) + annual half day seminar / the doctors received annual descriptive feedback reports on individual patients	PATIENT - Plasma glucose concentration - Glycated hemoglobin - Systolic blood pressure - Cholesterol concentration. PROCESS - number of follow-up consultations	PATIENT: + PROCESS: + Risk factors were significantly lower for interventions patients for: Plasma glucose concentration, glycated hemoglobin, systolic blood pressure and cholesterol concentration. In primary care, individualized goals with educational and surveillance support may for at least 6 years risk factors of patients with type 2 diabetes to a level that has been

CARE MODELS	Type DM	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
Smith et al 2002	-	+	-		RCT	IIb	I1 educational skills to type 2 diabetes -GP I2 professional education/ appointment of a community – based diabetes nurse specialist I3 annual review-screening I4 structured record cards and communication across prim-sec care interface / fast track referral system initiated by primary care team as needed/3 monthly routine reviews, carried out by GP and practice nurse.	PATIENT -Biophysical outcomes -HbA1c -Blood pressure MI -psychological outcomes PROCESS - Process outcomes	shown to reduce diabetic complications but without weight gain PROCESS: Doctors arranged more follow-up consultations PATIENT: + PROCESS: + PATIENT: Significant improvements in diabetes care delivery and psychological outcomes. No significant improvements in biomedical outcomes PROCESS: Significant improvements in information exchange between primary and secondary care interface. Process data collection revealed a significant increase in diabetes care – related activity for participating patients with an increase in structured annual reviews and fewer patients defaulting from care

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
CARE MODEL 2: <i>General practitioner (working in own practice) + caregivers</i> <i>(Family) Physician (working in primary care facility/outpatient clinic) + caregivers</i> <i>Chronic care clinics in primary care</i> Litzelman et al 1993								
	+	-		RCT	Ib	I1: Distribution of educational materials I2: Patient education sessions, behavioral contracts I3: Reminders for patients I4: ---	PATIENT: Serious foot lesions - All foot lesions - Dry or cracked skin - Ingrown nails - Fungal nail infection - Fungal skin infection - Interdigit maceration - Appropriate self-foot-care behaviors PROCESS: - Percentage of patients with documentation: - Ulcers - Pulse examination done - Dry or cracked skin - Calluses or corns - Fungal infection (foot or nail) - Ingrown nails - Improperly trimmed nails - Foot or leg cellulitis - Foot deformities - Sensory examination done - Referral to the	PATIENT: PROCESS: Patients receiving the intervention were less likely than control patients to have serious foot lesions (baseline prevalence, 2.9%; odds ratio, 0.41 [95% CI, 0.16 to 1.00]; P = 0.05) and other dermatologic abnormalities. Also, they were more likely to report appropriate self-foot-care behaviors, to have foot examinations during office visits (68% compared with 28%; P < 0.001), and to receive foot-care education from health care providers (42% compared with 18%; P < 0.001). Physicians assigned to intervention patients were more likely than physicians assigned to control

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
De Sonaville et al 1997		+	-	CBA	Ila	<p>I1: GP was supported by a laboratory with facilities to visit patients at home, a computerised patient register and recall system, a diabetes nurse educator and a podiatrist)</p> <p>I2: Patient education</p> <p>I3: Clinical multidisciplinary team + formal integration of services, arrangements for follow-up + communication and case discussion between distant health professionals/changes to the site/setting of service delivery</p> <p>I4: Changes in medical record system</p>	<p>podiatry clinic</p> <p>PATIENT:</p> <ul style="list-style-type: none"> -Fasting glucose -HbA1c -BMI -Blood glucose lowering therapy -Total cholesterol -HDL-cholesterol -Triglycerides -Systolic blood pressure -Diastolic blood pressure <p>PROCESS: NONE</p>	<p>patients to examine patients' feet for ulcers, pulses, and abnormal dermatologic conditions and to refer patients to the podiatry clinic (10.6% compared with 5.0%; P = 0.04).</p> <p>PATIENT: +</p> <p>PROCESS: NM</p> <p>Mean HbA1c (reference 4.3-6.1%) fell from 7.4 to 7.0% in SG and rose from 7.4 to 7.6% in CG during follow-up (p = 0.004). The percentage of patients with poor control (HbA1c > 8.5%) shifted from 21.4 to 11.7% in SG, but from 23.5 to 27.9% in CG (p = 0.008). Good control (HbA1c < 7.0%) was achieved in 54.3% (SG; at entry 43.4%) and 44.1% (CG; at entry 54.4%) (p = 0.013). Insulin therapy was started in 29.7% (SG) and 8.8% (CG) of the patients (p = 0.000) with low risk of severe hypoglycaemia (0.019/patient year). Mean levels of total and HDL-cholesterol (SG), triglycerides (SG) and diastolic blood pressure (SG + CG) and the percentage of smokers (SG) declined significantly, but the</p>

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
Kinmonth et al 1998		+	-	RCT	Ib	I1: Distribution of educational materials & educational meetings (training in patient-centred care) I2: Patient education (booklet for patients) I3: --- I4: ---	PATIENT: -HbA1c -Total cholesterol -Triglyceride -BMI -Systolic blood pressure -Diastolic blood pressure -Urinary albumin/Creatinine -Quality of life -Depressed Wellbeing -Wellbeing overall -Subscales -Depression -Anxiety -Energy -Positive wellbeing PROCESS: NONE	prevalence of these risk factors remained high. General well-being (SG) did not change during intensified therapy. Treatment satisfaction (SG) tended to improve. PATIENT: + PROCESS: NM Compared with patients in the C group, those in the intervention group reported better communication with the doctors (odds ratio 2.8; 95% confidence interval 1.8 to 4.3) and greater treatment satisfaction (1.6; 1.1 to 2.5) and wellbeing (difference in means (d) 2.8; 0.4 to 5.2). However, their body mass index was significantly higher (d=2.0; 0.3 to 3.8), as were triglyceride concentrations (d=0.4 mmol/l; 0.07 to 0.73 mmol/l), whereas knowledge scores were lower (d=-2.74; -0.23 to -5.25). Differences in lifestyle and glycaemic control were not significant.
Pill et al 1998		+	-	RCT	Ib	I1 training practitioners + nurses -> diabetic care, support research nurse I2 2 training sessions 3h.,	PATIENT: -Glyco-Hb -BMI -Blood pressure	PATIENT: + PROCESS: +

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
						<p>newsletters every 3-4months, 13 group meeting, regular visits 14 ---</p>	<p>-Clinical complications -Medication use -Presence of other conditions and lifestyle behaviors -Smoking and alcohol use -Attendance rates at the surgery</p> <p>PROCESS: -Clinical competence -Control clinicians -> interview</p>	<p>PATIENT: Clinical data: Glyco-Hb lower in the intervention group There was no significant difference over time in the number of complications experienced, in demand on primary care services or in the numbers in each group. There was no difference over time in smoking or alcohol consumption levels.</p> <p>Attitude and satisfaction There was no significant difference between the groups over time on any of the measures for attitudes and satisfaction, except for the scale that measured satisfaction with recent consultations and treatment received (range 1-15)</p> <p>Health status no significant difference</p> <p>The trial was unable to demonstrate significant biochemical or functional improvements.</p> <p>PROCESS: Higher levels of engagement among the nurses</p>
Woodcock et al 1998		+	-	RCT	Ib	II training interventions/ nurses	PATIENT:	PATIENT: +

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
		(newly diagnosed)				educational skills I2: education/ patient centered approach I3: 6 and 12 month nurse training and review I4: ---	-Patient confidence in practitioners PROCESS: NM	PROCESS: -
Ovhed et al 2000		+	-	CBA	IIA	I1: --- I2: education from a nurse I3: 3 visits a year to a nurse and 1 visit to GP, annual checkup I4: ---	PATIENT -Blood pressure -Lipids -HbA1c -BMI -Smoking status -Foot care -Eye examination -Self management PROCESS: NONE	PATIENT: + PROCESS: NM
Renders et al 2003		+	-	RCT	Ib	First programme I1: educational skills to type 2 diabetes -GP I2: --- I3: --- I4: supported them in making organizational changes in their practice Second programme I1: receiving therapy advice I2: self-management/ received structured diabetes education I3: follow-up visits I4: ---	PATIENT -HbA1cLevel PROCESS -Supporting a diabetes service	PATIENT: + PROCESS: + PATIENT: HbA1c significantly improved in patients supported by diabetes service PROCESS: + A diabetes service, providing GP's advice and patient education, resulted in better glycaemia control over 3,5 years than an intervention aimed at improving the skills of GP in combination with organizational changes in general practice.
Long et al 2005		+	-	RCT	Ib	I1: --- I2: Patients received calls,	PATIENT Satisfaction with	PATIENT: +

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
						<p>scheduled for 20min related to their level of blood glucose control I3: visits physician I4: ---</p>	<p>treatment</p> <p>PROCESS: NONE</p>	<p>PROCESS: NM</p> <p>PATIENT</p> <p>Persons receiving the intervention continued to report high levels of satisfaction with their treatment. >90% agreed telecarer approach was acceptable Increased feeling of well-being.</p>
Young 2005		+	-	RCT	Ib	<p>I1: --- I2: Patients received calls, scheduled for 20min related to their level of blood glucose control I3: visits physician I4: ---</p>	<p>PATIENT</p> <p>HbA1c level Proportion of patients reducing HbA1c by at least 1%</p> <p>PROCESS</p> <p>---</p>	<p>PATIENT: +</p> <p>PROCESS: NM</p> <p>Compared with usual care HbA1c improved by 0,31% overall in the intervention group. For patients with baseline HbA1c >7% , the improvement increased with 0,49%, whereas in patients with HbA1c <7% were no changes.</p> <p>The difference in proportion was also here significantly for patients with HbA1c >7%</p>
O'Connor et al 1996	+	+	-	CBA	Ila	<p>I1: Local consensus procedures + audit I2: Patient education + outreach to targeted patients I3: Skill mix changes: nurses more actively assist in providing diabetes care</p>	<p>PATIENT:</p> <p>-HbA1c</p> <p>PROCESS:</p> <p>-Number of outpatient</p>	<p>PATIENT: +</p> <p>PROCESS: +</p> <p>The mean HbA1c value at the intervention clinic fell from 8.9% at</p>

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
						I4: Computerized audit	visits -At least 1 HbA1c-test	baseline to 8.4% at 12 months and to 7.9% at 18 months. The mean HbA1c value at the comparison clinic was 8.9% at baseline, 8.9% at 12 months, and 8.8% at 18 months (difference between clinics, $t = 4.13$, $P < .001$). Differences after the intervention in the proportion of patients at the comparison clinic ($n = 121$) vs the intervention clinic ($n = 122$) with HbA1c values of 8% or less (40% vs 51%), between 8% and 10% (33% vs 37%), and 10% or greater (27% vs 12%) were unlikely due to chance ($\chi^2 = 9.7$, 2 df, $P = .008$). The intervention was not associated with increased utilization of outpatient visits or outpatient charges.
Lobach et al 1997	-	-	+	RCT	Ib	I1: Local consensus processes+ audit, computerized management protocol I2: --- I3: --- I4: Feed-back & reminders	PATIENT: NONE PROCESS: -Compliance rate overall -Compliance rate with regard to specific guidelines on: -Foot examination -Complete physical examination	PATIENT: NM PROCESS: + Availability of patient management recommendations generated by the decision support system resulted in a two-fold increase in clinician compliance with care guidelines for diabetes

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
							<ul style="list-style-type: none"> -Chronic glycemia monitoring -Urine protein determination -Cholesterol level -Ophthalmologic examination -Influenza vaccination -Pneumococcal vaccination 	mellitus (P = 0.01). Median compliance for the group receiving the recommendations was 32.0% versus 15.6% for the control group.
Taplin et al 1998	-	-	+	CBA	Ila	<p>I1: Distribution of educational materials + local consensus processes + audit + marketing</p> <p>I2: ---</p> <p>I3: Establishing a team (and after that regular team meetings to discuss and achieve clinical goals). Clinical multidisciplinary teams (physicians, nurses, clinic manager, a clinic pharmacist and a trained facilitator (a registered nurse with a masters degree in public health and training in the application of total quality management tools) attended the group meetings</p> <p>I4: Feed-back & reminders + changes in medical record systems</p>	<p>PATIENT: NONE</p> <p>PROCESS: Compliance with guideline for diabetic eye care</p>	<p>PATIENT: NM</p> <p>PROCESS: -</p> <p>There was no significant improvement in warfarin control or diabetic eye examinations, though absolute increases occurred.</p>
Benjamin et al 1999	-	+	-	CBA	Ila	<p>I1: distribution of educational materials (guidelines) + educational meetings + local consensus processes + audit</p> <p>I2: ---</p> <p>I3: ---</p> <p>I4: ---</p>	<p>PATIENT: - HbA1c</p> <p>PROCESS: -Compliance with standards of care: -Annual urine test for albumin/protein -Annual cholesterol determination</p>	<p>PATIENT: +</p> <p>PROCESS: +</p> <p>At 9 months, there was a mean -0.90% within-subject change in HbA1c in the intervention group, with no significant changes in the control group. The 15-month mean within-</p>

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
							-Annual diabetes education -Annual dilated retinal exam -Annual influenza vaccinations -Annual nutrition education	subject change in HbA1c of -0.62% in the intervention group was also significant. Among intervention patients, those with the poorest glycemic control at baseline realized the greatest benefit in improvement of HbA1c. The intervention group also exhibited significant changes in physician adherence with American Diabetes Association standards of care.
Halbert et al 1999	+	+	-	RCT	Ib	I1: Guidelines + a list of their diabetes patients with their diabetic retinopathy screening exam status I2: Patients without a record of diabetic retinopathy exam received educational materials I3: Arrangements for follow-up I4: ---	PATIENT: NONE PROCESS: - Rates of retinal examination	PATIENT: NM PROCESS: + There was a significant difference in overall annual DRE rates between the groups (P = 0.023).
Sadur et al 1999	+	+	-	RCT	Ib	I1: --- I2: Patient education I3: Clinical multidisciplinary teams + case management I4: ---	PATIENT: -HbA1c -Inpatient and outpatient services (self-reported measures are not included in the review) PROCESS: NONE	PATIENT: + PROCESS: NM After the intervention, HbA1c levels declined by 1.3% in the intervention subjects versus 0.2% in the control subjects (P < 0.0001). Several self-care practices and several measures of self-efficacy improved

CARE MODEL	Type DM	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
									significantly in the intervention group. Satisfaction with the program was high. Both hospital (P = 0.04) and outpatient (P < 0.01) utilization were significantly lower for intervention subjects after the program.
Middleton et al 2003	-	+	-	-	RCT	Ib	I1 --- I2 Patient support: patient education I3 Systems delivery design: nurse case manager implementing diabetes protocol I4 ---	PATIENT: -improved glycemic control (HbA1C) PROCESS: NONE	PATIENT: + PROCESS: NM A statistically significant difference in the average glycosylated hemoglobin value was maintained after baseline between the 2 groups (T=3.95; DF=58, p<0.05). The mean HbA1C in group A was 9.9% and the mean for group B was 7.6%.
Reiber et al 2004	+	+	-	-	RCT	Ib	I1: -- I2: -- I3: -- I4: Computerized feed-back to primary care providers (synthesized information on patients' health, function and satisfaction)	PATIENT -Demographic outcomes -HbA1c level -Blood pressure -Mean LDL -Mean HDL -Blood sugar -Check feet -Meal plan -Quality Of Life -Satisfaction PROCESS: - Percentage of patients with documentation:	PATIENT: - PROCESS: - - The timely delivery to primary care providers of state-of-the-art patient feed-back reports that identified patient issues and areas for improvement did not result in significant improvements in patient & process outcomes between intervention and control group.

CARE MODEL	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Conclusions
							<ul style="list-style-type: none"> - Ulcers - Pulse examination done - Dry or cracked skin - Calluses or corns - Fungal infection (foot or nail) - Ingrown nails - Improperly trimmed nails - Foot or leg cellulitis - Foot deformities - Sensory examination done - Referral to the podiatry clinic 	
Taylor et al 2005	+	+	-	RCT	Ib	I1: --- I2: consultation with a specialist and/or nutritionist -> connecting, empowering, doing for and finding meaning (4 action components) I3: standard care + home visits nurse I4: ---	PATIENT Clinical indicators: HbA1c, blood pressure, cholesterol Functional outcomes: measures of diabetes activity Quality of life indicators Self – management practices PROCESS ---	PATIENT: - PROCESS: NM No significant difference for the clinical indicators A trend of improvement in functional outcomes, self management in the intervention group, not significant.
Wagner et al 2001	-	-	+	RCT	Ib	I1 -- I2 self-management: one on one counseling with the practice nurse, group sessions conducted by the practice nurse/ group education/ peer support meeting I3 into groups of 6-10 were invited to chronic care clinics with interval of 3- 6 months I4 worksheets individual patient data and plans	PATIENT: Satisfaction with - HbA1c level PROCESS: - Number of preventive procedures & education sessions - Number of primary care	PATIENT: + PROCESS: + Intervention group demonstrated better outcomes: Diabetes care satisfaction HbA1c level – clinical test. intervention group received more

CARE MODEL	Type I DM	Type 2 DM	DM not specific d	Type of study	Interventions	Outcomes	Conclusions
						sessions	recommended preventive procedures and helpful education -> periodic primary care sessions improved the process of diabetes care

CARE MODELS	Type DM	1 Type DM	2 DM not specified	Type study	of EL	Interventions	Outcomes	Aggregated conclusions
CARE MODEL 3: <i>Nurse educator/diabetes care coordinator/nurse case manager (working in primary care facility/HMO/Medical care)</i>								
Legoretta et al 1996	-	+	-	CBA	Ila	I1: Distribution of educational materials + educational meetings I2: Distribution of educational materials + arrangements for follow-up I3: Clinical multidisciplinary teams: nurse or physician assistant, endocrinologist and staff assistant. Skill mix changes (nurse treating patients) I4: Changes in medical record systems	PATIENT: - Glycated haemoglobin PROCESS: NONE	PATIENT: + PROCESS: NM At site A, improvements were observed in patients' glycated hemoglobin levels (9,6% at baseline, compared with 8,0% at endpoint) and low density lipoprotein cholesterol levels. Referral for a yearly ophthalmologic examination was 100%. At site B, glycated hemoglobin levels also fell (from 10,3% to 9%) but remained above desirable standards of diabetic control.
Aubert et al 1998	-	+	+	RCT	Ib	I1: Distribution of educational materials (detailed management algorithms) I2: Patient education + follow-up calls every two weeks. Patients who were taking insulin received weekly calls. I3: Revision of professional roles (nurse case management+ arrangements for follow-up I4: ---	PATIENT: -HbA1c -Mean fasting blood glucose -Insulin dose -Systolic blood pressure Diastolic blood pressure -Weight -Serum	PATIENT: + PROCESS: - 72% of patients completed follow-up. Patients in the nurse case management group had mean decreases of 1.7 percentage points in HbA1c values and 43 mg/dL (2.38 mmol/L) in fasting glucose levels; patients in the usual care group had

CARE MODELS	Type DM	Type 1 DM	Type 2 DM not specified	Type of study	Interventions	Outcomes	Aggregated conclusions
Peters et al 1998	-	+	+	CBA	Ila	<p>cholesterol -Serum triglycerides -Serum HDL-cholesterol -Serum LDL-cholesterol -Self-reported health status score</p> <p>PROCESS: -Renal assessment: test -Dipstick test -Quantitative protein/microalbumin</p> <p>PATIENT: -HbA1c -Total median cholesterol concentrations in the subgroup of patients with an initial total cholesterol level >6.2 mmol/l</p> <p>PROCESS: -Compliance with ADA guidelines: -HbA1c levels -Lipid panels -Foot exams -Ophthalmology referrals</p>	<p>decreases of 0.6 percentage points in HbA1c values and 15 mg/dL (0.83 mmol/L) in fasting glucose levels ($P < 0.01$). Self-reported health status improved in the nurse case management group ($P = 0.02$). The nurse case management intervention was not associated with statistically significant changes in medication type or dose, body weight, blood pressure, or lipids or with adverse events.</p> <p>PATIENT: + PROCESS: + Initial HbA1c levels were higher in the CDCS group than in the GMH group (median of 11.9 vs. 10.0%). In the CDCS patients, HbA1c levels not only fell significantly but were also significantly lower ($P < 0.05$) than in the GMH patients during the 2nd and 3rd year of follow-up care. There were no significant changes in HbA1c levels in the GMH patients. When CDCS patients were divided into compliant and noncompliant patients, the median HbA1c levels in</p>

CARE MODELS	Type DM	I	Type DM	2 DM not specified	Type of study	EL	Interventions	Outcomes	Aggregated conclusions
									compliant patients was 8.2%, compared with 11.5% in the noncompliant group. The CDCS patients who needed treatment for hypercholesterolemia were more likely to have a lowering of their cholesterol levels than the GMH patients. All process measures, such as yearly measurement of HbA1c levels, lipid levels, and foot and retinal exams, occurred much more frequently in the CDCS patients.
Piette et al 2001	-		+	-	RCT	Ib	I1: --- I2: automated telephone calls, each assessment is during 5-8min./ telephone nurse follow-up, each week – as a nurse educator -> I3: weekly telephone nurse + had the ability to schedule clinic appointments I4: the nurse communicated with primary care providers using an established protocol created by a research team/ remind care givers for preventive care (screening diabetes complications)	PATIENT: - HbA1c - Cholesterol tests - Glucose self monitoring - foot inspections - Satisfaction PROCESS: NONE	PATIENT: + PROCESS: NM Intervention patients reported more frequent glucose self monitoring and foot inspections than patients receiving usual care and were more likely to be seen in podiatry and diabetes specialty clinics. More improvements in: cholesterol test, HbA1c Greater satisfaction in the intervention group
Vrijhoef et al 2001	-		+		Non equivalent control	Ila	I1 --- I2 --- I3 : nurse specialist active in general practice I4 ---	PATIENT: - clinical status: HbA1C, total cholesterol, HDL cholesterol &	PATIENT: + PROCESS: NM Changes between

CARE MODELS	Type DM	Type 1 DM	Type 2 DM not specified	Type of study	EL	Interventions	Outcomes	Aggregated conclusions
				group design			triglycerides, - BMI, systolic BP, diastolic BP - Health status: physical fitness, feelings, daily & social activities, change in health & overall health - Self-care behaviour - knowledge of diabetes - Patient satisfaction - Consultation with care providers PROCESS: NONE	means of HbA1C level in the intervention group were statistically significant. In the control group changes between means of HbA1C were also statistically significant. Total cholesterol declined by 0.5 mmol/l and mean HDL-cholesterol increased by 0.1 mmol/L. Both changes were statistically significant.
Gary et al 2003	+	+	-	RCT	Ib	I1: --- I2: patient education I3: coordinated care according to ADA Clinical Practice Recommendations, VCM intervention 45min face to face visits, counseling, follow-up patients, referrals, advising regimen changes and implementing changes under physician's order I4: physician feedback Intervention group 2 I1:--- I2: CWH-> education I3:home visits 3times a year by CHW 45-60min and /or telephone contacts, monitor participants and family behavior, treatment recommendations I4: physician feedback Intervention group 3: Preceed-proceed behavioral model: combination of CWH and nurse	PATIENT -HbA1c -Cholesterol levels -Blood pressure -BMI -Face to face interventions -Phone interventions -Leisure time physical activity index -Dietary risk factor PROCESS NONE	PATIENT: + PROCESS: NM Compared to the usual care group, the NMC group and the CHW group had modest declines in HbA1c over 2 years, and the combined NCM/CHW group had a greater decline in HbA1c level (0,8% p= 0,137). The combined group NCM/CHW showed improvements in triglycerides (-35,5mg/dl ; P=0,041) and diastolic pressure, compared to the usual care group.

CARE MODELS	Type DM	I	Type DM	2	DM not specified	Type study	of	EL	Interventions	Outcomes	Aggregated conclusions
Krein et al 2004	+		+		-	RCT		Ib	case manager I1: I2: self care practices I3: patient counseling I4: physician reminders I1 treatment protocol + collaborative goal setting I2 patient education by nurse case manager I3 telephone contacts nurse case manager/ regular follow-up visits I4 ---	PATIENT - HbA1c - Cholesterol level - Blood pressure - Satisfaction PROCESS: NONE	PATIENT: + PROCESS: NM There was a little difference between the groups in mean exit HbA1c level. There was no significant difference that the intervention resulted in improvements in low density cholesterol level, blood pressure or greater intensification in medication therapy. Intervention patients were significant more satisfied with their diabetes care.

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Aggregated conclusions
CARE MODEL 4:								
<i>Endocrinologist (working in hospital outpatient clinic)</i>								
<i>Diabetologist (working in primary care clinic)</i>								
Nilasena et al 1995	+	+	-	RCT	Ib	I1: - I2: Distribution of educational materials & reminders I3: - I4: Changes in medical record systems	PATIENT: NONE PROCESS: Compliance score	PATIENT: PROCESS: After a six month study period, compliance with the recommended care significantly improved in both the intervention group that received patient-specific reminders about the guidelines (38.0% at baseline, 54.9% at follow-up) and the control group that received a nonspecific report (34.6% at baseline, 51.0% at follow-up). There was no significant difference between the two groups. Both clinic sites showed similar improvement over baseline levels of compliance. Residents who completed encounter forms used by the system showed a significantly greater improvement in compliance than those who did not complete encounter forms (19.7% vs. 7.6%, $p = 0.006$). The improvements in guideline compliance were seen in all areas of diabetes preventive care studied, and significant improvements were seen with recommended items from the medical history, physical exam, laboratory testing, referrals, and patient education. The use of encounter forms by the providers significantly improved documented compliance with the guidelines in almost all categories of preventive care.

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	EL	Interventions	Outcomes	Aggregated conclusions
Thompson et al 1999	-	+	-	RCT	Ib	I1: -- I2: -- I3: regular phone contacts with the nurse, average 3 call a week each lasting 15 minutes. Insulin adjustment were recommended during most calls. I4: general guidelines for insulin adjustment.	PATIENT -HbA1c level -The proportions of patients in each group who experienced a 10% reduction in HbA1c levels over the study -Telephone contact PROCESS: NONE	PATIENT: + PROCESS: NM After 6 months, the mean HbA1c level in the standard care group was 0,0089 (0,010) which was not significantly different from the mean level at the baseline. However, the mean HbA1c level in the intervention group had fallen to 0,0078 (0,008), which was significantly lower than both level at the baseline for that group ($p<0,0001$) and the level for the standard care group at 6 months ($p<0,01$)
Williams et al 2003	-	+	-	RCT	Ib	Activation group: I1: education I2: nurse educator -> 20min sessions to identify and clarify questions about diabetes care, education patients, exercise in training and stimulating in their care -control of diabetes I3: use of disciplinary teams-> nurse educator, dietician, 3months visits I4: --- Education group: I1: --- I2: nurse educator-> 20min sessions answering questions + video tapes about preventing long-term complications, diabetes and exercise in training and diabetes foot and skin care I3: 3 appointments for questions	PATIENT Patient demographics Clinical data Active involvement via ratings of taped interactions between patients and providers HbA1c level PROCESS ---	PATIENT: + PROCESS: NM PATIENT Patients in activation were rated as more actively involved in discussions of diabetes self-management. No effect of the activation group was found on the HbA1c level. No significant difference in clinical data, but the activation group was more involved, more questions and improvement in glycemic control

CARE MODELS	Type 1 DM	Type 2 DM	DM not specified	Type of study	Interventions	Outcomes	Aggregated conclusions
Maislos, 2003	-	+	-	RCT	I1 treatment protocol to reach targets I2 patient education (changing lifestyle) I3 interdisciplinary approach-> first visit diabetologist, dietician, diabetes nurse educator / regular follow-up visits I4 ---	PATIENT -HbA1c level -Plasma glucose PROCESS: NONE	PATIENT: + PROCESS: NM Significant improvements in plasma glucose and HbA1c in the intervention group

CARE MODELS	DM I	DM II	DM NS	Type study	of EL	Interventions	Outcomes	Conclusions
CARE MODEL 5:								
<p><i>Hospital based diabetes team (physician, educator, dietician)/disease management program</i></p> <p><i>Hospital nurse educators/specialist nurses (working in General Medical/Regional hospital/Primary care clinic)</i></p> <p><i>Hospital nurse practitioners/nurse case managers (working in diabetes clinic/centre university hospital)</i></p> <p><i>Diabetes specialist nursing service (University Hospital)</i></p> <p><i>Medical, (b) Cardiac & (c) Internal units (Academic) Medical Centre</i></p> <p>Hurwitz et al 1993</p>	-	+	-	RCT	Ib	<p>I1: Educational meetings</p> <p>I2: ---</p> <p>I3: Arrangements for follow-up</p> <p>I4: Changes in medical record system/patient tracking system</p>	<p>PATIENT</p> <ul style="list-style-type: none"> - Weight - Blood pressure - Urinary albumin value - Glycated haemoglobin value - Numbers admitted to hospital for a diabetes related reason - Number of deaths - Satisfaction <p>PROCESS:</p> <ul style="list-style-type: none"> - Follow up for 	<p>PATIENT: +</p> <p>PROCESS: +</p> <ul style="list-style-type: none"> - 14 hospital patients failed to receive a single review in the clinic as compared with three patients in the prompted group (chi 2 = 6.1, df = 1; p = 0.013). - Follow up for retinal screening was better in prompted patients than in controls; two prompted patients defaulted as against 12 controls (chi 2 = 6.9, df = 1; p = 0.008). - Three measures per patient yearly were more frequent in prompted patients: tests for albuminuria (median 3.0 v 2.3; p = 0.03), plasma glucose estimations (3.1 v 2.5; p = 0.003), and glycated haemoglobin estimations (2.4 v 0.9; p < 0.001).

CARE MODELS	DM I	DM II	DM NS	Type of study	EL	Interventions	Outcomes	Conclusions
							<ul style="list-style-type: none"> retinal screening Plasma glucose estimations Glycated haemoglobin estimations Continuity of care Last recorded random plasma glucose concentration Foot examination Examination of visual acuity and retinoscopy through dilated pupils 	<ul style="list-style-type: none"> - Continuity of care was better in the prompted group (3.2 v 2.2 reviews by each doctor seen; $p < 0.001$). - The study ended with no significant differences between the groups in last recorded random plasma glucose concentration, glycated haemoglobin value, numbers admitted to hospital for a diabetes related reason, and number of deaths. - Questionnaires revealed a high level of patient, general practitioner, and optometrist satisfaction.
Gaede et al 1999	-	+	-	RCT	Ib	I1: --- I2: Self-management (individualized diabetic dietary advice) I3: Delivery systems design (Diabetes team, including physician, nurse and dietician). I4: ---	PATIENT: -Development of nephropathy, -median albumin excretion rate > 300 mg per 24h in at least one of the two-yearly examinations. PROCESS: NM	PATIENT: + PROCESS: NM - Patients in the intensive group had significantly lower rates of progression to nephropathy (odds ratio 0.27, 95% CI 0.10-0.75), progression of retinopathy (0.45) and progression of autonomic neuropathy (0.32) than those in the standard group (receiving care by general practitioners).
Trento 2004	-	+	-	RCT	Ib	I1: -- I2: Self-management (individual & group educational sessions) I3: -- I4: --	PATIENT -Knowledge of diabetes -Problem solving ability -Quality of life -HbA1c level -BMI -HDL cholesterol PROCESS: NM	PATIENT: PROCESS: - Knowledge of diabetes and problem solving ability improved from year 1 with group care and worsened among control control subjects ($p < 0.001$ for both). Quality of life improved from year 2 with group care but worsened with individual care ($p < 0.001$). - HBA1C level progressively increased over 5 years among control subjects (+1.7%, 95% CI 1.1-2.2) but not group care patients (+0.1%, -0.5 to 0.4), in whom BMI decreased (-1.4, 2.0 to 0.7) and HDL cholesterol increased

CARE MODELS	DM I	DM II	DM NS	Type of study	EL	Interventions	Outcomes	Conclusions
Maljanian et al 2005	+	+	-	RCT	Ib	<p>I1: ---</p> <p>I2: Self-management (Series of 12 weekly phone calls reinforcing base education and self-management skills including standardized inquiry to patients, adherence with self-management activities and attendance at scheduled physician office visits).</p> <p>I3: Delivery systems design (the weekly phone calls were added to a diabetes disease management program including 4 hours of educational classes, individual visits with a registered nurse and a nutritionist and scheduled follow-up visits).</p> <p>I4: Clinical information systems: Written feedback on the patient's primary care provider</p>	<p>PATIENT</p> <ul style="list-style-type: none"> -Glycemic control -Health-related quality of life -Symptoms of depression -Eye examination -Foot examination -Self examination of feet -Monitoring blood sugars -HbA1c level -Nutritional counseling -Flu immunization <p>PROCESS</p> <ul style="list-style-type: none"> -Adherence to ADA standards of care, specifically annual eye exams, physician foot exams, foot self-exams and pneumonia vaccination 	<p>(+ 0.14 mmol/l, 0.07-0.22).</p> <p>Adults with type 2 diabetes can acquire specific knowledge and conscious behaviors if exposed to educational procedures and settings tailored to their needs.</p> <p>- PATIENT:</p> <ul style="list-style-type: none"> - No differences between the groups on glycemic control & HRQOL. <p>-</p> <p>PROCESS:</p> <ul style="list-style-type: none"> - Adherence to ADA standards of care, specifically annual eye exams, physician foot exams, foot self-exams and pneumonia vaccination were significantly better with the added telephone intervention.
Rachmani et al 2005	-	+	-	RCT	Ib	<p>I1: --</p> <p>I2: Self-management (patient participation and teaching program including two hours individual consultation about ways to achieve tight control of the modifiable risk factors, a plan of lifestyle modification, a fitness programme, instruction how to measure blood</p>	<p>PATIENT</p> <ul style="list-style-type: none"> -Modifiable risk parameters: relative risk -Developing nephropathy -Blood pressure -LDL Cholesterol -HbA1c level <p>PROCESS: NM</p>	<p>PATIENT: +</p> <p>PROCESS: NM</p> <ul style="list-style-type: none"> - The mean follow-up was 7.7 years. - The standard consultation (SC) group each attended 8 annual consultations. The intervention group initiated on average 1.2 additional consultations per annum. The relative risk over 8 years for the combined cardiovascular event index in the intervention vs. the

CARE MODELS	DM I	DM II	DM NS	Type of study	EL	Interventions	Outcomes	Conclusions
Weinberger et al 1995	-	+	-	RCT	Ib	<p>pressure weekly, keep records of laboratory results and urging the physicians to change or intensify treatment if target values of blood pressure, LDL cholesterol, and HBAC were not reached).</p> <p>I3: --</p> <p>I4: --</p> <p>I1: --</p> <p>I2: patient mediated interventions: nurses attempted to telephone patients to facilitate compliance, monitor patients' health status, facilitate resolution of identified problems, facilitate access to primary care</p> <p>Patient education by phone</p> <p>I3: Arrangements for follow-up</p> <p>I4: --</p>	<p>PATIENT:</p> <ul style="list-style-type: none"> -Glycohemoglobin -Fasting blood glucose -Health-related quality of life: -Physical functioning -Social functioning -Physical role functioning -Emotional role functioning -Mental health -Vitality -Bodily pain -General health perceptions <p>- In the subgroup of hyperlipidemic patients (total cholesterol >=200mg/dl):Seen by dietician</p> <ul style="list-style-type: none"> - % taking lipid-lowering medications - Total cholesterol - Triglycerides - LDL cholesterol - HDL cholesterol <p>In the subgroup of obese patients (weight at study enrolment>=120% of ideal body weight):</p> <p>Change in weight</p> <p>Seen by dietician</p> <p>PROCESS:</p>	<p>control group was 0.65 (95% CI 0.41-0.89, P=0.001). Nephropathy developed in 14 vs. 7 patients in the standard consultation and intervention group, respectively, RR 0.50 (95% CI 0.28-0.85, P=0.03). Throughout the study, period blood pressure, LDL and HBA1C were significantly lower in the intervention vs. the standard consultation group.</p> <p>PATIENT: +</p> <p>PROCESS: NM</p> <p>At one year, between-group differences favored intervention patients for FBS (174.1 mg/dL vs 193.1 mg/dL, p = 0.011) and GHb (10.5% vs 11.1%, p = 0.046). Statistically significant differences were not observed for either SF-36 scores (p = 0.66) or diabetes-related symptoms (p = 0.23).</p>

CARE MODELS	DM I	DM II	DM NS	Type of study	EL	Interventions	Outcomes	Conclusions
New et al 2003	-	-	+	RCT	Ib	<p>I1: --- I2: --- I3: Specialist-nurse led consultation to discuss targets for treatment, measuring blood pressure, discussing diet and exercise patterns, willingness to change + an individual action plan + follow-up of patient by nurse specialists every 4-6 weeks for 30-45 minutes appointments until targets were achieved. I4: ---</p>	<p>NONE</p> <p>PATIENT:</p> <ul style="list-style-type: none"> -Primary outcome measures -Blood pressure control -Cholesterol values -Mortality <p>PROCESS: NM</p>	<p>PATIENT: +</p> <p>PROCESS: NM</p> <ul style="list-style-type: none"> - Specialist-nurse led clinics were associated with a significant improvement in patients achieving the target after 1 year (odds ratio 1.37, p=0.003). - Targets were achieved more frequently in patients enrolled in the specialist nurse-led clinic for hyperlipidemia (odds ratio 1.69, P=0.0007) than for hypertension (odds ratio 1.14, P=0.37). The intervention was associated with a reduction in all-cause mortality (OR 0.55, p=0.02).

GREISINGER ET AL 2004	-	-	+	NON EXPERTIME N-TAL DESCRIP- TIVE STUDY	III	<p>I1: --</p> <p>I2: SELF-MANAGEMENT (EDUCATIONAL SESSIONS)</p> <p>I3: DELIVERY SYSTEMS DESIGN (COMPREHENSIVE DIABETES CARE MANAGEMENT PROGRAM INCLUDING CERTIFIED DIABETES EDUCATOR VISITS, DIABETES EDUCATION CLASSES, MONTHLY REPORTS TO PRIMARY CARE PHYSICIANS, BIENNIAL QUALITY OF CARE REPORTS TO PRIMARY CARE PHYSICIANS, A DIABETES EDUCATION LETTER FOR PATIENTS, A DIABETES EYE EXAM LETTER FOR PATIENTS AND A BROCHURE OUTLINING THE DIABETES EDUCATIONAL RESOURCES AT THE CLINIC).</p> <p>I4: FEED-BACK ON PHYSICIAN PERFORMANCE (MONTHLY REPORTS ARE SENT ON ABNORMAL VALUES OF HBA1C, MICROALBUMIN AND LOW DENSITY LIPO-PROTEIN). BIANUAL QUALITY OF CARE REPORTS COMPRISE THE NUMBER OF PATIENTS UNDERGOING REQUIRED TESTS AND COMPARING THEIR</p>	<p>PATIENT</p> <ul style="list-style-type: none"> - HOSPITALIZATION -HBA1C LEVEL -BLOOD GLUCOSE LEVELS -PHYSICIAN OFFICE VISITS -DIABETES EDUCATOR VISITS -PHYSICAL EXAM -CO MORBIDITIES <p>PROCESS: NM</p>	<p>PATIENT: +</p> <p>PROCESS: NM</p> <ul style="list-style-type: none"> - PATIENTS PARTICIPATING IN SOME TYPE OF PRIMARY CARE DIABETES MANAGEMENT WERE 16% LESS LIKELY TO HAVE AN INCIDENCE OF HOSPITALIZATION. - WHEN INDIVIDUAL EDUCATIONAL COMPONENTS OF THE DIABETES CARE MANAGEMENT PROGRAM WERE EXAMINED, DIABETES EDUCATION SESSIONS WERE MORE BENEFICIAL THAN CERTIFIED DIABETES EDUCATOR VISITS IN REDUCING THE INCIDENCE OF HOSPITALIZATION. PATIENTS WITH CONTROLLED BLOOD GLUCOSE LEVELS AND A DIABETES EDUCATION SESSION SEEMED TO HAVE THE MOST SIGNIFICANT REDUCTION IN HOSPITALIZATION RISK (ODDS RATIO 0.62; 95% CI: 0.40,0.95).
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						RESULTS TO THEIR PEERS.		
Kam Yet Wong, 2005	+	+	-	RCT	Ib	I1:-- I2:-- I3: System delivery design: nurse-led transitional hospital care I4:--	PATIENT: -HbA1C -blood monitoring adherence -exercise adherence -hospital stay PROCESS: NM	PATIENT: + PROCESS: NM - The intervention group had a greater decrease in HbA1C at 24 weeks, although statistical difference was marginal (7.6 vs. 8.1, $p=0.06$), a higher blood monitoring adherence score at both 12 weeks (5.4 vs. 3.6, $p<0.001$), and 24 weeks (5.5 vs. 3.2, $p<0.001$). - The study group had a shorter hospital stay (2.2 vs. 5.9, $p<0.001$).
Davies et al 2001	-	+	-	RCT	Ib	I1: -- I2: -- I3: DSN (diabetes specialist nursing service) in a university hospital, including individual structured patient education appropriate to need and practical management advice including verbal and written case-note feedback to ward-based medical and nursing staff. I4: --	PATIENT -Length of stay -Pattern of readmission -Diabetes related quality of life -Diabetes knowledge -Satisfaction with treatment -GP and community care contacts -- Following discharge PROCESS: NM	PATIENT: PROCESS: - Median length of stay was lower in the intervention group (11.0 vs. 8.0 days, $P<0.01$). - Readmission rates were the same in the two groups (25%), and mean time to readmission was similar in the two groups, although slightly less in the control group (278 vs. 283 days, $p=0.80$). - The cost per patient for nursing input was 38.94 pounds. However, when the reduced length of stay was accounted for, the intervention produced a mean cost per admission of 436 pounds lower than that of the control group ($P=0.19$). - Patients in the intervention group were more knowledgeable regarding their diabetes and more satisfied with care.
Roman et al 2001	-	+	-	Pre/post quasi experimental design	IIb	I1: --- I2: --- I3: a) Management algorithms including the revision of the hospital's capillary blood glucose monitoring (CBGM) form into a chart with color-coded columns for defined glucose ranges, providing immediate visual input about trends in glucose	PATIENT -Patient characteristics -Glucose control -Nosocomial infections -Patient survey data -Diabetes self-care information and instruction -Diabetes	PATIENT: + PROCESS: NM -The frequency of patients with severe hyperglycemia (at least one glucose level $>400\text{mg/dl}$) and prolonged hyperglycemia (at least three consecutive glucose levels $>250\text{mg/dl}$) decreased from 12 and 17% preintervention to 6.6 and 10% post-intervention ($p=0.017$, and $P=0.013$, respectively).

						control. b) interdisciplinary clinical path for management of type 2 diabetes as secondary diagnosis. The path gave recommendations on when and how to initiate or adjust standing insulin or oral diabetic agent regimens based on glucose levels, and it provided staff with elements of patient self-care instructions to provide to patients before discharge. I4: ---	knowledge PROCESS: NM	- Patient-reported receipt of self-care instruction varied from 44 to 69% on nine survey items preintervention. Postintervention linear regression slopes for receipt of self-care instruction were all greater than preintervention slopes, but the differences did not achieve statistical significance.
Meigs et al 2003	-	-	+	RCT	Ib	I1: --- I2: training and feedback I3: patients visits, The DMA (disease management application) displays interactive patient specific clinical data and links to other web-based care resources I4: electronic medical record, available web browsers patient care room	PATIENT -HbA1c level -LDL cholesterol -Blood pressure -Eye screening -Foot screening PROCESS: NM	- The DMA was used for 42 % of scheduled patient visits. - The number of HbA1c test obtained per year increased significantly in the intervention group compared with the control group, as did the number of LDL cholesterol tests and the proportions of patients undergoing at least one foot examination per year. - Levels HbA1c decreased by 0,2 in the intervention group and increased by 0,1 in the control group (P=0,09); proportions of patients with LDL Levels < 130mg/dl increased by 20,3 % in the intervention group and 10,5 in the control group.

CARE MODELS	Type DM	Type 1 DM	Type 2 DM	DM not speci-fied	Type of study	EL	Interventions	Outcomes	Conclusions
CARE MODEL 6:									
<i>The pharmacist-led model for diabetes care</i>									
Jaber, 1996	-		+	-	RCT	Ib	I1: -- I2: Patient education on glycaemic control and self-monitoring of blood glucose I3: Revision of professional roles (all diabetes-related management aspects were solely provided by a pharmacist) I4: --	PATIENT: -Fasting plasma glucose -Glycated haemoglobin -Blood pressure -Body weight -Serum lipid measurements -Renal function parameters -Quality of life PROCESS: NONE	PATIENT: + PROCESS: NM Significant improvement in glycated hemoglobin ($p = 0.003$) and fasting plasma glucose ($p = 0.015$) was achieved in the intervention group. No change in glycemia was observed in the control subjects. Statistically significant differences in the final glycated hemoglobin ($p = 0.003$) and fasting plasma glucose ($p = 0.022$) concentrations were noted between groups. No significant changes in blood pressure control, lipid profile, renal function parameters, weight, or quality-of-life measures were noted within or between groups.

Choe, 2005	-	+	-	RCT	lb	<p>I1: clin pharmacist-> assist primary care providers</p> <p>I2: clinical pharmacist->self management diabetes, education, reinforcement of diabetes complications</p> <p>I3: clinic visits, telephone follow-up</p> <p>I4: ---</p>	<p>PATIENT</p> <ul style="list-style-type: none"> - HbA1c level -Lipoproteine measures -Retinal examination -Urine micro albumin testing -Monofilament screening for diabetic neuropathy <p>PROCESS: NONE</p>	<p>PATIENT: +</p> <p>PROCESS: NM</p> <p>Intervention group greater reduction HbA1c level than control group (2,1% vs 0,9% p 0,3)</p> <p>Also for lipoproteins measures and retinal examinations.</p> <p>More frequent foot screening (92,3% vs 62,9%)</p>
Rothman, 2005	-	+	-	RCT	lb	<p>I1: ---</p> <p>I2: nurse educator-> education, training glucose control + complications</p> <p>I3: clin pharmacist + practitioner-> evidence based treatment, pro active management of clinical parameters. Pharmacist telephone call every 2-4 weeks with each patient.</p> <p>I4: database -> patient outcomes and proactively improve care</p>	<p>PATIENT</p> <ul style="list-style-type: none"> -Blood pressure -HbA1c level -Cholesterol level -Aspirin use satisfaction -Diabetes knowledge -Use of clinical services <p>PROCESS</p>	<p>PATIENT: +</p> <p>PROCESS: NM</p> <p>The intervention group had significantly greater improvement than the control group (95% confidence interval) for systolic blood pressure, HbA1c level.</p> <p>Changes in cholesterol level were not significant.</p> <p>91% aspirin use with intervention group and 56% among controls-> significant (p<0,0001)</p> <p>-> reduce cardiovascular complications</p>

Appendix part 3 : checklist and description of the country systems

Checklist used for the country-based description of diabetes care

I Overview of the health system

1.1 Organisational structure of the health system

Management of the health care system

- Which bodies are responsible for planning, administration, regulation and provision of health services?

Coverage

- What percentage of the population is covered?
- Which care package is covered?
- Level of out-of-pocket payments general / diabetes care

Human resources

- Availability of GP's, specialists and nurses
- Payment systems for GP's and specialists

1.2 Financing and expenditure of the health system

- Financing: public versus private
- Source of financing: tax-based versus contribution-based
- Health expenditure per capita
- Health expenditure as % of the GDP
- Cost of diabetes care as % of total health expenditure
- Cost of diabetes care per patient

2 Organisation of diabetes care

2.1 *Overview of the diabetes care organisation*

General organisation

- What are the usual patient pathways?

National policy

- Specific policies for diabetes care
- Guidelines for type 1 and 2 diabetes
 - Target population
 - Dissemination
 - Initiator

Diabetes patients

- Diabetes prevalence
- National diabetes register
- Diabetes patients' association: membership, impact

2.2 *Structure*

Primary care

- Description of primary care diabetes team
- Availability of diabetes nurse
- Availability of diabetes clinics
- Use of electronic medical records
- Screening programme for retinopathy: coverage?
- Support structures at intermediate level

Secondary care

- Description of secondary care diabetes team
- Availability of diabetes nurse

Training

- Training for diabetes nurse and other health professionals

2.3 Process

- Patient listing with GP
- GP as gatekeeper
- Availability of a diabetes register and use of call/recall systems
- Diabetes clinics in general practice
- Shared care protocols
 - Initiator
 - Content
 - Financing
- Availability of a “diabetes passport”
- Health education for the patient

2.4 Outcome

Outcome of diabetes care

Quality assurance

- National indicators for good quality of diabetes care
 - How were they chosen?
 - How are they measured?
- Audits of diabetes care
- Peer review on diabetes care
- Regulations on continuing medical education

Description of diabetes care organisation per country

I Belgium

1.1 Overview of the health system

All information in this section is retrieved from “Health Care Systems in Transition: Belgium” (European Observatory on Health Care Systems 2000), unless indicated otherwise.

1.1.1 Introduction

Belgium has a population of about 10 million people with in 2002 a GDP per capita of 23 841 USD Purchasing Power Parity. Life expectancy at birth was 81.1 years for women and 75.1 years for men (OECD 2005).

In the last decades of the twentieth century the Belgian state evolved to a complex federal structure with a shift of responsibilities to the regions and communities. The three regions (Flanders, Walloon and Brussels) are determined by geographic boundaries and the three communities (Dutch-speaking, French-speaking and a small German-speaking community) are determined by language.

1.1.2 Organisational structure of the health system

Management of the health care system

The responsibilities in the health care system are divided between the federal and the community level. The communities are responsible for health education, preventive care and co-ordinating home care, though the main responsibilities in health care remain with the federal government.

The Department of Public Health and Environment and the Department of Social Affairs are both part of the federal Ministry of Social Affairs, Public Health and Environment. The Department of Public Health and Environment sets the overall health budget, controls hospital planning and financing, the use of health technology, the registration and price of drugs and wages. The implementation of these decisions is the responsibility of the Health Care Service (Dienst voor Geneeskundige Verzorging) of the National Institute for Sickness and Invalidity Insurance (Rijksinstituut voor Ziekte- en Invaliditeitsverzekering), which depends on the Department of Social Affairs within the same ministry. In the General Council of the Health Care Service decision-making power is shared by the financial contributors (representatives of employers and employees), the sickness funds and the government, who has a veto right. In several subcommittees that report to the General council and decide e.g. on the level of service fees, the health care providers are also represented.

The National Institute for Sickness and Invalidity Insurance doesn't transfer its funds directly to the health care providers, but through the sickness funds (so-called “mutualities”). The sickness funds are private non-profit organisations with a public interest, which are organised along religious and political affiliations in five national alliances. The dominant alliances are the Christian and Socialist groupings, covering respectively 45% and 29% of all health insurers. The sickness funds disburse to the patients the refunds on their health care expenditure

or – in case of a third party payer system – pay directly the physicians. They are also in charge of medical audit: they have to verify whether services have really been performed and that fees are charged as per regulations.

60% of the hospitals are private non-profit, the remaining 40% public. Levels of service fees and hospital payments are negotiated on a yearly basis in subcommittees of the National Institute for Sickness and Invalidity Insurance. Hospitals are financed through a double system: 1) a rate per inpatient day; 2) a share of the fees for services of the health professionals working in the hospital (representing 80% of the hospital income).

Coverage

Since 1998 residence in Belgium is enough to confer the right to reimbursement of health care. In ambulatory care patients pay for medical services and are reimbursed afterwards. 70% of the fee for a GP consultation and 60% for a specialist consultation is reimbursed, with vulnerable groups getting higher reimbursements. The costs of inpatient care are mostly covered by the health insurance through a third-party payer system. Drugs are covered at 0 to 100%, also through a third-party payer system. The specific contributions for diabetes patients can be summarized as follows:

- Oral antidiabetics and insulin are for free.
- Antihypertensive and hypolipaeamic drugs are reimbursed at 75% - and for vulnerable groups at 85%.
- In the context of the diabetes passport (see below) diabetes patients get 75% -90% reimbursement for 2 dietetic services per year (see www.diabetespas.be).
- In the context of the diabetes passport (see below) patients with both peripheral neuropathy and orthopaedic malformation get 75% - 90% reimbursement for 2 podiatric consultations per year (see www.diabetespas.be).
- Diabetes patients in the diabetes convention (see below) get
- a ceiled number of test strips for free (Debacker 2005).

Sickness funds can add some extra benefits to this package financed from the contributions of their members, as e.g. partial reimbursement of test strips or dietetic and podiatric services. But these extra benefits don't result in real coverage differences between the sickness funds.

Self-employed people are only obliged to contribute to a limited health insurance excluding reimbursement of so-called "minor risks" as e.g. consultation fees, drugs and some laboratory tests. However 85% of the self-employed subscribe to a voluntary health insurance offered by the sickness funds, covering these minor risks.

About half of the Belgians have a complementary health insurance with a sickness fund or a private insurer. These complementary insurance cover hospital costs (e.g. the co-payments for drugs during hospital stay or the cost of a single room).

Human resources

According to the OECD data Belgium had in 2002 2.1 GP's, 1.8 specialists and 5.6 nurses per 1000 inhabitants (OECD 2005). However, the number of practising GP's would be only about 1.4 per 1000 inhabitants (personal communication Prof. De Maeseneer, University of Ghent).

Most doctors – both GP's and specialists – are paid on a fee-for-service basis. Specialists in hospitals sign an agreement with the hospital on the proportion of the fees the hospital will retain to cover staff, equipment and building costs. This proportion can differ from hospital to hospital. Since a few years patients can register with a GP. GP's receive per registered patient a capitation fee, more or less equivalent to the fee for one consultation.

About 1% of the GP's has joined an alternative payment system that is based on capitation fees only (and in which the patient doesn't have to contribute for a GP's consultation).

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1.1.3 Financing and expenditure of the health system

Table 1. Health financing in Belgium in 1994

<u>Public health expenditure (% of total health expenditure)</u>	74%
National taxes (% of total health expenditure)	38%
Other public expenditure (% of total health expenditure)	36%
<u>Private health expenditure (% of total health expenditure)</u>	26%
Out-of-pocket payments ((% of total health expenditure)	17%
Others¹	9%

Source: Health Systems in Transition (European Observatory on Health Care Systems 2000).

Table 2. Expenditure on health in Belgium in 1994

Health expenditure per capita (USD PPP)	2172 USD
Health expenditure as % of Gross Domestic Product	9.1%

Source: OECD Health Data (OECD 2005).

¹ Include a premium on complementary health insurance and motor vehicle insurance, a levy charged to pharmaceutical companies and a 3.55% deduction from pensions.

The public health care system is financed through both social security contributions and taxes. The level of out-of-pocket payments is relatively high.

The CODE-2 study estimated the direct cost of diabetes care at 3295 per patient per year. Assuming a diabetes prevalence of 3.3% and using OECD figures on health expenditure, this represents 5.3% of the total health expenditure in 1999 (OECD 2005). Hospital costs amounted to 1791, ambulatory care costs to 603 and drug costs to 901 per patient per year (Jönsson 2002).

1.2 Organisation of diabetes care

1.2.1. Overview of the diabetes care organisation

General organisation

The primary and secondary care both take care of type 2 diabetes patients. Most patients on more than one dose of insulin are seen at least once a year by an endocrinologist as required in the diabetes convention (see below). Almost all type 1 diabetes patients are exclusively followed up at secondary care. In the National Interview Survey 55% of the diabetes patients were followed only by the GP, 28% by both the GP and the specialist and 9% only by the specialist. These figures include both type 1 and 2 diabetes patients (Demarest 2002).

National policy

The diabetes convention is an agreement between hospitals (“revalidation centres”) and the National Institute for Sickness and Invalidity Insurance which sets standards for care for type 1 and 2 diabetes patients who have at least two insulin injections per day (Debacker 2005). The diabetes convention considers three categories of patients:

- Group 1: patients with at least 3 insulin injections per day and who self-regulate their glycaemia on basis of daily day profiles.
- Group 2: patients with at least 3 insulin injections per day and who self-regulate their glycaemia on basis of day profiles four times a week.
- Group 3: patient with at least 2 insulin injections per day and who self-control their glycaemia on basis of glucose day profiles twice a month.

Each patient who enters the diabetes convention should get:

- Individual health education covering insulin therapy, diabetes education, diabetes diet and physical activity (3 hours per year for Group 1 and 2 patients; 1 hour per year for Group 3 patients).
- Yearly screening for retinopathy, peripheral neuropathy, foot disorders and micro-albuminuria.
- A glucometer and a limited number of test strips per year (according to the patient’s category).

About 80 000 patients have entered the diabetes convention (Debacker 2005).

Each centre recognized under the diabetes convention should agree to pass its outcome data to the Institute for Public Health (Wetenschappelijk Instituut Volksgezondheid). The Institute for Public Health has recently published the outcome data of a 10% sample for 2004 (Debacker 2005). The convention doesn't provide any quality-based payments.

The diabetes passport (see www.diabetespas.be) is a medical record kept by the patient to facilitate communication between health workers. It is also linked to the reimbursement of dietetic services and, for some patients, also podiatric services (see above).

Guidelines

In Walloon the GP association formulated a guideline in 2001 (Société Scientifique de Médecine Générale 2001). In Flanders a guideline on type 2 diabetes was recently developed by a group of GP's and endocrinologists, on the initiative of the Flemish Diabetes Association and the Flemish GP Association (Wens 2005).

Diabetes patients

The Health Interview Survey interviews every 3 or 4 years +/- 5000 people about their health status and behaviour. The diabetes prevalence was 2.6% in 2001 versus 2.3% in 1997 (Demarest 2002), but this is probably an underestimation as it is based on self-reporting. The results of a nationwide network of sentinel general practices gave in 2000 a diabetes prevalence of 3.3% (Puddu 2001).

There is a national type 1 diabetes register (see www.bdronline.be, but no type 2 diabetes register.

The Flemish Diabetes Association (Vlaamse Diabetesvereniging, www.diabetes-vdv.be) and the Belgian Diabetes Association (Association Belge du Diabète, www.diabete-abd.be) are organisations of both patients and health professionals in the Flemish and Walloon part of the country. The Flemish Diabetes Association has 22 500 members and participated in the formulation of the Flemish guidelines for type 2 diabetes (Wens 2005). Both organisations were also involved in the development of the diabetes passport (see www.diabetespas.be).

I.2.2. Structure

Primary care

Most GP's work in solo practices, without any additional staff. In the Health Interview Survey 16% of the people had a GP working in a duo practice and 6% a GP working in a group practice (Demarest 2002).

An alternative model of primary health care are the so-called integrated health care practices, which operate a multidisciplinary with GP's, administrative staff, nurses, and sometimes also physiotherapists and psychotherapists. In 1999 there were 61 such a practices in Belgium. Several of them use the capitation payment system (European Observatory on Health Care Systems 2000).

In 2000 70% of the Flemish GP's used electronic medical records (Verdonck 2004). The National Institute for Sickness and Invalidity Insurance licences electronic medical record packages and gives a financial incentive of about 743 per year to GP's using a licensed package (see www.inami.fgov.be).

GP's can refer diabetes patients to dieticians and podiatrists in primary care.

Since 2003 the diabetes reference nurses have been introduced in primary care. They can give 2 – 5 hours of health education to patients who are started on insulin, on demand of the GP (National Institute for Sickness and Invalidity Insurance 2003).

The Flemish Community government recently introduced the “Initiatives for Cooperation on primary care” (Samenwerkingsinitiatieven Eerstelijnsgezondheidszorg). These structures should co-ordinate primary health care at local level. They are not operational yet (Flemish Department of Social Welfare, Public Health and Culture 2004).

There is no systematic screening for retinopathy. In a 10% sample of the patients in the diabetes convention, 84% of the type 1 diabetes patients with a duration of illness of at least 5 years and 75% of the type 2 diabetes patients had an eye check in the past 15 months (Debacker 2005).

Secondary care

Most hospitals are recognized as a revalidation centre under the diabetes convention. A revalidation centre should have a diabetes team consisting of (National Institute for Sickness and Invalidity Insurance 2005):

- an endocrinologist, who has final responsibility
- a diabetes nurse with a training as diabetes educator
- a dietician with a specific training in diabetic diet
- The team should be able to involve a social worker, a psychologist and a podiatrist in the care.

Recently third-line diabetes foot clinics have been established. According to the requirements of the National Institute for Sickness and Invalidity Insurance, these clinics are staffed by an endocrinologist, a surgeon with a special interest in foot-surgery, a diabetes nurse, a podiatrist and a chiropodist (National Institute for Sickness and Invalidity Insurance 2005).

Waiting lists on secondary care for diabetes care are virtually non-existing.

Training

A diabetes educator is a non-official postgraduate qualification for nurses, dieticians, podiatrists and other health workers. The training encompasses 110 hours of theory and 70 hours of practice. Nurses or dieticians with a qualification as diabetes educator comply with the requirements of the diabetes convention for employment in a revalidation centre (see www.arteveldehs.be).

A diabetes reference nurse is a job title for a nurse with a postgraduate training of at least 40 hours of theory (National Institute for Sickness and Invalidity Insurance 2003). A diabetes educator can apply for the job of diabetes reference nurse.

1.2.3. Process

Since a few years the patient can choose to register with a GP, but is not obliged to do so. The GP receives for each registered patient a small capitation fee, as compensation for keeping the medical record (known as “globaal medisch dossier”). A registered patient gets a reduction in co-payments when consulting this GP, but is still free to consult any other GP. By January 2004 about one third of all patients were registered. Registration is much more common in Flanders than in Walloon (Artsenkrant 2004).

The GP has no gatekeeping function. The National Health Survey revealed that in 2001 65% of the contacts with secondary care specialists (not only for diabetes patients) were on the initiative of the patient – and not on referral. In 1997 only 54% of secondary care contacts were not on referral (Demarest 2002).

GPs usually don't use diabetes registers nor call/recall systems.

Shared care protocols are usually not in place (Flemish Department of Social Welfare, Public Health and Culture 2004). The Minister of Health recently proposed a system of care pathways (zorgtrajecten). The aim is to give patients incentives to follow recommended care pathways. This should enhance the communication between health workers and avoid unnecessary specialist care (Minister of Public Health and Social Affairs 2004). So far pathways for diabetes care haven't yet been established.

The diabetes passport is a medical record kept by the patient to facilitate the communication between caregivers. At the same time the diabetes passport includes educational information and wants to enhance diabetes self-management (see www.diabetespas.be).

All patients within the diabetes convention should get at least 1-3 hours of individual health education (Debacker 2005). Diabetes reference nurses can give 2- 5 hours of health education to patients on insulin (National Institute for Sickness and Invalidity Insurance 2003). Group-based health education sessions are not commonly organised.

I.2.4 Outcome

Outcome of diabetes care

In 2003 - 2004 the Institute for Public Health evaluated the outcome for both type 1 and type 2 diabetes in a sample of about 8000 patients – representing 10% of the patients in the diabetes convention (Debacker 2005). The outcome for type 2 diabetes patients was: the mean HbA1c was 7.95%, with 29% having a HbA1c below 7%; the average systolic and diastolic blood pressure were respectively 140 and 78 mmHg, with 44.4% having a blood pressure below 140/90 mmHg; the average cholesterol level was 197mg%, with 44% having a level below 190 mg%.. However, due to the nature of the diabetes convention, this sample included only patients on at least two doses of insulin a day and reflects mostly the quality of secondary care.

Quality assurance

Within the diabetes convention all revalidation centres receive a feed-back on the outcome for a sample of 10% of the patients per centre. Their result is compared with the results of the other (anonymous) centres (Debacker 2005).

Audits are usually not done for patients outside the diabetes convention. National indicators for diabetes care haven't been formulated yet.

There exists a voluntary system of certification for physicians. In order to receive certification, GP's and specialists should collect a number of educational points over a period of three years and attend at least two Local Quality Group meeting per year. The Local Quality Groups should function as peer review groups, but are not obliged to discuss diabetes management. Certification is linked to financial incentives (see www.inami.fgov.be).

1.2.5 Strengths and weaknesses

The evaluation of strengths and weakness of the Belgian diabetes care system is based on a stakeholders' analysis of 18 Flemish key persons by the universities of Leuven, Ghent and Anwerp (Bastiaens 2005). Its main conclusions are:

- Diabetes care is quite accessible, though some aspects are expensive for patients who don't fit in the diabetes convention (dietetic and podiatric services, use of test strips).
- The fee-for-service payment of health professionals results in an organisation of the health system that is rather supply-driven than demand-driven. The payment system also induces a medical practice which is rather determined by patient's demand than by clinical protocols. Other payment systems rewarding e.g. screening, health education or communication between health workers, should be put in place.
- The policy makers don't have a long-term vision on diabetes care. The diabetes convention is a project with a long-term vision, but is not fully satisfactory. Too many group 3 patients are treated in secondary care. The group 3 patients exceed the treatment capacity of secondary care and create a heavy financial burden.
- The health system should pay more attention to prevention of and screening for diabetes, by organising public health campaigns and giving organisational or financial support to GP's and nurses.
- More group 3 patients should be treated in primary care, but for the moment general practice is poorly structured with variable quality of care. To enhance the quality of care:
 - Primary care diabetes teams – with the GP as central caregiver – should be developed.
 - GP practices should be better structured: evolution from solo to group practices, further development of the registration system, strengthening of the IT systems so that electronic medical records can be used for communication and quality measurement.
 - The role of nurses and dieticians should be strengthened. They should be able to get specific diabetes trainings.
 - Diabetes educators should be available in primary care.
- The recent initiative to support primary care with diabetes reference nurses is well received, though the communication between nurses and GP's can be improved.
- There is an urgent need for more communication and co-ordination between health workers. Competition between the health workers and lack of mutual respect are part of the problem. Local agreements for shared care protocols should give the answer, but for the moment there are no financial incentives to develop these protocols.
- Patients should be more involved in the diabetes management. The diabetes passport tries to address this, but for the physician the pass represents extra work which is not paid for. Patients should also get more health education.
- Systems of quality control should be developed. Indicators of good quality care should be identified.

1.3 Conclusions

The Belgian health system is characterised by a split of responsibilities between the federal and the community level. (European Observatory on Health Care Systems 2000).

The health care system offers a comprehensive package of care to all Belgian residents, though diabetes patients not on insulin have to make considerable contributions for dietetic and podiatric services, test strips and – to a lesser extent – drugs. The system is financed through both social contributions and general taxes.

Physicians are mainly paid by a fee-for-service system. This results in an organisation of the health system that is rather supply-driven than demand-driven, and a medical practice which is rather determined by patient's perceived needs than by clinical protocols. This is also reflected in the weak patients' listing system – which was introduced only a few years ago - and the absence of a gatekeeper's function for the GP. 65% of all secondary care contacts are on the patient's initiative, without referral by a GP (Demarest 2002). A recent report of the OECD particularly criticizes the absence of a gatekeeper from the point of view of cost-containment (OECD 2005b).

This context partially explains the perception in a recent stakeholders' analysis that the system lacks a long-term vision on diabetes care (Bastiaens 2005).

The main piece of government regulation in diabetes care is the diabetes convention. The convention mainly deals with secondary care and results in most diabetes patients on insulin being treated in secondary care. Its minimum standards require a multidisciplinary secondary care team with at least one endocrinologist, a diabetes nurse and a dietician. Recently the government has set standards for diabetes foot clinics as well. Foot clinics can only be organised in larger hospitals.

One of the main concerns about the diabetes convention expressed in the stakeholders' analysis was that many diabetes patients (especially those on not more than 2 doses of insulin a day), who are now being treated at secondary care, should actually be taken care of by primary care. The GP should play a pivotal role in primary care (Bastiaens 2005).

General practice is poorly structured, with a variable quality of care. Most GP's work in solo practices without any administrative support. Enhancing group practices, strengthening the patients' listing system, further developing the electronic medical record, organising specific continuing medical education and integrating the GP in a primary care diabetes team, are seen as important elements to promote the quality of primary care. The introduction of diabetes reference nurses, who give health education to the patient on demand of the GP, was generally welcomed by the stakeholders as a positive step towards more qualitative primary care (Bastiaens 2005).

The stakeholders also saw a strong need for more communication and co-ordination between the primary and secondary care and between the different health workers in primary care. The roles of the different health workers should be defined in a local protocol. The competition between physicians (linked to their fee-for-service payment), the lack of proper financing and the variation in quality of care in primary care are seen as

obstacles to develop shared care (Bastiaens 2005). The Ministry of Health has the intention to develop care pathways, which should motivate patients to follow the recommended lines of referral. The diabetes passport, a medical record held by the patient, is designed to facilitate communication between caregivers. At the same time it is a tool for patient empowerment.

Within the diabetes convention the quality of care is measured regularly, revealing an average outcome (Debacker 2005). The stakeholders expressed the need for a broader system of quality control and a more systematic development of quality indicators (Bastiaens 2005).

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2 Canada (Québec)

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This part of the study gives a general overview of the Canadian diabetes care system. Taking into account the diversity of the provincial health care systems, the diabetes care system in Quebec has been studied more in detail.

2.1 *Overview of the health system*

2.1.1 Introduction

Canada is a federal state with 30 million inhabitants (Statistics Canada 2002). Quebec is one of the ten provinces (7,2 million inhabitants in 2002). The Québec political system includes three important types of institutions: political, judicial, and administrative. Administrative institutions regroup government departments and bodies as well as the health care, education, and public security systems. These institutions make up the basic structure of the Québec governmental organization.

In 2002 Canada had a Gross Domestic Product (GDP) per capita of 29 580 USD PPP. The average life expectancy was 77.2 years for men and 82.1 years for women (OECD 2005).

2.1.2 Overview of the Health Care System

The federal health care system (Fortin 2004)

Canada's publicly funded health care system is an interlocking set of ten provincial and three territorial health insurance plans. Among other activities, Health Canada's responsibilities for health care include setting and administering national principles for the health care system through the Canada Health Act and delivering health care services to specific groups (e.g., First Nations and Inuit). Working in partnership with provinces and territories, Health Canada also supports the health care system through initiatives in areas such as health human resources planning, adoption of new technologies and primary health care delivery.

Canada's national health insurance program, referred to as "Medicare", provides access to universal, comprehensive coverage for medically necessary hospital and physician services. Necessary health care services are provided on the basis of need, rather than the ability to pay. Medicare in Québec is called the "Régie de l'assurance maladie du Québec".

"Medicare" is designed on a prepaid basis. Instead of having a single national plan, Canada have a national program that is composed of 13 interlocking provincial and territorial health insurance plans, all of which share certain common features and basic standards of coverage. Under the Canada Health Act (CHA), the federal health insurance legislation, criteria and conditions are specified that must be satisfied by the provincial and territorial health care insurance plans in order for them to qualify for their full share of the federal cash

contribution, available under the Canada Health Transfer (CHT). Provincial and territorial governments are responsible for the management, organization and delivery of health services for their residents.

National health expenditures are reported based on the principle of *responsibility for payment* rather than on the ultimate source of the funds (OECD Health Technical Papers n 2 ; Canada national health Accounts 1999).

The public sector has four management levels (Fortin 2004):

- Provincial Government Sector is the main level of health management.
- Federal Government Sector is responsible for health services to special groups such as Aboriginals, the Armed Forces and veterans, as well as expenditure for health research, health promotion and health protection.
- Municipal Government Sector has limited responsibilities in Quebec.
- Social Security Funds are social insurance programmes imposed and controlled by a government authority. In Canada, social security funds include the health care spending by workers' compensation boards and the drug insurance fund component of the Quebec Ministry of Health and Social Services drug subsidy program.

The private sector includes out-of-pocket expenditures made by individuals for health care goods and services. The health insurance claims paid by commercial and not-for-profit insurance firms, as well as the cost of administering those claims; non-patient revenues received by health care institutions such as donations and investment income; private spending on health-related capital construction and equipment; and, health research funded by private sources.

The management of the health care system in Quebec (see www.immigration-quebec.gouv.qc.ca)

Québec has a tax-based health care system managed by the Health and Social Services Ministry and 17 regional boards and a regional council located in 18 health and social service regions. The system has adopted a management model centred on regionalization and the complementarity of the different management levels. Québec's health care and social services system is universal, free of charge. Québec's medicare system is part of Canada's health care system and shares its guiding principles. All medically necessary health services are covered. All citizens or resident have a right to the same standard of covered services. All citizens have access free of charge to all covered services. Medicare is administered on a not-for-profit basis by a public authority appointed or designated by the government and subject to specific accountability requirements.

Qualifying individuals registered with the Québec Medicare - called "[Régie de l'assurance maladie du Québec](#)" - receive medical and hospital services, some optometric and dental care, visual and hearing aids and prostheses. The Régie de l'assurance maladie is under the authority of the Minister of Health and Social Services. The Régie de l'assurance maladie du Québec plays a leading role within this system, serving the 7.4 million people covered by the Québec Health Insurance Plan, 3.2 million of whom are also registered for the Public Prescription Drug Insurance Plan

The "Régie de l'assurance maladie du Québec" administers the following laws and regulations:

- The Act concerning the "Régie de l'assurance maladie du Québec"
- The Health Insurance Act
- The Act on drug insurance

The drug insurance (Fortin 2004)

Quebec is the province with the best drug insurance coverage. On January 1, 1997 the government of Quebec introduced a drug program (The Public Prescription Drug Insurance) that covered residents of the province, who were not otherwise covered by the "Régie de l'assurance maladie du Québec" or by private health insurance generally offered through employment. Drug claims for these participants of the new plan are paid from the Drug Insurance Fund. This component of the Quebec drug program is self-funded (i.e. it is funded through the compulsory payment of premiums and not by the provincial government of Quebec). Enrolment in a drug insurance plan is mandatory. Individuals are covered either by a group insurance plan offered by their employer or association, if they are eligible, or by the "[Régie de l'assurance maladie du Québec](#)". Private insurance generally covers 80 % of the medication and health services against 75% by the public health insurance. The level of out-of-pocket payment generally reaches 10,6%.

In the other provinces, if a patient does not have contracted a private insurance, he would be covered by the public insurance only under these conditions: being older than 65 or being assisted by the social welfare.

Private Plans

Insured persons pay only a portion of the cost of the drugs they purchase. This contribution usually consists of a *deductible* and a *co-insurance* amount. The *deductible* is the first portion of a person's annual expenditure on drugs which is not re-imbursed by the insurance plan e.g. an insurance plan might require persons to pay the first 50\$ of their drug costs themselves. The *co-insurance* is a percentage of the person's drug costs that exceed the deductible and that are paid by the person himself. The *co-insurance* may not exceed 28.5% of the drug cost. The method of calculating the contribution and the procedure for obtaining a reimbursement vary from one private plan to another (see www.ramq.gouv.qc.ca/en/citoyens/assurancemedicaments/regimesprives/lescouits_alapharma_cie.shtml).

Persons insured under a private plan must pay a premium, whether or not they purchase prescription drugs. The maximum annual amount that insured persons may be required to pay for their drug purchases is 629€ (\$ CA 857). As a general rule, insurers see that this maximum is not exceeded.

Prescription drug coverage under private plans differs from one plan to another, with certain plans offering broader coverage than others. However, all private plans are required to provide minimum coverage corresponding to that offered by the Régie de l'assurance maladie du Québec under the public

plan. All private insurers are therefore required to cover at least the drugs listed on the [drug formulary](#), which comprises over 4 500 drugs available on prescription. The drug formulary is published periodically by the Régie. The Minister of Health and Social Services, in consultation with the Conseil du médicament, determines which drugs to list.

Population coverage in Québec

The public health system covers 70% of the population. In 2001, 91,2% of the population older than 15 have had an access to an health care and 45% received an advise or information in the matter of health. Health and social services are provided by 474 public and private institutions, nearly 1,000 medical clinics and 3,954 community-based agencies. A third of Québec's budget is devoted to health and social service-related expenses. Québec has 2.8 short-term care services beds per 1,000 inhabitants (2002).

Human resources

The health and social services system employs nearly 10 % of the Québec labour force. The health and social services system encompasses over 600 public and private establishments, several hundred medical clinics and over 2000 community agencies. The Canadian health system counts 2.1 GP's, 1.8 practising specialists and 9.8 nurses per 1000 people (OECD 2002). The GP's and practising specialists are basically paid on a fee-for-service basis.

2.1.3 Financing and expenditure

In 2002 (OCDE), the total health expenditure per capita reached 133 (percentage OECD average) and the public expenditure on health 129 (index with OCDE average). The health expenditure represented 9,9% of the GDP.

In 1999, to enable Canadians to benefit more fully from the considerable resources and expertise available across the country, the Government of Canada pledged 85 million (115 Millions\$ CAN) over five years to the development of a Canadian Diabetes Strategy (CDS). In November 2004, the Canadian Diabetes Association has asked the members of the Standing Committee on Finance to recommend that the federal government make an immediate and ongoing commitment, including a minimum of 36,7 million a year (CA \$50 million), to the national diabetes strategy.

Table 1. Health expenditure and financing in 2002

Health expenditure per capita (USD PPP) ⁽¹⁾	2845
Health expenditure as % of GDP ⁽¹⁾	9,6 %
<u>Public health expenditure (% of total health expenditure) ⁽²⁾</u>	70,5 %
Public sector less Social Security Funds	69.2%
Federal Government Sector	3.7%
Provincial Government Sector	64.8%
Municipal Government Sector	0.6%
Social Security Funds	1.3%
<u>Private health expenditure (% of total health expenditure) ⁽²⁾</u>	29,5%
Group Insurance by Commercial and Not-for-Profit Insurance Firms	9,9%
Individual Insurance by Commercial and Not-for-Profit Insurance Firms	1%
Out-of-pocket payments	16%
Non-Consumption ()	2,6%

⁽¹⁾ OECD 2002

⁽²⁾ FORTIN G. 2004, OECD Health Technical Papers n 2; Canada national health Accounts 1999

() Includes non-patient revenues received by hospital (e.g. donations), private expenditure on construction and equipment and privately funded health research.

Costs for the diabetes patient

The majority of Canadians with diabetes pay out-of-pocket expenses. The annual out of pocket cost for prescribed medication & supplies of a standard diabetic patient of type 2 is estimated to 4.9 % of his annual income (Canadian Diabetes Association and Diabète Quebec 2005).

The annual premium for people covered by the public plan varies from 0 to 382 depending on income (deductible: up to 8,7 /month). Children of insured people, employment assistance recipients and persons above 65 receiving the maximum Guaranteed Income Supplement, don't pay a premium. The coinsurance varies between 25% and 28,5% of drug costs to monthly maximum of 52,4 depending on income. Blood glucoses strips and ketone (urine test) strips as well as oral medication are covered but lancets and meters are not. Most of the costs of the medication and supplies are covered by an employer's health care plan.

It is estimated that people with diabetes face direct medical costs ranging from 735 to 3670 (CA\$ 1000 to 5000) more per year than those without diabetes; indirect costs can add up to an additional 7350 (CA\$ 10000) per year. According to the Diabetes Report 2005 (Canadian Diabetes Association and Diabète Québec 2005):

- Over 50% of the Canadian Association members (52 percent) reported that they pay for diabetes medications and supplies.
- More than 70% of Diabète Québec members pay out-of-pocket for medication and supplies.
- Almost 50% of Canadian Association members paying out-of-pocket expenses reported spending between 37 (CA\$ 50) and 147 (CA\$ 200) per month; 25 % spent less than 47 a month.
- Among Diabète Québec members, 47 percent said they paid more than 47 a month but less than 147 , while 36 percent paid less than 37 a month.
- People with diabetes face financial limitations to purchasing drugs or supplies. Almost 25% of the Canadian Diabetes Association members reported there were diabetes drugs, supplies or devices that their doctor recommended, but that they could not afford to purchase and could not access through their insurance plan.
- Only 10% of the Diabète Québec members reported there were drugs, supplies or devices they could not afford, thanks to the Public Prescription Drug Insurance (interview 1, Canadian Diabetes Association and Diabète Québec 2005).
- 40% of Canadian Association members stated that their diabetes caused them or their family a financial hardship and that they were not covered by any health insurance plan, and were unaware of government financial assistance programs.

According to a study published by the National Diabetes Strategy (2004), for a diabetic patient type 2, who takes injections and tests his blood 4 times a day, the monthly costs are approximately:

- Insulin 66 (CA\$ 90.00) /month
- Test Strips 88 (CA \$120.00) /month
- Needles 29 (CA \$40.00) /month
- Other 18 (CA \$25.00) /month

Dietetic and podiatric services are rarely covered by the public insurance. On the other hand, private insurances cover 80% of the costs of these services.

Coverage for diabetes-related drugs and supplies under provincial and territorial health plans varies widely across Canada. For example, the listings for diabetes medications in Quebec is (Canadian Diabetes Association and Diabète Quebec 2005):

- *listed on the provincial formulary as a full benefit; available to recipients who meet eligibility requirements under the public drug plan:* Chlorpropamide, R Glucagon, Glyburide, Humalog (Insulin lispro), Insulin(s) regular, Metformin HCL, Novo Rapid (Insulin aspart), Prandase (acarbose), Tolbutamide, Lantus.
- *listed on the provincial formulary, but only available under special circumstances:* Actos (pioglitazone HCL), Amaryl (glimepiride), Avandia (rosiglitazone maleate), Diamicron MR (gliclazide), GlucoNorm (repaglinide).
- *not listed on the provincial formulary, and therefore not available through the public drug plan, even for eligible recipients:* Avandamet (rosiglitazone maleate and metformin HCL), Starlix (nateglinide).

The economic burden of diabetes in Canada

In Canada, the economic burden of diabetes alone was estimated at 1,17 billion in 1998; 0,29 billion (25%) in direct costs and 0,88 billion (75%) in indirect costs (*Economic Burden of Illness in Canada, EBIC 1998*). The relative magnitude of the major cost components are the following:

- Mortality costs: 45%
- Long term morbidity costs: 32%
- Hospital expenditures: 12%
- Drug expenditures: 11%

Direct costs are defined as the value of goods and services for which payment was made and resources used in treatment, care and rehabilitation by governments (federal, provincial and territorial) as well as by individual Canadians. The direct cost estimate for diabetes includes only hospital care and drug expenditures, at 150 million€ (CA \$203.5 million), and 133 million€ (CA \$181.0 million), respectively. Indirect costs refer to the dollar value of lost production due to illness, injury, disability or premature death. In terms of the principal indirect cost components that are estimated for diabetes in 1998, the value of lost production due to premature mortality represents the largest indirect cost at 538 million€ (CA \$732.8 million). The morbidity costs due to long-term disability represents 388 million€ (CA \$529.1 million).

Although the economic burden of diabetes appears to have continuously increased in Canada these costs estimates are considered to be conservative and do not include physician costs. In addition, the hospital costs include only the leading cause of hospitalization, and this results in an underestimation of the real burden of diabetes essentially because the complications of diabetes are not captured.

Assessing the costs of diabetes still represents a major issue, and many challenges must be tackled.

Further research is needed to fill the various gaps that exist in assessing the economic burden of diabetes in Canada. Monitoring the use of health services by individuals with diabetes requires additional information. As it

matures, the *National Diabetes Surveillance System* (NDSS, see “Quality Assurance”) will provide many of these data. Additional information is also needed on the use of diabetes education centres.

2.2 *Organisation of diabetes care*

2.2.1 Overview of the diabetes care organisation

National policy: the Canadian Diabetes Strategy

Developed in 1999, the purpose of the Canadian Diabetes Strategy (CDS) is to articulate and establish effective diabetes prevention and control strategies for Canada. Its investment in the CDS allows the Government of Canada to move forward in three areas:

- **Development of a health promotion-disease prevention strategy for the entire population.** Diabetes needs a concerted, long-term approach to prevention and control, engaging all stakeholders -- the diabetes patient and their families, health care providers, health care institutions and workplaces, governments, voluntary organizations, the non-health sector and the public at large.
- **Care and treatment, and diabetes prevention for First Nations people in reserves and Inuit communities: Aboriginal Diabetes Initiative (ADI).** Rates of diabetes among Aboriginal people in Canada are three to five times higher than those of the general Canadian population. They are above 130 000 in Québec.
- **Improvement of national and regional data about diabetes and its complications:** the National Diabetes Surveillance System (NDSS) (see “Quality Assurance”)

Its partners in this national initiative include the provinces and territories, various national health bodies and interest groups, and Aboriginal communities across the country.

Particularly, the Canadian Diabetes Association and the provincial level, Diabète Québec, are very active partners on various aspects of the diabetes care (such as prevention, information but also the development of the national guidelines).

Associations

The Canadian Diabetes Association and Diabète Québec are the two major diabetes associations in Canada. Since 1994, the Canadian Diabetes Association and Diabète Québec have a partnership agreement. They both are key contributors within the Canada Diabetes Council and the International Diabetes Federation. These multidisciplinary organizations are mainly specialised in diabetes education, research and clinical care.

Founded in 1954, Diabetes Québec has a network of more than 45 affiliated associations in almost every region of the province, gathering 2,400 volunteers. Actually, the association counts over 30000 members. More than 17 000 persons participated in over 470 information sessions in 2004. Diabetes Quebec aims to give information on diabetes and health services provided in each region:

- thanks to a staff of nurses and dieticians, as well as to the participation of other health care professionals, the association offers a free diabetes education for persons with diabetes or their family members (through individual meetings with a nurse and a dietician).
- Diabétaide offers up-to-date educational programs to people with diabetes as well as to health care professionals.
- the Diabetes Québec Professional Council (CPDQ), grouping over 1,300 health care professionals working in the field of diabetes, represents the expertise team of the association and plays an important role in the diabetes care in Québec and Canada (in prevention, education, treatment, development of guidelines and organisation of an annual conference).
- through information (a quarterly publication; a web site www.diabete.qc.ca; the organisation of detection seminars; brochures, videos, ect...)
- through an assistance telephone line, InfoDiabetes : toll-free line allows people having questions on diabetes to get answers and to be referred to the person or the organism that will be able to help them as soon as possible.

Diabetes Québec and its affiliated associations set forth defending the rights of people with diabetes, with governments, health services and companies (awareness of the Régie d'assurance maladie du Québec, introduction of new drugs to improve treatments, preventing discrimination, etc.).

Guidelines

The Canadian Diabetes Association 2003 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada were drafted over a 2-year period by a volunteer Expert Committee representing key stakeholders across Canada. These guidelines are intended to guide practice and are not intended to serve as a comprehensive text on diabetes management.

These 2003 guidelines are a complete review of the 1998 recommendations (1998 Clinical Practice Guidelines for the Management of Diabetes in Canada) which were the first comprehensive, evidence-based, clinical practice guidelines for diabetes care that allowed readers to independently judge the value of the diagnostic, prognostic and therapeutic recommendations.

Diabetes patients

In Canada, the type 1 diabetes represents about 10 % of the diagnosed cases. Type 2 diabetes, mostly in people older than 40, represents 90 % of the diagnosed cases. According to Statistics Canada (2002) 4,4% of the population in Canada has been diagnosed with diabetes. Diabetes Québec estimates about 550 000 persons suffer from diabetes (7,3 % of the population). Of this number, about 225 000 cases are undiagnosed. The World Health Organization estimates the number of diabetes patients to have doubled by the year 2025.

2.2.2. Structure

Primary care

The GP is the one who starts the diabetes treatment. 85 % type 2 diabetes patients are followed up by GP. Type 1 diabetes patients generally are followed up by a specialist. 60% of the GP's work in group practices or in multidisciplinary teams. A minority of the GP's employ administrative personnel. Other staff such as a nurse, dietician or podiatrist is rare. An access to dieticians is free in community health centres (exclusively in Québec). Diabetes nurses work mostly with patients followed at the secondary care, but they are involved in primary care as well. For example, Diabetes Québec and affiliated associations provides free diabetes nurse services. The tasks of the diabetes nurse are: giving health education, controlling the patient, giving insulin therapy.

Shared care protocols between primary and secondary care are uncommon (Canadian Diabetes Association and Diabète Quebec 2005).

Secondary care

The diabetes team consists of:

- an endocrinologist, who has the final responsibility
- a diabetes nurse
- a dietician
- in foot clinics: podiatrist, chiropodist, vascular surgeon

The endocrinology departments organise educational centres for patients. There are about one hundred educational centres in Québec. Diabetes nurses are available in day care centres for diabetes, clinics and sometimes at the secondary care specialist. They provide health education and clinical follow-up of patients. Problems of long waiting times often affect diabetes care (6 to 9 months). Despite the lack a systematic screening program for retinopathy, 60% of the patients have an annual eye check.

Training

The Faculties of medicine organise programs for continuing education. These programs have to be approved by the Health Ministry. The trainings for other professional than physicians are variable but must always be accredited.

Physicians' colleges, medicine associations and pharmaceutical companies contribute to a considerable part of the trainings.

2.2.3 Outcome

Outcome of diabetes care

There is hardly any information available on the outcome of diabetes care in Canada.

According to the diabetes care specialists interviewed we can consider the following estimations:

Target	Canada
HbA1c < or = 7%	51%
Cholesterol level < or = 180 mg%	49%
LDL 90 mg%	45%
Systolic blood pressure < or = 130 mmHg	55%
Diastolic blood pressure < or = 80 mmHg	49%

Source: Interviews 1, 4

Between September 2002 and February 2003, a study (Diabetes In Canada Evaluation) has been conducted by Ipsos Reid Healthcare. The study aimed to describe type 2 diabetes care in general practice and self-management among patients in Canada. The study included 243 GP's who completed records for 2,473 patients with type 2 diabetes. The study evaluated four areas: blood sugar control, prevalence of complications, disease management and barriers to achieving treatment targets.

About half the people with type 2 diabetes did not have a satisfactory blood sugar control. Moreover, the majority of patients have serious associated health conditions and complications, such as heart disease, stroke, kidney failure and eye disease. The prevalence of these diabetes-associated co-morbidities and complications is higher the longer the person suffers from diabetes. Key study findings include:

- *Blood sugar control* – One in two patients in the DICE study did not achieve the blood sugar target recommended by the Canadian Diabetes Association's Clinical Practice Guidelines (Blood sugar target HbA1c = 7%). The picture is worse the longer a person has diabetes. Only 38% of the people with diabetes for more than 15 years had met the HbA1c target.
- *Prevalence of complications* – Up to 80% of the people with diabetes die as a result of cardiovascular disease. The majority of the patients had cardiovascular risk factors such as high blood pressure (more than 60%) and high cholesterol (almost 60%). Nearly 30% had one or more macrovascular complications (e.g., heart attack or stroke), and almost 40% had one or more microvascular complications (e.g., kidney disease, neuropathy or eye disease). The prevalence of co-morbidities and complications increases the longer a person has diabetes.
- *Disease management* – many physicians use a “stepwise approach” – moving gradually from lifestyle modification to medication – to control blood sugar levels in patients. The study results show that more intensified therapy with anti-diabetic agents is under-used, especially as patients' diabetes progress. Intensified treatment was recommended for only 56% of the people not on target.
- *Barriers to achieving treatment targets* – there is a gap between knowledge and practice. Although GP's are very knowledgeable about Clinical Practice Guidelines targets and recognize the need for adopting more intensive treatment for poorly controlled patients, the findings suggest GP's should be more aggressive in their implementation.

Quality assurance (Health Canada 2003)

There is not yet a concerted quality assurance system in Canada. Diabète Quebec and the Canadian Diabetes association recommend for years to implement such a system. At present, the follow-up of the patient is decentralised, often under the responsibility of the hospital. The health insurance companies (private and public) have the necessary data to follow the drug treatment of their members if they wish to do so.

Currently, the National Public Health Institute is developing a national data base on diabetes care: the *National Diabetes Surveillance System (NDSS)*.

Since 1996, the National Diabetes Surveillance System (NDSS) has been in development with a broad stakeholder base including the federal and all provincial/territorial governments, non-governmental organizations, national Aboriginal groups, and researchers. In 1999 a budget of 8,1 million euros has been allocated for this purpose. It is a network of regionally distributed diabetes surveillance systems that compile administrative health care data relating to diabetes, and send aggregate anonymous data to Health Canada for national analyses.

The NDSS goals are:

- a national standardized database for diabetes surveillance, with long-term monitoring for diabetes-related complications through the integration of new and existing databases
- ongoing surveillance of diabetes and its complications in each province and territory, and in the Aboriginal community
- dissemination of national comparative information to assist in effective prevention and treatment strategies by public health departments, Aboriginal communities, non-governmental organizations and private industry
- a basis for evaluating economic/cost-related issues regarding the care, management and treatment of diabetes in Canada

The concept for NDSS was based on initial contributions from Young et al. and Blanchard et al. It was also a response to the National Forum on Health, which encouraged the use of existing provincial/territorial administrative databases in support of public health activities in Canada.

In 1999, a pilot project conducted in the three Prairie provinces (Alberta, Saskatchewan, and Manitoba) demonstrated the feasibility of the NDSS approach to data collection and the development of inter-government agreements for surveillance using provincial administrative data. The project extended an existing diabetes surveillance system operating in Manitoba to Saskatchewan and Alberta and identified a method for reconciling variations in the three provincial health information systems so that the same core body of software could be used in all three provinces.

The surveillance system developed through this project provided estimates of the incidence and prevalence of diabetes for each year of data provided by the provinces/territories. It also demonstrated that event rates for approximately 40 complications of diabetes as well as health services use can be generated for both the population with diabetes and the population without.

The administrative data from the NDSS are based on information from all provinces and territories (with the exception of New Brunswick, Newfoundland and Labrador, Northwest Territories and Nunavut). This diversity is reflected in the NDSS governance structure. The Surveillance System provides a strategic support function for the Canadian Diabetes Strategy.

Canada was in a unique position to develop this type of surveillance system, given its publicly funded health insurance generating person specific administrative data. NDSS use of multiple databases offers information on diabetes that is far superior to what would be possible using one source alone. The resultant rich source of data can be used not only for surveillance but also for examining many policy and research questions.

NDSS represents in Canada the first time that a coordinated, national use of administrative data for public health surveillance purposes has been undertaken. NDSS can measure prevalence, incidence and outcomes over time for both the nation as a whole and for specific regions. Also for the first time, NDSS can compare health services use and other health outcomes of people with and without diabetes. With these features, NDSS is also a prototype of enhanced capacity and infrastructure to support surveillance for other diseases that can be tracked through the health care system.

Underlying the NDSS concept is the assumption that the clinical path of diabetes from detection to the treatment and management of complications theoretically makes it possible to track the diabetes burden through various client interactions (physician visits, hospitalizations, etc.) within the provincial and territorial health care systems.

Tracking is possible because data are captured routinely in the provision of publicly funded, insured health services in the various jurisdictions and are stored in three major provincial/territorial administrative databases – physician claims files, hospital files, and health insurance registries. NDSS uses person-specific administrative databases organized originally to support payment of claims under publicly funded health insurance. In Canada, publicly funded health insurance is mainly the responsibility of the provinces and territories and covers almost the entire population. NDSS uses three types of databases, which exist in all provinces and territories and can provide data by fiscal year: the physician claims file, the hospital file, and the health insurance registry. These databases are linked by a unique lifetime identifier that is usually an encryption of the personal health insurance number. In each province and territory, the files are restricted to residents to avoid duplicate counting of people, since tracking individuals who live in one jurisdiction but obtain much of their care in another or who migrate back and forth between provinces is problematic. NDSS does not yet use other data sources, such as prescription drug use databases, that are either not consistent or not available across the country. The provincial/territorial physician claims file and the hospital file supply numerator data; the health insurance registry supplies denominators and socio-demographic characteristics.

The surveillance model can provide ongoing, systematic collection and analysis of public health data, suitable for dissemination to the public, for health planning and for use by health professionals. Other sources, such as the National Population Health Survey (NPHS) and the Canadian Community Health Survey (CCHS) will continue to provide important socio-economic data.

The following represents the first comprehensive compilation and public dissemination of data by NDSS. The data presented below are derived from the data collection period starting in 1995/1996. The first two years constituted the run-in period required by the case definition. Therefore, the earliest data presented here are for the fiscal year 1997/1998, and the most recent year of data available for this report is 1999/2000. The information represents eight provinces and three territories, accounting for over 95% of the Canadian population.

- **Prevalence:** in 1999/2000, 5.1% of Canadian adults were living with diagnosed diabetes. The data include both type 1 and type 2 diabetes. However, since the data are restricted to people aged 20 years and over, they largely represent type 2 diabetes. NDSS prevalence estimates represent diagnosed diabetes among health services users. Prevalence may be underestimated by 30% as a result of subclinical, undiagnosed diabetes.
- **Prevalence over time:** the NDSS shows an increasing prevalence. This increase is expected for a chronic condition such as diabetes that has a lengthy disease duration. However, at this early stage of diabetes surveillance, the observed increase in prevalence is due, in part, to detection of cases diagnosed before the start of observation (1995/1996). Future NDSS reports will be based on more than five years' of data, allowing a clearer distinction between prevalent (existing) and incident (new) cases.
- **Prevalence by sex:** the NDSS also demonstrates that diabetes is more common among Canadian men aged 20 and older (5.4%) than among women (4.9%).
- **Prevalence by age group:** for both sexes, prevalence increases with age, peaking in the 75-79 age group at 15.5% (17.4% among males and 14.2% among females) (Figure 6). People aged 65 and over account for almost 50% of diabetes cases but represent only about 15% of the population aged 20 and over.
- **Prevalence by region:** for the majority of jurisdictions, age-sex adjusted prevalence ranges from 4.0% to 5.5%. Apparent differences among the provinces should be interpreted with caution because of the effects of different populations, different data collection procedures, and variations in the likelihood of diagnosis.
- **Mortality:** in 1999/2000, the death rate among Canadian adults with diabetes was 1,393 per 100,000 (age-sex standardized to the 1991 Canadian population). This includes deaths due to external injuries or other causes that may not be directly related to diabetes. Canadian adults with diabetes are twice as likely to die prematurely, compared to persons without diabetes.
- **Mortality over time:** in all years, the death rate is significantly higher among those with diabetes than those without for both sexes. While the death counts are increasing, the mortality among people with diabetes relative to those without is stable over time.
- The NDSS gives also information about mortality by sex, mortality by age group, mortality by region
- **National Impact:** NDSS data begin to paint a picture of the burden of diabetes in Canada. The next NDSS report will contain incidence data that can be used to study risk factors for use in projection models.

In the near future, the NDSS is expected to give information about:

- **Health services use:** the databases already in use for NDSS will support analysis of health services use by both people with and those without diabetes. This analysis can include physician visits, specialist visits and hospital use. The development of methods for applying costs to service use will permit refined estimates of the economic burden of diabetes. Days of hospital stay and number of services provided will be included in the 2004 NDSS report (still to be published).
- **Complications:** one of the primary goals of NDSS is to develop the capacity for long-term monitoring of diabetes-related complications. The Prairie Pilot developed a stroke module that is ready for testing with NDSS software. The next priority of the Validation Working Group is the development of standard definitions for diabetes complications, and the identification and validation of data sources. The 2004 NDSS report will include estimates of diabetes-related cardiovascular disease, cerebrovascular disease, peripheral vascular disease, retinopathy and renal disease.
- **Aboriginal participation:** data for the Aboriginal population in Canada are currently captured by NDSS but not identified.
- **Population coverage**
- **Incidence**

Limitations of the NDSS:

The NDSS has some limitations, many of which may eventually be overcome:

The one of most concern is the inability to distinguish among type 1, type 2 and gestational diabetes. Current work to distinguish gestational diabetes is promising.

A second limitation results from population mobility and the consequent difficulties of record duplication and losses to follow-up, both of which contribute to data inaccuracies. A partial solution to this problem may be periodic linkages of the provincial/territorial databases with the National Mortality Database for death clearance.

Third, information on risk factors for diabetes is currently very limited.

In the long term the NDSS could give more information about Risk factors, Care indicators, Diabetes education, Application to other chronic diseases.

2.2.4 Strengths and weaknesses

The two associations (Canadian Diabetes Association and Diabetes Québec) are very active in the field of the diabetes care, especially in teaching and prevention but also in the elaboration of guidelines and awareness of the public health authorities.

The current orientation of the Canadian Diabetes Strategy is the prevention and control of the illness. For this

purpose, a standardized database for diabetes surveillance has been developed in order to monitor diabetes-related complications and health services utilization (the *National Diabetes Surveillance System NDSS*).

The drug insurance in Canada, especially in Québec covers a large part (75 to 80 %) of the medication and health services. Québec has about 100 centres for health education. In hospitals, the diabetes care services are almost all covered. Some clinics have a multidisciplinary team offering diabetes foot care.

But according to the interviews there is a lack of co-ordination in the follow-up of the patient, a lack of resources for health education (only 10% of the type 2 patients have an access to health education). The diabetes strategy is not enough implemented and a lack of ambulatory care has been reported.

For the future, the interviewed experts highlighted the following priorities:

1. a better coordination in the follow up of the patient (between the first and secondary care)
2. prevention of the type 2 diabetes
3. a real and global application of the Canadian Diabetes Strategy (CDS)
4. free access to dietetic services

In the Diabetes Report 2005, the Canadian Diabetes Association and Diabetes Québec have expressed six recommendations to the federal and provincial authorities:

Create and appropriately fund a national catastrophic drug plan. Some provincial governments do not have the population or tax base that provides fair and equitable access to the medications, devices and supplies that Canadians with diabetes need. The creation of a national catastrophic drug plan with a national formulary that provides the highest level of coverage currently available to eligible Canadians is the first of a number of critical steps towards addressing the current inequalities and gaps in access to appropriate diabetes medications, devices and supplies.

Ensure that the costs for diabetes medications and supplies, as well as the costs associated with diabetes-related complications, are not a barrier or a burden to an individual managing her or his diabetes. All jurisdictions have a responsibility to ensure that the funding, programs and services they deliver help reduce the financial burden for diabetes patients and their families.

Increase awareness of existing government programs and services for Canadians living with diabetes. All federal, provincial and territorial governments should better inform Canadians with diabetes about the financial assistance and support programs and services currently available, and facilitate more efficient and effective access for Canadians with diabetes and their health care providers.

Implement the Canadian Diabetes Association 2003 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. While all jurisdictions acknowledge the Association's 2003 Clinical Practice Guidelines as the best available research evidence for preventing and managing diabetes and have incorporated aspects of these guidelines in programs and services, the guidelines are yet to be fully implemented.

Accelerate and enhance implementation of the Canadian Diabetes Strategy (especially the NDSS) and the Aboriginal Diabetes Initiative (ADI). Federal announcements are expected before the end of 2005 on the specifics of how the enhanced Canadian Diabetes Strategy will be implemented over the next five years. In particular, in recognition of the diabetes epidemic in Aboriginal communities, the ADI should get high priority.

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Interviewed persons:

1. Mr. M. Aras, Director of Communications, Diabète Québec
2. Prof. Dr. M.-D. Beaulieu, Department of Family Medicine, University of Montreal
4. Prof. Dr. J. F. Yale, endocrinologist, University of McGill

3 Denmark

3.1 *Overview of the health system*

All information in this section is retrieved from “Health Care Systems in Transition: Denmark” (Vallgarda, 2001), unless indicated otherwise.

3.1.1 Introduction

Denmark has a population of 5.3 million and in 2002 a GDP per capita of 30 042 USD Purchasing Power Parity. Life expectancy at birth was in 2002 79.5 years for females and 74.8 years for males (OECD 2005). The country is divided in 14 counties and 275 municipalities.

The most striking feature of the Danish health system is the far-reaching decentralisation of primary and secondary care to the counties and the municipalities, reflecting its history of municipalities and counties taking the lead in organising health care in the nineteenth century.

3.1.2. Organisational structure of the health system

Management of the health care system

The Ministry of Health is responsible for preparing legislation and providing overall guidelines. The ministry, together with the municipalities and the counties take part in the annual budget negotiations to set (not legally binding) targets for health care expenditure. The National Board on Health, a body connected to the ministry, supervises the health personnel and has an advisory role towards the counties and the municipalities. The state also controls the supply of health professionals by limiting the entry into the training courses

The counties have the major responsibilities in the health system. They run the hospitals and finance the GP's, specialists, physiotherapists and pharmaceuticals. The Association of County Councils negotiates on behalf of the counties with the health professionals about the service fees in the National Health Security System (NHSS) Committee. The counties also regulate the number of physicians entitled to reimbursement by the NHSS.

Hospital financing varies from county to county. Traditionally hospitals were financed through global budgets based on negotiated activity targets. Global budgets have been very effective tools for cost containment but don't reward more efficient institutions. In 2000 the national government proposed a system in which 10% of the hospital financing is activity-based, giving extra finances to hospitals that exceed the activity targets.

The municipalities are responsible for nursing homes, home nurses, municipal dentists and school health services. These services are carried out by salaried health professionals. Salaries and working conditions are negotiated by the Association of Local Authorities and the professional organisations.

A consequence of the decentralisation of health care is unequal access to health care in different counties (e.g. differences in number of hospital bed ranges from 3.0 to 4.7 per 1000; also differences in types of treatment on offer). The central government has tried to influence the annual budget negotiations for more equal access to health care. E.g. they have earmarked extra grants to assist counties and municipalities in achieving targets as reducing waiting times for surgery. Differences in access have also decreased by legislation of 1993 which allows patients to obtain care in other counties that offer the care they require.

In 2004 the Ministry of the Interior and Health published its re-organisation plan for the civil service. The counties will be replaced by five regions and the number of municipalities will be reduced to about 100 by 2007 (Ministry of the Interior and Health 2004). The exact share of responsibilities is not yet clear. Regions will probably remain the main management level for health care but they won't be able to raise taxes anymore. Money for health will thus come from other levels, which will probably change the present decision-making process (interview 4).

The NHSS coverage

All people are covered by the NHSS. People are free to choose between a group I and a group II insurance. More than 98% of the people choose the group I package. Under the group I insurance patients are obliged to register with a GP who functions as gatekeeper. The NHSS offers them free access to most services. Patients have to pay a co-payment for physiotherapists, dentists, opticians and pharmaceuticals. The co-payments for dental care are rather high. Co-payment for drugs depends on the individual annual expenditure on drugs: below 69€ there is no reimbursement; 70€ – 165€: 50% reimbursement; 166€ – 387€: 75% reimbursement; above 387€: 85% reimbursement. Chronically ill patients can apply to have any annual expenditure above 480€ reimbursed. Hospitalised patients get their drugs for free. Home nursing and dietetic services are also for free. Podiatric services are subsidized for diabetes patients (Ministry of the Interior and Health 2002a, Ministry of the Interior and Health 2002b).

Group II patients, less than 2% of the population, pay physicians, laboratory and so on directly and are partly reimbursed (about 50%) by the health insurance. They are not obliged to register with a GP and are free to go to the GP and/or ambulant specialist of choice at any time. Though they can only access hospitals on referral by a physician.

Long waiting times for hospitals are a problem and are monitored through benchmarking. 7% of the patients have to wait more than 3 months to receive pre-planned hospital treatment. Since July 2002 patients may choose among private hospitals or clinics in Denmark or abroad if the waiting for treatment exceeds two months at the hospital contracted by the NHSS (Ministry of the Interior and Health 2002b). Waiting times for diabetes clinics are not monitored, but nobody of the interviewed experts mentioned waiting times as a major problem.

Apart from the NHSS, voluntary health insurance schemes cover fees for dentists, treatment in private hospitals and the costs of commodities as drugs and spectacles. In recent years these schemes have become increasingly popular, partially due to the fear of long waiting times and poor service in public hospitals. In 1998 they covered 28% of the population.

Human resources

Denmark has 0.9 GP's, 2.0 specialists and 10.3 nurses per 1000 inhabitants (OECD2005). The NHSS employs one GP per about 1900 persons (Danish College of General Practitioners 2005).

Specialists in public hospitals receive a salary. Ambulant specialists work on a fee-for-service basis. GP's are paid by a mixture of capitation fees - which makes up about 50% of their income - and fees for service, including consultations, home visits, minor interventions etc. With the fees-for-service the NHSS also tries to promote specific activities as e.g. preventive consultation.

Very few doctors are employed in the private for-profit sector.

Health professionals employed by the municipality are all salaried.

3.1.3. Financing and expenditure of the health system

Table 1. Health financing and expenditure in Denmark in 1999

<u>Public health expenditure (% of total health expenditure)</u>	82.0%
National/county/municipality taxes (% of total health expenditure)	82.0%
Social security schemes (% of total health expenditure)	0%
<u>Private health expenditure (% of total health expenditure)</u>	18.0%
Private insurance schemes (% of total health expenditure)	1.5%
Out-of-pocket payments ((% of total health expenditure)	16.5%

Source: Health Care Systems in Transition: Denmark (Vallgarda 2001).

The NHSS is fully financed through national, county-level and municipal taxes. Part of the national funds for health is transferred to the counties and municipalities as general grants per capita. During the annual budget negotiations the government, the counties and the municipalities agree upon the size of these grants, the maximum level of municipality and county taxes, the degree of solidarity between the different regions and the size of extraordinary grants earmarked for priority areas.

Table 2. Expenditure on health in Denmark in 2002

Health expenditure per capita (USD PPP)	2 655 USD PPP
Health expenditure as % of GDP	8.8%

Sources: OECD Health Data (OECD 2005), except salaries: European Health for All Database (WHO 2004)

The Aarhus diabetes register showed that diabetes care cost 657€ per patient per year, excluding treatment for complications and hospital admissions. This represents about 0.4% of the total health expenditure. The total cost of diabetes care (including complications) is estimated to represent 7% of the total health expenditure (DACEHTA 2003).

3.2 Organisation of diabetes care

All information in this section is retrieved from “Type 2 diabetes: health technology assessment of screening, diagnosis and treatment (DACEHTA 2003), unless indicated otherwise.

3.2.1 Overview of the diabetes care organisation

General organisation

85% of the type 2 diabetes patients are treated in general practice without use of the hospital diabetes clinics. Traditionally, when patients have to be started on insulin, they were referred to secondary care (interview 2). The awareness that intensified treatment can prevent a lot of complications has raised the need for more co-operation between primary and secondary care in diabetes care (DACEHTA 2003).

National policy

On demand of the Danish Diabetes Association, the Minister for Health asked the Danish Centre for Health Technology Evaluation (DACEHTA) to develop a "Health technology assessment for type 2 diabetes" (DACEHTA 2003). The report was written by a group of endocrinologists, GP's, dieticians, podiatrist and nurses. It gives – amongst others - the following recommendations:

- Patients for who the presence of diabetes has a marked impact on the type and intensity of treatment, should be systematically screened for diabetes (e.g. patients with known heart disease, hypertension, dislipidaemia). But, awaiting more evidence of cost-effectiveness of screening in Denmark, efforts should focus on optimising clinical case finding and treatment of diabetes patients. Population-based screening for diabetes is not recommended because of the high costs and the uncertainty about the effect of early treatment.
- Education at the time of diagnosis and regularly thereafter should be offered to all patients. This will necessitate the expansion of dietician service and the use of nurses in primary care. Before changing current educational practices, for example through the establishment of more diabetes schools, experience with activities at the existing diabetes school should be carefully evaluated.
- Patients with atherosclerosis or micro-albuminuria should receive multipharmacological treatment, i.e.; acetylsalicylic acid, cholesterol-lowering statins, ACE inhibitor or angiotensin II antagonist (in case of micro-albuminuria) and, where necessary, antihypertensive and hypoglycaemic treatment.
- Screening for diabetic retinopathy should be performed in specialist clinics using fundus photography. Screening for other late complications (through examination of the feet, measurement of albuminuria and ECG) should be done by the patient's usual diabetes therapist.
- The report doesn't make any recommendations by lack of evidence on the effectivity of shared care in the Danish context.
- A national database for diabetes patients should be established. The information in this database should be used for feed-back to the hospital departments and general practices.
- At county level there should be an organisation co-ordinating diabetes care.

The DACEHTA also provides specific clinical guidelines. A guideline for both primary and secondary care published in 2000 in the Journal of the Danish Medical Association is wide-spread (Beck-Nielsen 2000). The Danish College of General Practitioners published new guidelines on type 2 diabetes treatment based on the DACEHTA report in 2004.

The HTA for type 2 diabetes gave a new impetus to the national diabetes policy. The HTA was followed by a diabetes action plan of the government and the establishment of a national diabetes steering committee. This committee has been set specific targets and a timeframe. It resulted in the establishment of a national diabetes register and a quality monitoring system (see below) (interview 1, 3, 4).

Each county has a diabetes steering committee, in line with recommendations of the National Board on Health of 1994. This committee includes representatives of the patients, the administration, the primary and secondary care (interview 1, 4).

Diabetes patients

About 100 000 to 150 000 people are believed to be diagnosed with diabetes, corresponding to a prevalence of 2 – 3%. In a survey of about 13000 people in the Copenhagen County 66% of the diabetes patients was undiagnosed (Glumer 2003).

Some counties are starting a web-based registration system. In Aarhus County, in the context of a research project, a diabetes register was established using the health insurance data. Following the recommendations in the health technology assessment for type 2 diabetes, a national diabetes register will be established as per 1 January 2006. This register calculates the incidence and prevalence of diabetes using an algorithm based on the diagnoses registered in hospitals, podiatrist visits and blood glucose measurements in general practice (interview 1, 3, 4).

The Danish Diabetes Association is an organisation of both patients and professionals. By urging for a health technology assessment on type 2 diabetes, it gave an important impetus to the organisation of diabetes care in Denmark. (see www.diabetes.dk, interview 3).

3.2.2 Structure

Primary care

The primary care exists of two components: at the one hand the private GP practices and at the other hand the services organised by the municipality, i.e. home nursing, dietetic and podiatric services.

GP's used to work predominantly in solo practices. In the last 20 years GP's have started to form groups. At present two thirds of the GP's work in group practices (Vallgarda 2001). The GP's provide their own premises and supporting staff. About half of them employ a secretary, and about a quarter paramedical staff (practice nurse or laboratory technician) (interview 3). Multidisciplinary health centres do not exist. In an effort to integrate private and public services, social workers or home nurses employed by the municipality are directly attached to a GP practice, though this is not common (Danish College of General Practitioners 2005). For dietetic and podiatric services diabetes patients have to be referred to primary care staff contracted by the NHSS, or to a diabetes clinic (DACEHTA 2003).

All services in the GP practice are documented on individual sheets filed in the health insurance system (Danish College of General Practitioners 2005).

In 2002 87% of the GP's had electronic medical records. Communication with pharmacies and hospitals often happens through an electronic network. The Ministry of Health has set up a national IT strategy with the aim, among others, to develop a common basis structure of the electronic medical record. (Ministry of the Interior and Health 2003).

Six out of 14 counties have a systematic screening programme for retinopathy (Hansen 2004). There are no data on the coverage of these programmes.

Secondary care

Secondary care for out-patients is organised in diabetes clinics which are usually linked to a hospital. Diabetes clinics are typically staffed by an endocrinologist, diabetes nurses, dieticians and podiatrists.

Training of health staff

The training for diabetes nurse differs from one hospital to another. Recently an official curriculum for diabetes nurse has been published (interview 4).

3.2.3. Process

Nearly all patients are registered with a GP. Patients can only contact a specialist by referral of a GP, except for ENT specialists and ophthalmologists (Vallgarda 2001). Call/recall systems aren't used. Shared care protocols between primary and secondary care are not widely established, but the situation differs considerably from one county to another. The diabetes steering committee at county level is usually the initiator of such protocols. Sometimes the national diabetes steering committee also supports the process (interview 4).

The Aarhus diabetes register showed that 85% of the type 2 diabetes patients were treated exclusively by the GP. A diabetes patient visited by average the GP 3.6 times a year and a diabetes clinic 0.2 times a year. GP's often refer the patient to a diabetes clinic when he/she is started on insulin (interview 2).

In recent years some counties have taken measures to improve diabetes care. Among others these include (DACEHTA 2003):

- Establishment of diabetes school for patients and primary care workers.
- Establishment of quality assurance tools and quality databases.
- Establishment of shared care agreements between primary care and diabetes clinics.
- Expansion of dietetic services in primary care.
- Agreements about special honoraria for diabetes control in general practice.
- Establishment of diabetes foot care clinics.

The project in Funen County is often seen as a model of good practice in diabetes care (DACEHTA 2003). A total of four diabetes clinics have been established in the county, all staffed with a full diabetes team. A general practice diabetes co-ordinator has been appointed to enhance cooperation between the GP and the diabetes clinics, and clinical dieticians have been appointed in the clinic solely to advise diabetes patients from general practice. Patient case notes follow the patient from hospital to general practice and vice versa. The diabetes team provides education to general practice in the form of courses. Patient pathway guidelines have been formulated, setting standards for good clinical practice and agreements on division of responsibilities. Newsletters and an audit project that collects data on diabetes patients have been established. Since 2003 a common web-based diabetes registration system was implemented in the whole county. A diabetes school offers courses to diabetes patients. An evaluation in 2000 revealed that the division of responsibilities between

general practice and diabetes clinic had become clearer. About 50% of the patients had attended the diabetes school. Nearly all patients self-monitored their glucose. 76% of the patients regularly visited a podiatrist. 90% of the patients went for eye screening once a year.

The GP association established the “General Practitioners as Advisors in Hospitals” (GPAH). This is a network of GP’s who want to strengthen the co-operation between the hospital, the GP and the public home care authority. Most of them work for free, but a few counties have employed a GPAH (see www.dsam.dk).

Health Education

Several counties have established structured educational programmes under the form of diabetes schools providing courses of several day for patients. The trainings usually encompass dietary instruction, measurement of blood glucose, motivation to smoking cessation and physical exercise, and information on pharmacological treatment. The trainers are nurses, dieticians, podiatrists and social workers (DACEHTA2003).

3.2.4 Outcome

Outcome of diabetes care

There is hardly any information available on the outcome of diabetes care in Denmark. The only information we could retrieve stems from the control groups of an RCT measuring the effect of structured diabetes care (Olivarius 2001). In the study of Olivarius et al. a control group of 614 patients diagnosed with diabetes in general practice between 1989 and 1991, was followed up for six years. Final outcome assessment was done in 1996 for 415 patients (see table 3). 164 had died, 17 withdrew and 18 were lost to follow up.

Table 3. Intermediate outcome of type 2 diabetes patients

	Olivarius (n=614)
Average HbA1c level	9.0%
Average cholesterol level	231 mg%
Average systolic blood pressure	150 mmHg
Average diastolic blood pressure	84 mm Hg

Source: Olivarius 2001.

The reference interval of the HbA1C assay used in the study was 5.4% - 7.4%, which is relatively high. We should also consider that the assessment was done in 1996, when the benefits of more intensive treatment were not yet well established.

Quality assurance

Till recently quality assurance measures had been sporadic and locally organised. Some GP's participate in diabetes audits.

The Danish Institute for Services Research and Development has set up several projects about quality monitoring concerning accreditation of hospitals, self-evaluation of hospitals, databases for clinical quality and development of quality standards and indicators (Danish Institute for Services Research and Development 2005).

The National Indicator Project was set up in 2000 to formulate and monitor indicators of quality of care for several diseases, among which diabetes. The project is led by the Aarhus University and has the support of the Ministry of Health and several medical and paramedical associations. In table 4 the list of (process) indicators for diabetes care are shown.

Table 4. Indicators for quality of diabetes care proposed by the National Indicator Project

Indicator	Standard
Proportion of patients with diabetes where HbA1c is measured	95% of patients with diabetes should have measured HbA1c at least once a year
Proportion of patients with diabetes where blood pressure is measured	95% of patients with diabetes should have measured the blood pressure at least once a year
Proportion of patients with diabetes where blood lipids are assessed	90% of patients with diabetes, age 30 or older, should have the blood lipids assessed every second year
Proportion of patients with diabetes examined for albuminuria	90% of patients with diabetes should be examined for albuminuria every second year
Proportion of patients with diabetes where the eyes are examined	90% of patients with diabetes should have an ophthalmologic examination within 2 years 95% of patients with diabetes should have an ophthalmologic examination within 4 years
Proportion of patients with diabetes where the feet are examined	95% of patients with diabetes should have examined the feet every second year

Source: National Indicator Project (www.nip.dk)

Since 2005 physicians are obliged to report on these parameters. The first results will be published by the end of 2006. Information on outcome indicators as HbA1c and blood pressure is also collected, but as a test case of which the results won't be published yet (interview 4).

The county has a specific budget for continuing medical education of +/- 1000€ per GP. The county has a specific budget of +/- 1000€ per GP, which can be used to finance continuing medical education. For secondary care health personnel there is one common budget for continuing medical education. There are no strict criteria on which types of training can be followed. Most trainings are organised by the GP's association and other medical associations or by pharmaceutical companies. Local trainings on diabetes care are common (interview 2, 3, 4).

. For secondary care health personnel there is one common budget for continuing medical education. There are no strict criteria on which types of training can be followed. Most trainings are organised by the GP's association and other medical associations or by pharmaceutical companies. Local trainings on diabetes care are common (interview 2, 3, 4).

3.2.5 Strengths and weaknesses

The content of this section is derived from the experts' interviews.

The experts mentioned several strengths that refer to the general organisation of the health care system: the fact that Denmark has one health system with most services for free (interview 2, 3); the gatekeeper function of the GP (interview 2, 3); patients' registration with the GP (interview 2).

The diabetes steering committees at county level and the national diabetes steering committee were seen as playing an important role in the organisation of diabetes care (interview 1, 4).

One expert valued the high level of knowledge on diabetes among doctors and nurses (interview 4). The quality of care in the diabetes clinics was well appreciated (interview 3).

Thanks to the presence of pharmaceutical company producing insulin in Denmark, the country has a long tradition of diabetes research, which was seen as an important guarantee for good quality diabetes care (interview 3).

Though the gatekeeper's function of the GP and the registration with a GP create clear lines of referral, most experts felt there is not enough co-ordination between caregivers in the field of diabetes care (interview 1, 2, 4). GP's seem to be hesitant to refer patients to a diabetes clinic (interview 2, 3, 4). Several reasons were given for this: diabetes clinics used not to refer back the patient to the GP – though this is no longer case now with the present work load at the diabetes clinic (interview 2, 3); the fee-for-service payment of the GP (while specialists are salaried) (interview 4). The endocrinologist noted that more and more patients are referred once every 2 or 3 years for a general check-up at the diabetes clinic (interview 4). A recent proposal that each type 2 diabetes patient should attend a diabetes clinic once a year, was not pursued, as the diabetes clinics lack the necessary capacity (interview 1).

Shared care protocols exist in some places, but they are often not very detailed or unsatisfactory (interview 1, 2). Payment systems should change, remunerating e.g. the investment of time in shared care protocols (interview 2). One expert suggested the establishment of centres of excellence outside the hospital with both GP's and endocrinologists (interview 2).

One expert thought the development of IT systems could facilitate the communication between health workers. But present data protection rules make the electronic transfer of patient-sensitive information very difficult (interview 4).

Primary care experts deplored the lack of attention to lifestyle change support. The diabetes schools seem to work well, but are a rather marginal phenomenon. They can only be accessed through secondary care (interview 2, 3).

3.2.6 Expected changes in the future

The content of this section is derived from the experts' interviews.

The National Board on Health has also set up a project on chronic disease management. It wants to develop a general strategy for the organisation of chronic care. Patient stratification would be the key to the care organisation. Though the project is still in process and nothing has been finalised yet, diabetes care is likely to be organised in three levels, roughly defined as follows (interview 1):

- The majority of patients are taken care of by the GP. The GP is the focal point.
- For a middle group of patients who need closer care, an organisational structure led by nurses would be introduced to support the GP.
- For complicated patients, case managers would co-ordinate the care.

Programmes for diabetes (interview 3) and diabetes complications (interview 3, 4) are expected to develop. E.g. photographic screening for retinopathy. The IT development could help to centralise such activities (interview 4). One expert feared this focus on technology would cause a loss of interest for lifestyle change (interview 3).

IT systems could also help communication between health workers by the development of a common electronic medical record (interview 2).

Due to a lack of GP's, nurses will get more involved in the diabetes management (interview 4).

3.3 Conclusions

Denmark has a tax-based health care system. It is characterised by a far-going decentralisation of responsibilities to the 14 counties. The counties are the central managers of the health care system, while the national level sets general standards and guidelines. As owners of most of the hospitals, the counties are also important health care providers (Vallgarda 2001). In the near future the counties will be replaced by five regions, thus creating larger entities.

At county level diabetes steering committees advise the policy makers in the county administration. They play an important role in the organisation of diabetes care (interview Denmark 1).

General practice is fairly well structured. Two thirds of the GPs work in group practices (Vallgarda 2001). About half of them employ secretary staff and sometimes a practice nurse or a laboratory technologist (interview Denmark 3). GP's get their income for about 50% from capitation fees, the other part from fees for service. Nearly all patients are registered with a GP and the GP has a gatekeeper function (Vallgarda 2001), which is seen by the experts as an important strength in the organisation of diabetes care (interview Denmark

2, 3). But there have been little efforts at policy level to strengthen the capacities of general practice in chronic disease management.

Secondary care diabetes clinics have a well developed team of endocrinologists, nurses, dieticians and podiatrists (DACEHTA 2003). A few diabetes clinics also organise diabetes schools, offering group-based training programmes for diabetes patients (DACEHTA 2003). These schools are not directly accessible for GP's and remain a rather marginal phenomenon (interview Denmark 2, 3).

The Danish Centre for Health Technology Assessment (DACEHTA) developed on demand of the Ministry of Health the Health Technology Assessment for type 2 diabetes. Following this report a national diabetes steering committee was established, which developed process indicators for the quality of diabetes care. Since 2005 physicians are obliged to report on these indicators. The plan is to measure in the future outcome indicators as well (interview Denmark 4). As from 2006 a national database will be established to calculate incidence and prevalence of diabetes (interview Denmark 1, 3, 4).

Most experts noted a lack of communication between caregivers (interview Denmark 1, 2, 4). Shared care protocols exist in some places, but they are often not very detailed or unsatisfactory (interview Denmark 1, 2). GP's seem to be hesitant to refer patients to diabetes clinics (interview Denmark 2, 3, 4). Several reasons were mentioned. Diabetes clinics often used to keep patients referred by the GP in routine follow-up; this is no longer the case with the increasing work load at the diabetes clinics, but this feeling still lives among GP's (interview Denmark 2, 3). The fee-for-service payment of the GP's creates competition with the diabetes clinics (interview Denmark 4). Experts mentioned specific payments for shared care (interview Denmark 2) and the development of ICT (interview Denmark 4) as interventions that could enhance shared care.

Most experts expect more structured diabetes care in the future (interview Denmark 1, 3, 4). The Ministry of Health is presently working on a project about chronic disease management. It will probably propose a diabetes care organisation in three levels, according to the stage of disease. For the complicated patients, case managers would be involved (interview Denmark 1).

Primary care experts deplored the lack of attention to lifestyle change support (interview Denmark 2, 3). One expressed the fear that this tendency will only be strengthened in the future by the emphasis on multi-pharmacological treatment (interview Denmark 3).

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Interviewed persons:

1. Mr. Mikkel Grimmeshave, Senior Advisor, National Board of Health
2. Prof. B. Flemming, professor in family medicine
3. Prof. N.F. Olivarius, associate professor in family medicine at the University of Copenhagen
4. Prof. K. Borch-Johnsen, professor in endocrinology, medical director at Steno Diabetes Centre

3 Estonia

4.1 Overview of the health system

All information in this section is retrieved from “Health Systems in Transition Estonia” (Jesse 2004), unless indicated otherwise.

4.1.1 Introduction

Estonia had in 2002 1.3 million inhabitants with a Gross Domestic Product per capita of 12 260 USD Purchasing Power Parity (World Bank 2004). The average life expectancy at birth was 65.0 years for men and 77.0 years for women (Statiskaamet 2004).

4.1.2 Organisational structure of the health system

Since regaining independence in 1991, the Estonian health system has undergone two major shifts: first from a state-controlled centralized system to a decentralized one; and second, from a system funded by the state budget to one funded through social health insurance contributions to the Estonian Health Insurance Fund (EHIF).

Management of the health care system

The EHIF is funded by mandatory contributions of employers and self-employed. It is governed by a 15-member supervisory board which consists of 5 representatives each from the state, the employers and the EHIF members (the insured people). The supervisory board is chaired by the Minister of Social Affairs.

The main roles of the Ministry of Social Affairs in the health care provision are: determining the health policy, supervision of health services quality and access, developing and implementing public health programmes, licensing health care providers and – since 2002 – holding negotiations with pharmaceutical companies over price agreements for drugs to be reimbursed by the EHIF.

Health care providers are not part of the governing structure within the EHIF. However the Estonian Medical Association and the Estonian Nurses’ Union have through lobbying a real impact on the health policy. E.g. lobbying resulted in the Assistant Minister responsible for health within the Ministry of Social Affairs being a medical doctor.

The health care providers

The EHIF mainly deals with three types of health care providers:

- hospitals;
- general practitioners;
- specialists offering ambulant care.

The hospitals are owned by the municipalities, the state or other public agencies and work either on a non-profit or a for-profit basis. The number of hospitals beds has been reduced from 120 in 1991 to 40 in 2003.

Hospital care is organised in three levels: 1) 2 regional hospitals; 2) 4 central hospitals; and 3) local hospitals only offering the basic medical disciplines (internal medicine, surgery, paediatrics and gynaecology). Most general practitioners and ambulant specialists are private entrepreneurs.

Each year the EHIF negotiates capped cost and volume contracts with the hospitals. The purchased volumes are based on a needs assessment. The contracts stipulate the range and volume of services to be purchased and include a total cap on payments. When hospitals exceed this cap, the extra services are not paid for by the EHIF. This can cause long waiting times, making patients pay the full cost of a service themselves.

Until 2004 hospitals were paid by a mix of fee-for-service, payment per case and payment per bed day. However this system is being gradually replaced by financing on diagnosis-based groups, thus introducing an element of risk sharing by the provider.

The EHIF coverage

The EHIF covers 94% of the population. Children and pensioners are automatically covered. The uncovered are mainly long-term unemployed or not officially employed people. Emergency care for the uninsured is funded by the state budget.

The EHIF covers a very broad range of health care. Excluded are cosmetic surgery, opticians' services, alternative therapies, and recently also parts of adult dentist care. Since 2003 long-term care, nursing care and some home care have become part of the package. However patients contribute through co-payments:

- General practitioner: office visits for free; home visits: co-payment of maximum 3.2 per visit;
- Out-patient specialist care: maximum 3.2 per consult if referred;
- In-patient care: 1.6 per day up to a maximum of 10 days; extra payment for above-standard accommodation;
- General drugs: 50% of the cost + 3.2 per prescription with a maximum reimbursement of 12 ;
- Drugs for chronic illnesses: co-payment of 0 – 25% of drug cost + 1.3 per prescription. There are no co-payments for insulin and 25% co-payment for oral antidiabetics.
- Podiatric services are for free when the podiatrist is contracted by the EHIF. There are no dieticians available (interview 2, 3).
- Patients with more than 3 injections per day get 250 test strips for free per year; children and pregnant women 300 test strips per year (Kaarna 2005).

The new GP contract guarantees the population access to their family doctor within three working days for any medical problems, while urgent cases are expected to be able to see the doctor the same day. In a majority of cases this criterion is fulfilled.

A 2003 survey of the EHIF showed that only 52% of the respondents considered access to health care good or very good, while 56% considered health care quality to be good or very good. But of those who actually used the health services 84% were satisfied with the inpatient care, 88% with the general practice care and 91% with the ambulant specialist care.

Human resources

Estonia has 3.2 physicians per 1000 inhabitants (Worldbank 2005), but only 0.7 recognized GP's per 1000. GP's have by average a list size of 1600 patients.

During the Soviet area, primary care was provided by physicians working in polyclinics. Any medical school graduate could work in a polyclinic. Payment was relatively low. Patients could consult directly specialists, which happened frequently. In the 1990's primary health care was revalued by increased payments and the establishment of a 3-years postgraduate training in general practice resulting in a general practice certificate. District internists and paediatricians could also enter the GP contract if they followed a special educational programme (Lember 2002).

Presently general practitioners work as private entrepreneurs. They are contracted by the EHIF to guarantee primary health care in a serviced area. Their payment is a combination of:

- a weighted capitation fee per registered patient (with a minimum of 1200 and a maximum of 2000 registered patients per general practitioner); the capitation fee also covers the costs for laboratory tests and sonographic examinations, thus enhancing the GP's to perform these test themselves or to limit their use (Lember 2002).
- fee-for-service up till a maximum of 18.4% of the capitation fee;
- a basic practice allowance;
- a bonus depending on the training qualifications of the GP and the location of the practice (urban versus rural).

In the '90's the funding of primary care improved considerably. As a result, investments in new premises and equipment became possible.

In 2006 GP's can join on voluntary basis a quality-based payment system, which includes indicators for diabetes care (interview 2, 3).

The hospital-based specialists receive a salary stipulated by an individual contract with the hospital they are working for. Ambulant specialists contracted by the EHIF are paid by the EHIF on a fee-for-service basis up to a maximum amount specified in the contract (close-ended case-volume contracts).

Physicians not contracted by the EHIF – quite an important group - are free to charge patients a (not reimbursed) fee up to a defined maximum.

4.1.3 Financing and expenditure of the health system

Table 1. Health financing in Estonia in 2002

Public health expenditure (% of total health expenditure)	76.3%
Government/municipalities health expenditure (% of total health expenditure)	10.7%
Social security schemes (% of total health expenditure)	65.6%
Private health expenditure (% of total health expenditure)	23.7%
Private insurance schemes (% of total health expenditure)	1.0%
Out-of-pocket payments (% of total health expenditure)	19.9%
Other private expenditure (% of total health expenditure)	2.8%

Source: European Health for All Database (WHO 2004).

Table 2. Health expenditure in Estonia in 2002

Health expenditure per capita (USD PPP)	574
Health expenditure as % of GDP	5.1%

Source: OECD Health Data (OECD 2005).

The health expenditure per capita and as % of GDP is far below the EU-15 average (respectively 2223 USD PPP per capita and 9.0% of GDP). The proportion of out-of-pocket payments is relatively high and mainly due to the co-payments for drugs (50.6%) and dental care (24.1%).

4.2 Organisation of diabetes care

As we could very little information from documents in English, most information in this section is derived from interviews. We indicate each time from which interview we have taken the information.

4.2.1 Overview of the diabetes care organisation

General organisation

About 75% of type 2 diabetes patients are seen by the GP. Patients on insulin are seen by both primary and secondary care caregivers. Most type 1 diabetes patients are mainly followed up in secondary care (interview 2, 3, 4).

National policy

Up till there has been no national policy on diabetes care. In 2006 GP's will be able to enter on voluntary basis a payment scheme that gives incentives for good quality care, including diabetes care (see below) (interview 2, 3).

Guidelines

The Estonian Society of Family Doctors and the Estonian Endocrinology Society formulated a guideline for type 2 diabetes for both primary and secondary care, which is based on the guidelines of the International Diabetes Federation European region (Kaarna 2005). The guideline is available in 76% of the GP practices and adhered to by a similar proportion of GP's (Lember 2004).

Diabetes patients

There is little known about the prevalence of diabetes in Estonia. Diabetes patients make up approximately 1 – 2% of the population, with about 10% having type 1 diabetes (Vides 2001). There is no national diabetes register (interview 2, 3).

The Estonian Diabetes Association is a patients' organisation which provides health education, encourages networking between diabetes patients and participates in the policy making process (interview 2, 3, 4).

4.2.2 Structure

Primary care

In 2004 97% of the general practitioners contracted by the EHIF had a general practice certificate (Kaarna 2005). About half of the independently contracted GP's work in solo practices and half in small groups (Lember 2002). GP's are obliged to work with at least one practice nurse, though there is a shortage of trained practice nurses (Jesse 2004). There are about 0.8 practice nurses per GP (Kaarna 2005). Many solo practices don't have a practice nurse (interview 2, 3). The supportive staff in general practice is financed from the GP's payment.

By 1998 76% had a computer at the practice (Lember 2002). More than 75% of the GP's are estimated to use now electronic medical records, which are used for communication with other health professionals and clinical audits (interview 2, 3).

The GP can refer a patient to a podiatrist working in hospital or privately. There are usually no dieticians available in primary care. He can also get support from a diabetes nurse, who gives health education, gives dietary advice and trains health staff. When diabetes nurses are not available, health education can be given up by the practice nurse (interview 2, 3; Kaarna 2005).

Secondary care

Secondary care is provided in hospital outpatient clinics or in secondary care health centres (Jesse 2004). Secondary care diabetes team ideally consists of an endocrinologist or specialist in internal medicine, diabetes nurses, a dietician and a podiatrist, but their availability differs across the country (interview 4; Kaarna 2005). Diabetes nurses give health education and dietetic advice, and train health staff (interview 4). The Ministry of

Social Affairs planned to have by 2005 27 trained endocrinologists, i.e. about 1 per 50 000 inhabitants (Minister of Social Affairs 2001). The country has only three services providing diabetes foot care (Kaarna 2005).

Training

There is a specific postgraduate training for diabetes nurses (interview 2, 3, 4). Practice nurses can also follow specific courses in diabetes organised by the medical schools (interview 2, 3).

4.2.3 Process

68% of the patients are registered with a GP (Lember 2002). Access to secondary care is only possible through the GP, except for specialties as ophthalmology gynaecology, psychiatry and dentistry. The GP treats all type 2 diabetes patients (on insulin or not, with or without complications) and refers when needed on an ad hoc basis (interview 2, 3).

GPs usually have a diabetes register. Keeping a regularly updated diabetes register will become one of the criteria for quality-based payments as from 2006. There are no data to what extent these registers are used for call/recall systems. GPs usually don't organise specific diabetes clinics (interview 2, 3).

There are no formal shared care protocols in place (interview 2, 3, 4).

The GPs complain of a lack of educational services for the diabetes patients (Kaarna 2005).

4.2.4 Outcome

There are no data available on the outcome of diabetes care (interview 2, 3, 4).

Quality assurance

In 2006 GPs will be able to join on a voluntary basis a quality-based payment system, which includes indicators for diabetes care (interview 2, 3).

There is no mandatory certification system for physicians in Estonia. But the medical associations have to perform every 5 years a competency assessment of all physicians, based on their work experience and efficiency and the continuing medical education they followed. A volume of 300 hours of continuing medical education over 5 years is suggested. Similar certification systems are in place for nurses (Kaarna 2005).

Both hospitals and general practices seem to hold regularly audits of the health system and inquiries into patient's satisfaction, also in the field of diabetes care. There are no official regulations governing these activities (interview 2, 3, 4; Kaarna 2005).

4.3 Conclusions

Since regaining independence in 1991, the Estonian health system has undergone a major shift from a system funded by the state budget to one funded through social health insurance contributions to the Estonian Health Insurance Fund (EHIF). The number of hospital beds has been strongly reduced. The system of polyclinics has been replaced by a primary health care system based on: 1) the development of general practice as a specific

medical specialty; 2) GP's working as private entrepreneurs; 3) patients' listing with a GP; and 4) a gatekeeper function for the GP (Jesse 2004).

The yearly health expenditure per capita is 574 USD, which is far below the expenditure of any other country in this study. Nevertheless, the EHIF offers a comprehensive package for diabetes patients (Kaarna 2005; interview Estonia 2, 3), which is comparable with that of the other countries in this study. But private practice, not covered by the EHIF, is fairly common. A relatively large proportion of patients (6%) is not covered by any health insurance (Jesse 2004).

Most type 2 diabetes patients are taken care of in general practice. General practice is well structured. The general practice team consists of one or more GP's, administrative staff and often one or more practice nurses. GP's have access to podiatric services (in private or in hospital), but hardly to dietetic services. Most general practices use electronic medical records and have diabetes registers. They can get support of a diabetes nurse who provides health education (interview Estonia 2, 3).

Secondary care is provided in secondary care health centres or hospital outpatient clinics. In secondary care an endocrinologist or a specialist in internal medicine, a diabetes nurse, a podiatrist and a dietician are ideally available, though the situation differs across the country (interview Estonia 4).

The general organisation of the health care (with a gatekeeper role for the GP) guarantees clear lines of referral, but there are so far no formal shared care protocols for diabetes care in place (interview Estonia 2, 3, 4).

Though there are no official regulations on quality assurance in diabetes care so far, both general practices and hospitals seem to organise regularly audits of clinical practice, health care organisation and patient satisfaction, also in the field of diabetes care (Kaarna 2005; interview Estonia 2, 3). In 2006 GP's will be able to join on a voluntary basis a quality-based payment system, which includes indicators for diabetes care (interview Estonia 2, 3).

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Interviewed persons

2. Ruth Kalda, Professor in Family Medicine, University of Tartu
3. Anneli Rätsep, Assistant at the Department of Family Medicine, University of Tartu
4. Margus Lember, Professor in Internal Medicine, Head of department, University of Tartu

5 France

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5.1 Overview of the Health Care System

5.1.1 Introduction

France is a republic with 59 million inhabitants of main land France and 1.7 million overseas in 2001.

In 2000, life expectancy for women was 82.7 years, while men are expected to live 75.2 years. (WHO, 2004)

5.1.2 Organizational structure of the health care system

Management of the health care system

The health care system is regulated by the state – the National Assembly, the government and ministries – and the statutory health insurance funds.

Since 1996, at the national level, the National Assembly pass every year a law “Acts on Social Security Funding”, which set the national ceiling for health insurance spending, approve a report on health and social security trends and amend benefits and regulations.

The Ministry of Health has recently been reorganized, with directorates responsible for health policy, hospital and health care, social security and financial matters and social policy.

At the regional levels, the Ministry also has directorates of health and social affairs, most importantly the regional hospital agencies, the regional unions of the health insurance funds and the regional unions of self-employed doctors.

The French health care system is gradually becoming more decentralized to the regional level. At the same time, there has been a shift in power from the health insurance funds to the state.

Coverage

The public health system provides coverage to all residents (100%). The general scheme covers about 84% of the population (employees in commerce and industry and their families). The agricultural scheme covers 7.2% of the population (farmers and their families). The scheme for self-employed people covers 5% of the population.

Privates insurance covers 86% of the population (mostly for dental care and optical expenditure)

(WHO, 2004)

Diabetes patients are covered as follows (Sandier 2004, interview 1, 2, 3, 5)):

- Diabetes is one of 30 diseases that ensure fully exemption of drug costs.
- Dietetic services are not covered, except in the context of the diabetes care networks (see below).
- For podiatric services about 10% of the consultation fee is reimbursed. In diabetes care networks podiatric services are fully reimbursed.
- Glucometer and test strips are for free.

5.1.3 Financing and expenditure of the Health Care System

Table 1. Health expenditure in France in 2001

Health expenditure per capita (USD PPP)	2567 USD
Health expenditure as % of GDP	9.6%

Sources: Financement du système de santé en France (WHO, 2004)

Table 2. Health financing in France in 2002

	% of total health expenditure
Public health expenditure	76.7
Social security (taxes on salary)	39.8
General Social Contribution (taxes on total income rather salary)	27.6
Other taxes and revenues	9.2
Private insurance	11.7
Out-of-pocket payments	10.6

Sources: Comptes nationaux de la santé (DREES, 2002)

The total cost of diabetes care is estimated to 4.9 milliard €, representing 4.7% of the total health expenditure. The yearly cost for one Type 2 diabetes patient is estimated to 3780€. (Ricordeau, Weill, 2000).

The CODE-2 study estimated the direct cost of diabetes care at 3064€ per patient per year. Hospital costs amounted to 1540€, ambulatory care costs to 683€ and drug costs to 840€ per patient per year (Jönsson 2002).

5.2 Organization of diabetes care

5.2.1 Overview of the diabetes care organization

General organization

Follow-up care was mainly provided by general practitioners. In 1998, only 5.5 % of the patients consulted an endocrinologist (Weill, 2000).

National Policy

The French policy for 2002-2005 includes the diabetes prevention (nutritional policy), detection, and patient education and evidence-based interventions.

One of the initiatives of the Health Ministry to improve the care organisation is the “care networks”. These networks enable collaboration between primary care and secondary care, between general practitioners and other health professionals (diabetologists and other specialists in internal medicine, dieticians, chiropractors, nurses and ophthalmologists)

The network of care provide care protocols in order to improve health care with a more rational recourse to heavy treatments and hospitalisation, incitement to the use of treatments as dietetics and physical activity and a better detection of the complications.

The network is centred on the binomial doctor-patient around whose various actors revolve. The follow-up of the patients is done through a monitoring sheet.

Since 2000, 63 networks of care have been constituted around the type 2 diabetic patient in 20 areas. They gather more than 5000 health professionals and nearly 10000 diabetic patients, and are co-ordinated by the national association of co-ordination of the networks diabetes (Ancred). (BEH, 2003)

Guidelines

The National Agency of Accreditation and Health Evaluation (ANAES) has published guidelines about the follow up of type 2 diabetic patients to the exclusion of complication follow up.

[http://www.anaes.fr/anaesubpublications.nsf/nPDFFile/RA_ASSI-57JELJ/\\$File/diabete_99_rap.pdf?OpenElement](http://www.anaes.fr/anaesubpublications.nsf/nPDFFile/RA_ASSI-57JELJ/$File/diabete_99_rap.pdf?OpenElement)

The French agency of health products security (AFSSAPS) has published good clinical practice recommendations about type 2 diabetes drugs. <http://afssaps.sante.fr/pdf/5/rbp/5540.pdf>

Population

The prevalence of treated type 1 diabetes and type 2 is about 3.1% (Ricordeau, 2000). This result was calculated thanks to drugs repayment data. There is no national diabetes register.

The French Diabetics Association (AFD) is a patient association with 30.000 members which plays a role in diabetes prevention, support diabetes research and policy making. <http://www.afd.asso.fr/>

5.2.2 Structure and process

Primary care

General practitioners are the pivotal structure in the primary care. GP provide the follow-up care to more than 94.5 % of the diabetic patients (Weill, 2000). 38% of all ambulant physicians (both GP's and specialists) work in group practices (Sandier 2004). GP's sometimes employ administrative personnel - mostly in group practices - but rarely any other staff (interview 1, 2, 3, 5).

Secondary care

In 2001, 27.5% of the treated diabetic patients were hospitalized:

- 17.9% of the hospital stays are carried out in hospital of day (assessment of the diabetes, education of the patient),
- 17.1 % of the stays are hospitalizations in nephrology or for dialysis,
- 6.5% of the stays are hospitalizations in diabetology, endocrinology or nutrition.

(Scaturro, 2003)

5.2.3 Outcome

Outcome of diabetes care

A national study was performed in 2001-2003. The Entred study is a national representative sample of diabetic people (10.000 adults)

These study aims at characterizing, evaluating and monitoring the health status of people treated for diabetes, as well as the quality of care they received.

In 2001, respectively 66 %, 72 % and 16 % of people with diabetes benefited from at least one lipid measurement, one blood creatinine measurement and one urine albumin measurement, as recommended by ANAES. HbA1c measurement is recommended every 3 or 4 months, but only 30 % of people with diabetes benefit from it 3 times a year, whereas it should replace venous glucose measurement (44 % of people with diabetes still benefit from at least one venous glucose measurement 3 times a year).

(Fagot-Campagna, 2003)

Quality assurance

The evaluation of medical practices has been gradually introduced since 2004. The regional medical associations are responsible for the evaluation. The content of the evaluation is still being developed, but diabetes should be an essential part of it (interview 1, 3).

The public health insurance has a specific budget for continuing medical education, which is managed by a joint committee with representatives of the public health insurance and the medical associations. Continuing medical education has recently become mandatory through a system of certification (interview 1).

5.3 Conclusions

The health care system is regulated by the Ministry of Health and the statutory health insurance funds. At the regional levels, the Ministry has directorates of health and social affairs, most importantly the regional hospital agencies, the regional unions of the health insurance funds and the regional medical associations. The health care system is gradually becoming more decentralised to the regional level. At the same time, there has been a shift of power from the health insurance funds to the state.

Health care is financed through both social contributions and general taxes. It covers all French residents. Diabetes patients and other chronically ill don't pay for consultation and drugs. Material for self-control (glucometer, test strips) is also for free. There is hardly any reimbursement for podiatric and dietetic services, except in the context of care networks (see below). There is need for more re-imbursements for health education, dietetic and podiatric services (interview France 1).

Physicians in ambulatory care are mainly paid on a fee-for-service basis. General practitioners are the pivotal structure in the primary care. General practice is poorly structured. Most GP's work in solo practices without any administrative support. They provide follow-up care to more than 94.5 % of the diabetic patients (Weill, 2000). Secondary care is provided in secondary care health centres or hospital outpatient clinics by an endocrinologist or a specialist in internal medicine, a diabetes nurse, a podiatrist and a dietician. Experts complained about the lack of co-ordination of diabetes care (interview France 1, 2), the professional isolation of some physicians and their "allergy" for any type of quality control (interview France 1).

One of the initiatives of the Health Ministry to improve the organisation of chronic care is the "care networks". These networks are welcomed as initiatives that enhance structured care and collaboration between health professionals (interview France 2). But only 2 % of the diabetes patients are part of such a network (Bulletin Épidémiologique Hebdomadaire 2003).

Much is expected of the introduction of a mandatory procedure of quality assurance for diabetes care which has to be implemented in the near future (interview France 1).

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Interviewed persons:

1. Mr. Michel Varroud-Vial, Association National Co-ordination Réseaux Diabète (ANCRED)
2. Prof. Dr. Gwénola Levasseur, Department of Family Medicine, University of Rennes
3. Dr Sylvie Aulanier, president of the diabetes network Le Havre
5. Dr. Anne Fagot-Campagna, Institute for Health Surveillance, Diabetes Programme

6 Germany

6.1 *Overview of the health system*

All information in this section is retrieved from "Health Care Systems in Transition: Germany" (Busse 2004a)

6.1.1 Introduction

Germany is a federal republic with 82.5 million inhabitants, consisting of 16 states (Länder). In 2002 Germany had a Gross Domestic Product (GDP) per capita of 24 101 USD. The average life expectancy was 75.4 years for men and 81.2 years for women (OECD 2005).

6.1.2 Organisational structure of the health system

Management of the health care system

The federal government and the Länder provide a legislative framework in which a large number of sickness funds (292) and private insurance companies operate. Issues of equity and comprehensiveness and the rules for the planning and financing of health services is regulated at federal level. The Länder are responsible for supervision of health services, hospital planning, health education and promotion.

The Federal Joint Committee (Gemeinsamer Bundesausschuss) is the body responsible for the actual health care management within the main health insurance system, the Statutory Health Insurance (SHI). Its members are: (representatives of) the sickness funds, the Federal Association for SHI Physicians and Dentists, the German Hospital Association and the patients' organisations (the latter without a voting right). Government and parliament at federal and Länder level are not directly involved in the decision-making process within the Federal Joint Committee.

The sickness funds carry out their tasks under government supervision, but they are organisationally and financially independent. In each region all sickness funds negotiate as a group with the regional physicians associations and the hospitals about the health care contracts. The regional sickness funds and physicians associations also control the execution of these contracts themselves, while the Länder and the federal government have only a general supervisory role.

Most hospitals are public or private non-profit. Since the reunification the proportion of private for-profit hospitals has risen to 8.3% by take-over of public hospitals, mainly in the eastern part of the country. As most private for-profit hospitals also treat SHI patients, they are bound by the SHI regulations.

Self-regulation is a typical element of the German health system. The federal government has assumed increasing responsibility in health sector reform through legislation since the 1980's, but the independence of the actors within the SHI has remained largely intact.

In recent years the SHI has gone through some basic reforms, which also have an important impact on chronic disease management:

- Previously in- and out-patient care were strictly separated. The physicians' associations have a monopoly on ambulatory care: their membership is mandatory for (SHI-accredited) ambulant physicians, and ambulant care has to be provided in line with the contracts negotiated between the physicians' associations and the sickness funds (Busse 2004b). Most ambulant physicians were not allowed to work in the hospital and vice versa. Since the 1990's the hospitals got more opportunities to organize polyclinics, but only for highly specialised care.
- The Reform of SHI Act of 2000 also introduced integrated care contracts. Under these contracts health professionals of different sectors provide care within a single budget in medical care centres (Medizinische Versorgungszentren). The medical care centres can be staffed by both ambulatory and hospital doctors and any other SHI-accredited health professional. The tedious negotiations between physicians' associations and sickness funds delayed the implementation. The SHI Modernization Act of 2003 gave the sickness funds the right to spend 1% of their expenditure on integrated care programmes (and deduct it from the budget for ambulatory physicians). The act also removed some requirements for integrated care contracts, to facilitate implementation. This legal framework can be used to organise e.g. a diabetes foot clinic (interview 4).
- Traditionally people had no choice of sickness fund; they were assigned to the appropriate fund on geographical and job characteristics. Sickness funds collected the SHI contributions directly from their members. This led to big variations in contribution rates because of members' different income and risk profiles. Since 1996 people can choose a sickness fund freely. A risk structure compensation scheme had to redistribute the contributions between the sickness funds on basis of the age and sex profile of their members. However the free choice still led to risk selection: healthier people tended to change sickness fund more easily, choosing for funds with lower contribution rates. The government responded to this by introducing the Disease Management Programme (DMP) in 2002 (Busse 2004b).

- The introduction of the DMP had a double objective: 1) avoiding risk selection by the sickness funds; and 2) improving the quality of chronic disease management. Sickness funds receive for people who fall under the DMP an extra budget, making chronically ill members more attractive. The DMP aims to improve the quality of care by establishing guidelines for clinical management, quality assurance, training of providers and patients, documentation and evaluation. The Federal Joint Committee sets minimum standards per disease. On the basis of these standards the regional sickness funds and the regional physicians' associations have to negotiate a DMP package. Chronically ill people are free to join the DMP (Busse 2004b). Sickness funds can give financial incentives to people who join a DMP. By mid 2005 1 200 000 patients had joined the DMP for type 2 diabetes, representing about 25% of all known diabetes patient (interview 4). Each regional sickness fund has to submit a separate DMP. These DMP's all offer the same basic package; they usually only differ in the extra benefits each sickness funds offers (interview 2).

As a result of the policy changes in the past few years, two different programmes are designed to enhance shared care: the integrated care programme and the DMP programme. The integrated care programme differs from the DMP programme in the sense that there are no minimum requirements regarding the care provided and that there is no extra risk compensation for the sickness funds. In integrated care programmes sickness funds can even decide not to focus on a specific condition and initiate e.g. programmes to increase co-operation in general between different providers (Schreyögg 2005).

Coverage of the health insurance

The SHI covers 88% of the population and is mandatory for retired people, unemployed and every employee with a monthly income below 3825€. 10% of the population is privately insured (including 4% of civil servants). 2% is covered by sector-specific schemes (military, police, asylum-seekers, etc.). 0.2% is uninsured. Civil servants have a separate insurance scheme in which the government reimburses 50% of their private health care costs. Therefore many civil servants opt for a private insurance to cover the remaining 50%.

The SHI pays for a comprehensive health care package, including ambulatory and hospital care, dental care, physiotherapy, nursing care and pharmaceuticals, through a third-party payer system. Patients pay for:

- drugs: minimum 5 and maximum 10 per prescription
- ambulatory physician and dental care: 10 for first visit every three months
- physiotherapy and nursing: 10% of the costs + 10 per prescription
- hospital stay: 10 per day

Contributions of the patients are ceiled at 2% of the household income (and 1% for chronic diseases). For diabetes patients dietetic and podiatric consults are for free. Only patients on insulin get the glucometer and test strips for free (interview 2).

Private health insurance companies are obliged to offer at least the same care package as the SHI. Three groups of people can choose for private health insurance:

- self-employed people
- employees with an income above 3825
- civil servants who want to complement their specific insurance scheme.

There is also a relatively small market of supplementary private health insurance for services that are not or only partially reimbursed by the SHI. The importance of supplementary private health insurance has risen in recent years, though remains relatively limited.

Since 1995 all members of the sickness funds and all people covered by private health insurances have to make mandatory contributions to a statutory long-term care insurance. This insurance offers a monthly benefit of up to 665€ for home care and 1432€ for institutionalised care.

Human Resources

The German health system has 1.1 GP's, 2.3 practising specialists and 9.6 nurses per 1000 people (OECD 2005). Ambulant paediatricians and specialists in internal medicine can register as GP's (Busse 2004a). Paediatricians registered as GP treat only children, but specialists in internal medicine who are registered as GP, are assumed to take up the usual role of a GP (interview 2). From 2006 specialists in internal medicine will no longer be able to register as a GP (interview 3).

Health professionals working in health institutions are salaried. Physicians in ambulatory care are basically paid on a fee-for-service basis by the regional physicians' associations, with the total budget being capped at regional level. The sickness funds pay the regional physicians' association a capitation fee per insured member. The physicians' associations determine the fee for each service paid to the physician on basis of: 1) the relative value of the service, as determined by the federal Valuation Committee; 2) the total amount of services delivered by all members of the association (Busse 2004a). In recent reforms the numbers of different fees has been drastically reduced: e.g. GP's can charge only about 10 different fees (interview 2).

6.1.3 Financing and expenditure

For the main characteristics see table 1. Social security schemes comprise mainly the SHI, but also the statutory long-term care insurance and the statutory accident insurance. The sickness funds are financed through the SHI contributions of their members. The care package required by the SHI represents 90% of the expenditure by the sickness funds. The remaining 10% goes to administrative costs and fund-specific care benefits.

Table 1. Health financing and expenditure in Germany in 2002.

Health expenditure per capita (USD PPP)

2637

Health expenditure as % of GDP	10.9
<u>Public health expenditure (% of total health expenditure)</u>	75.2%
Taxes (% of total health expenditure)	7.8%
Social security schemes (% of total health expenditure)	67.3%
<u>Private health expenditure (% of total health expenditure)</u>	24.7%
Private insurance schemes (% of total health expenditure)	8.4%
Out-of-pocket payments and NGO's (% of total health expenditure)	12.2%
Employers (% of total health expenditure)	4.1%

Source: Health Systems in Transition: Germany (Busse 2004a), except health expenditure per capita and as % of GDP: OECD Health Data (OECD 2005)

The CODE 2 study estimated the yearly cost for one type 2 diabetes patient at 3576 €. With a diabetes prevalence of 4.2 to 7% (see below), the total cost for diabetes care is about 12 to 20 billion €, representing 5 to 9% of the total health expenditure for 2002. The cost for hospital care was 2173 €, for ambulatory care 388 € and for drugs 1015 € per patient per year (Jönsson 2002). 25% of the patients were recruited from diabetes outpatient clinics, which is highly overrepresented compared to the total diabetes population (interview 4).

6.2 Organisation of diabetes care

6.2.1 Overview of the diabetes care organisation

General organisation

The GP takes care of 80 - 90% of the type 2 diabetes patients. The remaining 10 - 20% percent of type 2 diabetes patients and most type 1 diabetes patients are seen in specific outpatient diabetes clinics (Diabetes Schwerpunktpraxen) or, to a lesser extent, in the hospital clinics (Krankenhausambulanzen) (Deutsche Diabetes-Union 2004).

Before 2003 some Länder experimented with shared care protocols for diabetes care. These experiments served as models for the DMP for type 2 diabetes. By mid 2005 about 25% of the diabetes patients countrywide had entered the programme (interview 4).

National policy

With the introduction of the DMP the national government clearly made an effort to get more direct influence on the health care delivery. However the requirements for the DMP as formulated by the Federal Joint Committee still leave space for local variation in implementation (Gemeinsamer Bundesausschuss 2002). The main points of the DMP for Type 2 diabetes are (Deutsche Diabetes-Union 2004):

- The DMP is a contract between the patient and the physician, emphasizing the role of the patient in the management of his/her disease.
- Hospitals, diabetes clinics and GP's have to apply to participate in the programme. About half of all GP's have applied (interview 4). Physicians get a small incentive for patients who enter the DMP programme (interview 3, 4).
- Diabetes should be managed on (explicitly mentioned) evidence-based guidelines.
- The GP is the co-ordinating person for most Type 2 diabetes patients.
- The DMP clarifies the role of the GP and the specialist, with, amongst others, criteria for referral to secondary care and admission in hospital.
- Each diabetes patient has access to a structured health education programme.
- The GP has to document his/her management. Each GP should get an individualised feed-back from the sickness fund. This feed-back is not linked to financial incentives.

So far the effect of the DMP for type 2 diabetes has not yet been extensively evaluated. A DMP for type 1 diabetes is also planned.

Guidelines

The (Ärztesschaft zur Qualitätssicherung, ÄZQ) is an institute that several physicians associations including the German Diabetes Association or Deutsche Diabetes-Gesellschaft (DDG), have written a national guideline for type 2 diabetes (NVL Programm 2002). GP's have criticised the guideline, especially the criteria for referral, as these would be too much directed to secondary care (interview 2, 3). Presently the ÄZQ works on a new version.

The DDG on its own has written more detailed guidelines for both type 1 and type 2 diabetes (www.deutsche-diabetes-gesellschaft.de).

Diabetes patients

Germany seems to have a high diabetes prevalence. The Statistical Office set the prevalence of known diabetes on 4.2% (Statistisches Bundesamt 1998), but prevalence might have risen since then to an estimated 7% (Deutsche Diabetes-Union 2004). About 90% are type 2 diabetes patients (Deutsche Diabetes-Union 2004). In a population based survey the prevalence of known diabetes in the age group 55 – 74 years was 8.7%; another 8.2% had unknown diabetes (Rathmann 2003).

There is no national diabetes register, and at local level they are usually neither in place.

The Deutscher Diabetes Bund (DDB) is the most important diabetes patients' association with 40 000 members (see www.diabetikerbund.be). The Bund Diabetischer Kinder und Jugendlicher (BDKJ) unites 6000 children and adolescents with diabetes (see www.bund-diabetischer-kinder.de). They provide information and training for diabetes patients. They are part of the umbrella organisation Deutsche Diabetes-Union (DDU), which groups patients' and professional associations. Through the DDU the patients' organisations participate in the policy making process (Deutsche Diabetes-Union 2004).

6.2.2 Structure

The diabetes care is organised on three levels:

- GP's (and as GP registered specialists in internal medicine). Most GP's work in solo practices. They have about two full-time administrative employees per GP, paid from the GP's income. These administrative staff also received a basic medical training (1 hour per week during two years), enabling them to do minor acts as taking blood specimens or ECG's, putting plasters. GP's can contact dieticians or podiatrist in primary care without passing through a (secondary care) diabetes clinic (interview 2). They don't have direct access to a diabetes adviser (see below). All GP's use an electronic medical record for administrative purposes, but only about 60% for clinical purposes e.g. episode documentation (interview 3).
- The diabetes outpatient clinics and hospital clinics are typically staffed by a DDG trained diabetologist, diabetes advisers (Diabetesberaterinnen) and diabetes assistants (Diabetesassistentinnen). Clinics can be recognized by the DDG. The DDG requirements are: 1) the team consists of a DDG trained diabetologist, a diabetes adviser, a diabetes assistant and a podiatrist; 2) the clinic should organise structured health education programmes; 3) regular measurement of quality indicators (Deutsche Diabetes Gesellschaft 2004). At present about 300 out of 1100 diabetes outpatient clinics fulfil the DDG criteria for type 2 diabetes and 160 for type 1 diabetes. The DDG is also formulating quality standards for diabetes foot clinics (Deutsche Diabetes-Union 2004). The DMP for diabetes also sets criteria for a DMP klinik, but they are less strict than the DDG criteria e.g. one diabetes adviser *or* diabetes assistant is sufficient (Siering 2004).
- At hospital level there is usually a diabetologist, a diabetes adviser, a structured health education programme, a diabetes foot clinic, etc. (Deutsche Diabetes-Union 2004). The DMP criteria for a hospital service require – among others - at least two diabetologists, one diabetes adviser and one diabetes assistant (Siering 2004).

Training

Specialists (including GP's) have a four to six years postgraduate vocational training. The GP's postgraduate training takes 4-6 years and usually includes 2-3 years of training in internal medicine (interview 2).

GP's, paediatricians and specialists in internal medicine can follow a two-years training at the DDG for the now official title of DDG diabetologist. This training includes two years practice at a diabetes clinic, a theoretical training (80 hours) and a training in communication and didactics (40 hours). 3000 doctors have followed this training, of which about 1100 work in outpatient diabetes clinics. Many, but not all endocrinologists have followed this training (Deutsche Diabetes-Union 2004).

Diabetes advisers are nurses, dieticians or diabetes assistants who followed a one year training organised by the DDG. So far about 1000 of them have been trained. Only in one Land they are officially recognised. They are mainly involved in health education (Deutsche Diabetes-Union 2004).

Diabetes assistants are practice assistants, nurses, dieticians etc. who have followed 184 hours of training at the DDG. 2000 diabetes assistants have been trained. They provide health education in both outpatient diabetes clinics and general practice (Deutsche Diabetes-Union 2004).

6.2.3 Process

The majority of type 2 diabetes patients are followed up by the GP (Deutsche Diabetes-Union 2004). GP's usually start patient on insulin themselves and only refer to a diabetes clinic in case of complications (personal communication). Most type 1 patients are seen at the diabetes clinic (Deutsche Diabetes-Union 2004).

Since 2005 GP's have a limited gatekeeping function. Patients can bypass the GP to consult a specialist, but then they have to pay an extra 10€ to the sickness fund. Though there is no formal registration of patients: the first GP a patient consults in a term, is the GP who can refer him to a specialist (interview 2). Besides this system of gatekeeping, sickness funds often give their members a bonus if they access a specialist via their GP (Busse 2004a). Diabetes registers and call/recall systems are usually not in place yet (interview 3).

Specific outpatient diabetes clinics are common in secondary care (Diabetes Schwerpunktpraxen), but not in primary care (interview 3).

The DMP encompasses a protocol for shared care, defining the role of the GP and the specialist and the criteria for referral. The specialists see referred patients and take up routine care for complicated cases, but they don't give direct support to primary care (Gemeinsamer Bundesausschuss 2005). A physician has the freedom to ignore the referral guidelines in the DMP, but he should document this as an exception and give reasons why (interview 2).

As from 2006 an electronic health card will be introduced. This card will be used for administrative purposes and for prescriptions. The card can also store medical information, but the card holders will be free to choose whether they use this feature (see www.bit4health.de).

Already in the 1990's several structured health education programmes were developed for type 2 diabetes patients. These education programmes are organised by the outpatient diabetes clinics, the sickness funds and some of the GP's. More than half of all diabetes patients is estimated to have followed at least once such an education programme (interview 2). In Nordrhein 56.4% had followed an educational programme before entrance in the DMP (Siering 2004), though this group of patients might not be representative for all diabetes

patients. Within the DMP each patient should have access to a structured health education programme (Gemeinsamer Bundesausschuss 2005).

6.2.4 Outcome

Outcome of diabetes care

We didn't find nationwide data on the outcome of diabetes care. Nordrhein published data on a group of about 189 000 patients that have been in the DMP for at least 6 months (Siering 2004). Data collection was done in August 2004, i.e. 12 months after the start of the programme. See table 3 for results. The impact on the outcome indicators is very limited. 16.8% of the patients followed a group-based health education programme after entering the DMP. 39.5% of the patients had had a fundoscopia since entering the DMP. The DMP was not yet long enough implemented to assess whether the target of 70% coverage for retinopathy screening on yearly basis would be reached. As this report only includes patients in the DMP, these results cannot be generalised to all diabetes patients.

Table 3. Change of process and outcome indicators for patients in Nordrhein who participated to the DMP for diabetes for at least 6 months.

	Before DMP	After at least 6 months DMP
HbA1c < 6.5%	45.1%	44.0%
HbA1c > 7.5%	22.6%	22.5%
Blood pressure < 130/85 mmHg	21.8%	22.7%
Blood pressure < 160/100 mmHg	86.6%	89%
Participated in group-based education at least once in a lifetime	56.4%	73.2%
Fundoscopy in past half year	No data	39.5%

Source: Quality Monitoring Report 2004: Disease Management Programme Nordrhein (Siering 2004).

Quality assurance

An individualised feed-back to physicians about their clinical management is part of the DMP for type 2 diabetes, but this feed-back is not linked to financial incentives. A recent document set standards for quality monitoring within the DMP. All patients who entered the DMP programme within a 6 months period and treated by the same caregiver will form a cohort that will be followed up longitudinally. An extensive list of

indicators is measured concerning BMI, smoking status, HbA1c, blood pressure, creatinine, use of medication, health education, the occurrence of retinopathy, nephropathy, myocardial infarction and CVA (Gemeinsamer Bundesausschuss 2005).

Audits for diabetes care are not common.

Quality circles for GP's exist since 1994. However not all of them function well. Quality circles focusing on pharmacotherapy are more effective (interview 2, 3).

Since 2004 a mandatory certification system is in place for all health personnel. They should collect a number of educational points over a period of five years. In the case of SHI-affiliated physicians, failing the target may lead to a reduction of reimbursement (Busse 2004a). The general feeling is that this target can easily be reached (interview 2). The Medical Chambers have to approve the educational activities that can be considered for certification. Company-based activities are less and less approved (interview 4).

Physicians inscribed in the DMP programme for diabetes have to follow 6 hours of refresher courses on diabetes care (interview 2).

6.2.5 Strengths and weaknesses

The content of this section is derived from the experts' interviews.

All experts positively appreciated the basic structure of the diabetes care: the hospitals and diabetes clinics offer good quality care (interview 3, 4); the referral system works well – though the criteria might be too strict (interview 3); the GP's are well trained – especially in internal medicine (interview 2). The endocrinologist also mentioned as a strength the fact that the GP works as a real family doctor, taking full responsibility of his/her patient (interview 4).

All experts think the DMP programme will improve diabetes care (interview 2, 3, 4). Its impact is mainly on general practice, as in the hospitals and diabetes outpatient clinics the care was already well structured before the DMP (interview 4). The DMP should improve the care process by introducing elements of chronic disease management as e.g. structured care, clear division of responsibilities between health workers, setting standards, quality monitoring (interview 2, 3).

GP's often complain about the DMP (interview 2, 3). The financial incentive is small (interview 3, 4). The documentation creates a heavy burden (interview 2, 3, 4).

Quality monitoring seems to be a weak element of the DMP (interview 3, 4). Sickness funds are supposed to use the data from the physicians to draft individualised feed-back reports. The data are usually collected by non-medical personnel; their content is not validated (interview 4). In many Länder the sickness funds don't manage to compile on basis of these data meaningful individual reports (interview 3). This strengthens the feeling among GP's that the documentation is a loss of time (interview 3). One expert suggested that the data should stay at practice level, so that the physicians can use them themselves for quality monitoring (interview 3).

One expert pointed out that the main reason to develop the DMP was the problem of risk selection (interview 3). This creates a conflict of interest between the physicians who see the programme as a tool for quality

improvement and the sickness funds who are mainly interested in the risk adjustment mechanism within the DMP (interview 3). Most sickness funds put pressure on their members to participate in a DMP, even when physicians feel there is no need for the patient to enter the programme (interview 4).

The health system is weak in providing integrated care for the diabetes patient with co-morbidities (interview 3, 4). When a diabetes patient with e.g. cardiac failure attends a cardiac clinic, his diabetes won't get enough attention (interview 4). This could be solved by integrated care programmes, though these are only locally organised (interview 4). One expert expressed the need for a multi-morbidity DMP that structures the integrated approach to patients with several morbidities (interview 3).

6.2.6 Expected changes in the future

The content of this section is derived from the experts' interviews.

Diabetes care will become more integrated in the overall health care (interview 4).

Nurses will take more responsibilities in diabetes care (interview 4).

Doctors will get more training in diabetes care (interview 4).

In 2006 an electronic health card will be introduced (see also above). Its impact is not yet clear (interview 3).

6.3 *Conclusions*

Germany has a contribution-based health care system, characterised by a high degree of self-regulation by the health care providers and the sickness funds. Mixed committees of sickness funds and physicians' associations at Länder level are mostly responsible for the implementation of the national policy: they negotiate the contracts and also control the execution of these contracts (Busse 2004a).

GP's usually work in solo practices, with the support of one or two practice assistants. Since January 2005 they have a limited gatekeeper function (interview Germany 2). Use of diabetes registers, call/recall systems and specific diabetes clinics are rare in general practice. The GP's treat the overall majority of type 2 diabetes patients. Secondary care is provided in outpatient diabetes clinics and the hospitals. The outpatient diabetes clinics are typically staffed by a diabetologist, a diabetes adviser and a diabetes assistant (Deutsche Diabetes-Union 2004).

Typical for the self-regulatory model is the strong involvement of the German Diabetes Association (Deutsche Diabetes Gesellschaft, DDG), a physicians' organisation, in postgraduate education and quality assurance. Diabetologists, diabetes advisers and diabetes assistants are mostly DDG trained. The DDG sets standards for a DDG certificate for outpatient diabetes clinics and diabetes foot clinics. The DDG has also written clinical guidelines (Deutsche Diabetes-Union 2004).

The introduction of the disease management programme (DMP) for type 2 diabetes in 2004 thoroughly changed the outlook of diabetes care, especially in primary care. By mid 2005 about 25% of all diabetes patients had entered the DMP. A DMP for type 1 diabetes has been planned.

The DMP encompasses evidence-based treatment guidelines and a shared care protocol, defining the role of the GP and the specialist and the referral criteria. The physicians have to document their clinical practice for each individual patient. Sickness funds receive financial incentives when patients enter a DMP (Busse 2004b). As a result most sickness funds strongly propagate the DMP. The physicians also receive an incentive, but this one is relatively small and doesn't compensate for the extra work load due to the DMP (interview Germany 3, 4).

Quality monitoring is a weak point of the DMP (interview Germany 3, 4). Sickness funds are supposed to use the data from the physicians to draft individualised feed-back reports. The data are usually collected by non-medical personnel; their content is not validated (interview Germany 4). In many Länder the sickness funds don't manage to compile meaningful individual reports on basis of these data (interview Germany 3). This strengthens the feeling among physicians that the documentation is a loss of time (interview Germany 3).

Before the DMP was introduced, several Länder had already experience with similar programmes, yielding good results. The expectations towards the impact of the DMP on diabetes care are high (interview Germany 2). But the first data in Nordrhein, don't show many changes in the quality indicators, except for the participation to group-based health education (Siering 2004).

While it is still too early to draw conclusions on the effect of the DMP at a national level, the DMP has clearly caused a new dynamic in chronic disease management in Germany. However, it remains doubtful whether it will finally improve the quality of care, because: 1) it doesn't create much extra financial input for the health care delivery system; 2) it doesn't monitor well the quality of care; and 3) it doesn't link the quality of care to financial incentives.

A remarkable aspect of diabetes care in Germany is the widespread use of structured group-based educational programmes for diabetes patients. Outpatient diabetes clinics, sickness funds and some GP's organise these programmes. About half of all diabetes patients would have participated at least once to such a programme (interview Germany 2). Within a DMP, each patient should have access to a structured health education programme (Gemeinsamer Bundesausschuss 2005).

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7 The Netherlands

7.1 *Overview of the health system*

All information in this section is retrieved from “Health Care Systems in Transition: the Netherlands” (den Exter, 2004), unless indicated otherwise.

7.1.1 Introduction

The Netherlands has a population of 16.3 million and in 2002 a GDP per capita of 29 935 USD Purchasing Power Parity. Life expectancy at birth was in 2002 80.7 years for females and 76.0 years for males (OECD 2005).

7.1.2 Organisational structure of the health system

Management of the health care system

In the Netherlands, three parallel compartments of insurance exist:

- National health insurance for exceptional medical expenses (Algemene Wet Bijzondere Ziektekosten, AWBZ) which includes everybody. This insurance originally covered long-term care (e.g. long-term disability, psychiatric care) and expensive acute care, expenses which virtually no one is in a position to bear without support from the state or elsewhere. In the beginning of the 1990's the package under the AWBZ was gradually expanded, with the idea of basic scheme for everyone which would cover 85% of the health costs, but this idea was abandoned later on. Presently it comprises 43% of all health expenditure.
- A second compartment consists of two different regimes: one for compulsory health insurance with the sickness funds under a certain income - 32 600 in 2004 - (63% of the population), and another for private health insurance, mostly voluntary (35% of the population). This compartment encompasses 51% of the health expenditure. Under the latter scheme people are free to choose their health care provider, under the former scheme people can only seek care from health care providers contracted by their sickness fund.
- Supplementary health insurance with either a sickness fund or a private insurer (for e.g. dental care, spectacles, etc.), representing 3% of the total health expenditure.

On behalf of the Ministry of Health, the Health Care Insurance Board (College voor Zorgverzekeringen) controls the 22 sickness funds and the implementation of the Exceptional Medical Expenses Act. It also has an advisory role in disputes between insured people and the sickness funds. Since 2001 the Health Care Insurance Board has consisted of 9 independent representatives, appointed by the Minister of Health. Previously, representatives of employers, trade unions, health insurers, physicians and patient groups were all part of the board.

The Board for Health Care Tariffs, also made up of nine independent representatives appointed by the minister, provides the framework for tariff negotiations between health care insurers and health care providers. It sets maximum tariffs for health care services.

The sickness funds have to enter into contracts with institutional providers (hospitals) and eventually also with individual providers (GP's, specialists), though the latter is not obligatory. The contracts have to be drawn along the lines of the "consultation outcome", a document which has been negotiated between representatives of health insurers and health care providers at national level and has been approved by the Health Care Insurance Board. Previously hospitals have been paid by a combination of a fixed grant (based on the size of the hospital) and fees-for-service. As per 2005 the fees-for-service are being replaced by diagnosis-related groups financing.

Sickness funds are responsible for their expenditure. Over-expenditure has to be financed by increasing the contributions of the individual members. At present a part of the over-expenditure is still covered by the government and by a solidarity mechanism between the sickness funds, but this is should be phased out over the next years.

The private health insurers consist of commercial private non-profit and for-profit insurance organisations and private insurance organisations linked with sickness funds. They are supervised by the Pensions and Insurance

Supervisory Authority (Pensioen- en Verzekeringskamer), but this supervisory role doesn't extend to the implementation of the policy in individual cases. Disputes in individual cases can be taken before the civil courts.

By January 2006 the two regimes of sickness funds and private health insurers will be replaced by one health insurance scheme.

Coverage

The National Health Insurance for Exceptional Medical Expenses covers all Dutch residents or people receiving Dutch salaries. 63% of the population is insured with a sickness fund and 30% with a private insurance. 7% of the people are covered by specific schemes for civil servants, military personnel or prison inmates. Very few are not insured.

The insurance for exceptional expenses covers home care, psychiatric institutional care, rehabilitation, audiology and genetic testing.

The Sickness Fund Act (Ziekenfondswet) provides the statutory basis for the medical care to which people ensured with a sickness fund, are entitled. The package comprises – amongst others:

- Treatment by GP's, specialists, physiotherapists (up to 9 sessions per year) without co-payment.
- The coverage for dental care is limited to children and preventive care for adults, mostly without co-payment.
- Hospital care without co-payment (excluding psychiatric care). The sickness fund has to authorize the admission (on basis of the admission is reasonably indicated).
- Drugs are for free.
- Diabetes patients get dietetic services for free. Payments for podiatric services depend on the type of supplementary insurance. Patients on insulin or who are going to change to insulin in the near future, get a limited number of test strips for free. The number of test strips patients get depends on the type of treatment (interview 4).

Private health insurers, except those exempted from the obligation to offer standard cover, run a standard policy of which the content (coverage, level of benefits and co-payments) is regulated by legislation (Ministry of Public Health, Welfare and Sports, 2005).

By 2006 the package covered by the health insurance will be divided into a basic package of which every body will benefit and supplementary packages (Ministry of Public Health, Welfare and Sports, 2005). Podiatric services will no longer be part of the basic package (interview 2).

Human resources

The Netherlands have 0.5 GP's and 1.5 specialists per 1000 inhabitants (OECD 2005).

The majority of medical specialists are paid on a fee-for-service basis. University and municipal hospital specialists are always salaried. The fees for privately insured patients are usually higher than for patients insured with a sickness fund. To contain costs this fee-for-service system is combined with a mechanism of capping.

The hospital management negotiates service volumes with each specialty, resulting in a capped budget per specialty. Thereafter the hospital management negotiates overall service volumes with one representative of the sickness funds and one of the private insurers, in the presence of a representative of the medical specialists.

Up till now GP's were paid by a capitation fee per patient insured with a sickness funds, and on a fee-for-service basis for privately insured patients. The capitation fees are weighted for age and ethnicity. They can get extra financial incentives (for e.g. the use of an electronic medical record, starting patients on insulin) (interview 2). Some GP's are salaried. One uniform system which combines capitation fees and fees-for-service for all patients, will come into place as from 2006. The introduction of co-payments at primary care aims to encourage patients to take more responsibility for their own health and consult less often (Van Weel 2004).

7.1.3 Financing and expenditure of the health system

Table 1. Health financing in the Netherlands in 2002

<u>Public health expenditure (% of total health expenditure)</u>	80.0%
Taxes (% of total health expenditure)	5.6%
Social security schemes (% of total health expenditure)	74.5%
<u>Private health expenditure (% of total health expenditure)</u>	20.0%
Private insurance schemes (% of total health expenditure)	14.3%
Out-of-pocket payments (% of total health expenditure)	5.8%

Source: Health Systems in Transition: the Netherlands (den Exter 2004).

Table 2. Health expenditure in the Netherlands in 2002

Health expenditure per capita (USD PPP)	2775 USD
Health expenditure as % of GDP	9.3%

Source: OECD Health Data (OECD 2005).

Everybody has to contribute a percentage of his income to finance the AWBZ insurance (in 2004 13.25% up till a yearly income of about 30 000). Members of a sickness fund pay a flat rate plus an income-dependent contributions of 8% in 2004, up till a yearly income of about 30 000 . These contributions are made to a Central Fund and redistributed by the Health Care Insurance Board amongst the sickness funds, on basis of the characteristics of their members (age, gender, morbidity, region etc.). Private health insurers receive directly the contributions of their members.

When in 2006 the distinction between sickness funds and private insurers will disappear, the financing system will also change:

Everybody will have to contribute 6.25% of their income up till a maximum yearly income of 30 000 .

Every adult above 18 will have to pay a subscription fee of about 1000 to his health insurer to receive a basic package of health care. He will be free to pay more for any supplementary packages.

As under the new system people with a low income will have to contribute more than under the present sickness fund scheme, people with lower incomes will receive a compensation up till 420 for a single and 1200 for a couple (zorgtoeslag).

Health insurers will be obliged to accept any patients. A risk compensation scheme – as it exists already for the sickness funds – will guarantee financial equity between the insurers. For members with diabetes the health insurers will receive an extra funding. This system might be extended to other chronic diseases in the future (Ministry of Public Health, Welfare and Sports, 2005).

The CODE-2 study calculated on basis of a bottom-up approach the direct cost of diabetes care at 1827 per patient per year. Hospital costs amounted to 548, ambulatory care costs to 450 and oral antidiabetic drug costs to 836 per patient per year (Jönsson 2002). The diabetes costs - calculated on basis of a diabetes prevalence of 1.7% - represented 1.6% of the total health expenditure. With new data suggesting a diabetes prevalence of 3.5% (Baan 2005), this would be about the double. A top-down study by the “Rijksinstituut voor Volksgezondheid en Milieu” revealed a cost of 1655 per diabetes patient per year, i.e. 2% of the health budget (interview 1).

7.2 Organisation of diabetes care

All information in this section is retrieved from “Care protocols. A background study in the care for people with a chronic disease” (Baan 2003), unless indicated otherwise.

7.2.1 Overview of the diabetes care organisation

General organisation

About 75% of all diabetes patients are mainly treated by the general practitioner. 5% of the diabetes patients didn't have any contact with their GP during the 1997. More than 80% of the type 1 diabetes patients visit the diabetologist or the specialist in internal medicine at least 4 times per year. Shared care protocols between primary and secondary care health professionals are very often in place (Baan 2003).

National policy

In 2004 the Minister of Health established the ‘Taakgroep Programma Diabeteszorg’, a group of experts to give advice on the organisation of diabetes. In their report of June 2005 they make proposals for a better diabetes care organisation (Taakgroep Programma Diabeteszorg 2005):

- At present many shared care protocols exist, but they all differ in content and in health professionals involved, they don't have a nationwide coverage and they are not properly financed. The Ministry of Health wants to streamline this situation and ensure financing through the establishment of ‘diabetes care groups’ (diabeteszorggroepen) and the formulation of a ‘diagnosis-treatment chain for diabetes’ (keten-dbc diabetes). The diabetes care groups are conceived as a multidisciplinary team representing all health professionals involved in diabetes primary care in a region (general practitioners, diabetes nurses, dieticians and podiatrists). The secondary care specialists would only have an advisory role. In the initial phase they would get extra support to develop the necessary management capacity.

- The diabetes care groups should negotiate contracts for providing diabetes care with the health insurers. The content of the contracts should be in accordance with the concept diagnosis-treatment chain for diabetes. This concept chain for diabetes does not yet exist but it will be based on the “Care standard” (Zorgstandaard) as defined by the Dutch Diabetes Federation guidelines (Nederlandse Diabetesfederatie 2003).
- Process and outcome indicators should be identified for the evaluation of the quality of care. The health insurers will be responsible for quality monitoring.
- IT support with the development of an electronic diabetes file.
- Establishment of a knowledge centre for diabetes (Diabeteskenniscentrum), which should aggregate all information on process and outcome of diabetes care at national level.

At present some projects to pilot the contracting between health insurers and diabetes care groups are starting. The expectation is that this should lead to a nationwide implementation by 1,5 to 2 years (interview 1).

Guidelines

There are two important guidelines on diabetes mellitus type 2 at national level:

- The standard of the Dutch College of GP's (Nationaal Huisartsengenootschap) on diabetes mellitus type 2 gives guidelines on diagnosis, treatment, counselling and screening for diabetes in high-risk groups (Rutten 1999). Its revision of 1999 emphasises the importance of the structure of the diabetes care in the general practice. The guideline was developed by committee including GP's and diabetologists. Updated guidelines will be published early in 2006 (interview 2).
- The Quality Institute for Health Care (CBO Kwaliteitsinstituut voor Gezondheidszorg) - a department of the Ministry of Health – and the Dutch Diabetes Federation (Nationale Diabetesfederatie, see below) have also developed in 1998 4 guidelines on the diagnosis, treatment and prevention of complications in diabetes patients. The medical, nursing and paramedical professions were consulted on the development of the guidelines. The people who wrote the guideline of the Dutch College of GP's, were also involved to avoid contradictory advices (interview 5).

Diabetes patients

The prevalence of diabetes mellitus type 2 is 3.5%, resulting in 600 000 diabetes patients (Baan 2005). About 85% is type 2 diabetes. The prevalence is higher among people of Suriname or Hindustan origin. It is unknown how many patients are unaware of their diabetes. A study of the early '90's showed that about half of all

diabetes patients were undiagnosed, but it is generally thought that this figure is now considerably lower (Baan 2003, interview 1, 2, 3, 5). There is no national diabetes register (Rutten 1999, Baan 2005).

The Dutch diabetes association DVN (Diabetesvereniging Nederland) has 55 000 members. She provides health education, develops course material, organises courses and lobbies for the case of the diabetes patients (see www.dvn.nl). The DVN is an organisation of patients only. She is member of the Dutch Diabetes Federation.

The Dutch Diabetes Federation is an umbrella organisation in which patients, health professionals (GP's, diabetologists, dieticians, podiatrists, diabetes nurses) and the Diabetes Fund (which funds diabetes research) are represented. It participated in the formulation of the CBO guidelines. On basis of the CBO guidelines the Dutch Diabetes Federation developed the "Care standard for diabetes care" which is going to be the basis for diagnosis-treatment chain (see www.diabetesfederatie.nl).

7.2.2 Structure

Primary care

43% of the GP's still work in solo practices. The others work in group practices or in multidisciplinary teams (den Exter 2004). About half of all GP practices have a practice co-ordinator (interview 5), but usually not a dietician or podiatrist (Baan 2003). GP's have access to podiatrists and dieticians in primary care, often employed by home care services (interview 3).

More than 80% use electronic medical records, for which they receive an incentive (interview 2). In rural areas some practices also dispense drugs (den Exter 2004). IT is used for keeping a diabetes register and sometimes also for communication between health professionals and quality assurance at practice level (interview 2, 3).

The practice co-ordinators (praktijkondersteuners) were introduced in the '90's to support chronic disease management in general practice. General practices have to fulfil specific requirements to apply for the finances to pay a practice co-ordinators. Practice co-ordinators are involved in health education and clinical follow-up of diabetes patients (interview 5).

Initially diabetes specialist nurses (diabetesverpleegkundige) worked mostly with patients followed at secondary care, but they become more involved in primary care as well. Their financing differs from region to region e.g. some are paid by a pharmaceutical company. 45% of the GP's work with a diabetes nurse. The tasks of the diabetes specialist nurse are: giving health education, clinical follow-up and starting insulin therapy (Baan 2003). In general, in practices with a practice co-ordinator, the diabetes specialist nurse only intervenes for starting patients on insulin; the three-monthly check-up of diabetes patients is usually done by the practice co-ordinator.

Diabetes labs are services that support GP's by co-ordinating diabetes care. Their role can differ from place to place: they do the yearly check-ups (of which they report to the GP), set up call/recall systems, make appointments with a podiatrist, etc. They often work within a shared care protocol. Presently there are 10 diabetes services nationwide, co-ordinating the care for 20 000 patients (Baan 2003).

Secondary care

Well developed hospital services have a diabetologist, a diabetes nurse, a dietician and a podiatrist, but the situation differs much from one place to another (interview 4). In 1998 32% of the hospitals had a podiatrist specialised in diabetes foot care and 16% had a diabetes foot clinic (Baan 2003).

Training

The postgraduate training for diabetes specialist nurse consists of 156 hours of theoretical lessons spread over 8 months (HVU 2005). But only about half of the m have this certification (interview 5).

The Dutch Diabetes Federation organises courses for diabetologists and doctors in training (interview 4).

7.2.3 Process

Registration with a GP is obligatory for sickness fund patients, but not for privately insured people, though most actually do register. In a recent national inquiry among GP's (Van Avendonk, publication in preparation), 99.7% had a diabetes register and 66% organised diabetes clinics (usually in practices with a practice nurse). The majority of the GP's used call/recall systems.

The GP is the primary caretaker for 75% of all diabetes patients. In 22% of the consults for diabetes mellitus type 2, he refers the patient: 68% to an ophthalmologist, 25% to a medical specialist and 18% to a dietician. More and more the GP starts the insulin therapy without referral to secondary care. 5% of the diabetes patients didn't have any contact with their GP during the 1997. More than 80% of the type 1 diabetes patients visit the diabetologist or the specialist in internal medicine at least 4 times per year (Baan 2003).

73% of diabetes mellitus type 1 patients and 52% of the diabetes mellitus type 2 patients visit the ophthalmologist. In 1997 10% of all diabetes patients had visited a podiatrist, mostly in the hospital. In another study 23% have contact with a pedicure (Baan 2003).

Baan et al. (Baan 2003) sent a questionnaire to local health care organisations, identifying 66 shared care protocols. Bilo and Van Nunen (Bilo 2000) describe several of these protocols more in detail. The shared protocols have all been formulated locally and vary from area to area. Typically the protocol is an agreement between the GP, the medical specialist, the nurse, dieticians, podiatrists and the home care. Patients' associations are involved in about one third of the protocols.

The protocols usually consist of agreements on issues like clinical practice, roles of the different health providers and quality assurance through regular meetings, personal evaluation and benchmarking. They often facilitate access to certain aspects of care (e.g. podiatrist, dietician). They can include training for both health staff and patients. Facilitating access to the medical file is rarely part of the protocol. Baan found that in 41 of the 66 protocols some kind of evaluation had taken place, but it was not specified how this evaluation was done.

The implementation of the protocol often seems difficult (Baan 2003, interview 4): only 33% of the respondents said that the participants to the protocol worked fully according to the protocol, 47% followed the protocol partially and 20% didn't follow it at all. Factors enhancing implementation were: good cooperation, expertise, involvement in the protocol development, clarity of the protocols, common care vision and sufficient financial input (Baan 2003).

In its report 'Diabetes care better' the Taakgroep Programma Diabeteszorg states that in the diagnosis-treatment chain for diabetes each patient should have an individual education and motivation plan (Taakgroep Programma Diabeteszorg 2005). At present health education – individual or in group - is sometimes part of a shared care protocol (Bilo 2000).

7.2.4 Outcome

Outcome of diabetes care

In an inquiry of 2000 diabetes patients were generally satisfied with the care their received of the GP, the specialist and the paramedicals. 65% of the patients said that there was always a good continuity of care between the GP and the specialist (Baan 2003).

Prof. Rutten provided recent data from 5 large GP networks on some outcome indicators of diabetes care (interview 2) (see table 3).

Table 3. Outcome of diabetes care in general practice in 2005 (interview 2).

HbA1c	7.1%
Total cholesterol	191 mg%
Systolic blood pressure	146 mmHg
Diastolic blood pressure	83 mmHg

Source: Van Avendonk, publication in preparation.

Quality assurance

The Taakgroep Programma Diabeteszorg has proposed a list of 25 parameter and corresponding process and outcome indicators, which should be the basis for future contracting between health insurers and diabetes care groups (see table 4).

The shared care protocols very often offer some kind of feed-back to the health professionals, through meetings, individual evaluations or benchmarking (Bilo 2000, Baan 2003).

There is a mandatory certification system for specialists, requiring 40 hours of continuing medical education per year (Routil 2005).

Table 4. Parameter and indicators for diabetes care as proposed by the Taakgroep Programma Diabeteszorg.

No.	Parameter	Process indicator	Outcome indicator
<i>Patient's data</i>			
01	Date of birth / sex / ethnicity	N/a	Statistic data that describe the reported population
02	Year of diagnosis		
<i>Involvement of the patient</i>			
03	Self-control by patients not on insulin	N/a	% of patients not on insulin who control themselves
04	Self-control by patients on insulin		% of patients on insulin who control themselves
05	Communication		% of patients with complete access to the medical record
<i>Treatment and medication</i>			
06	Lifestyle and medication only	N/a	% of patients on lifestyle and diet only
07	Oral medication		% of patients on oral medication
08	Oral medication and insulin		% of patients on combination therapy
09	Insulin		% of patients on insulin
10	Blood pressure	% of patients with blood pressure measured	% of patients with: systolic blood pressure < 140mmHg systolic blood pressure > 160mmHg diastolic blood pressure < 80mmHg

			diastolic blood pressure > 90mmHg
11	Eyes	% of patients with fundoscopia	% of patients with retinopathy: background maculopathy proliferative retinopathy
12	Feet	% of pts whose feet are examined	% of patients with feet abnormalities
13	Body Mass Index	% of patients for who the BMI was calculated	% of patients with: BMI < 25 BMI > 30
14	Smoking	N/a	% of patients smoking % of patients that stopped smoking
15	Antihypertensive medication		% of pts with antihypertensive medication
16	Hypolipaemic medication		% of pts with hypolipaemic medication
<i>Laboratory</i>			
17	Glycosylated hemoglobine (HbA1c)	% of patients with HbA1C measured	% of patients with: HbA1c < 7.0% HbA1c > 8.5%
18	Blood lipids	% of patients with blood lipids measured	% of patients with: total cholesterol <5mmol/l (190mg%) LDL cholesterol <2.6mmol/l

			(100mg%)
			HDL cholesterol > 1.0mmol/l (38mg%)
			Triglycerides < 3.0 mmol/l
19	Creatinine (in blood)	% of pts with creatinine measured	% of patients with too high creatinine (normal values depend on age)
20	Albuminuria	% of pts with albuminuria measured	% of patients with micro-albuminuria
<i>Complications and end-points</i>			
21	Eye complications	N/a	% of patients blind
22	Cardiovascular complications		% of patients with cerebrovascular accident myocardial infarction
23	Renal complications		% of pts with dialysis or kidney transplant
24	Feet complications		% of pts with amputation above the ankle
25	Mortality		% of patients deceased

Source: Taakgroep Programma Diabeteszorg 2005.

7.2.5 Strengths and weaknesses

The content of this section is derived from the experts' interviews.

The impression was that the quality of diabetes care in the Netherlands was fairly good (interview 1).

Diabetes care is mainly rooted in primary care, which ensures good access (interview 3). The well structured primary care with patient registration was regularly mentioned as the main strength in the organisation of diabetes care (interview 1, 3, 4). Some experts specifically mentioned the role of the diabetes specialist nurses (interview 1) and the practice nurses (interview 5). The communication with dieticians and podiatrists is often insufficient, but the contracting under the future diagnosis-treatment is expected to improve this (interview 5).

There is a good co-ordination between primary and secondary care (interview 2). The shared care protocols are seen as important elements for improving the quality of care (interview 1, 4), though their effect on outcome indicators is not yet clear, mainly due to lack of research into the outcome (interview 1). All experts thought that the shared care protocols were often not well implemented and/or evaluated (interview 1, 2, 3, 4, 5). The fact that these protocols are not binding (interview 2) and the lack of quality monitoring at individual level (interview 3) were seen as serious limitations.

The Dutch diabetes federation which groups professionals and patients, plays an important role (interview 5). Diabetes has been very much on the political agenda since more than 10 years (interview 2).

The main problems in the organisation of diabetes care that were mentioned are: lack of IT development (interview 1, 4); lack of financing of shared care protocols (interview 1); the responsibility discussion and competition between the primary and secondary care (interview 1,3, 5) and between practice nurses and diabetes specialist nurses (interview 5); the insufficient financing for second/third line diabetes care (interview 4); lack of protocols and diabetes registers in secondary care (interview 2).

7.2.6 Expected changes in the future

The content of this section is derived from the experts' interviews.

Diabetes care in the Netherlands will thoroughly change in the near future with the introduction of the policy on diabetes care groups and the diagnosis-treatment chain. Most experts think that the new policy will have a positive impact (interview 1, 2, 3, 5). Shared care protocols will become more generalised (interview 1), properly financed (interview 1) and binding (interview 2). The contracting will improve communication between GP's and dieticians/podiatrists (interview 5). It will also clarify the role of each team member and avoid discussions on responsibilities (interview 5). Quality monitoring and quality-based payment will become part of the contracts between diabetes care groups and health insurers (interview 3, 5). ICT will be developed to enable health insurers to monitor the quality of care (interview 2).

One expert foresaw some problems with the introduction of the new policy (interview 2):

- Monitoring quality is labour-intensive, and thus expensive. Will health insurers be able/prepared to do this investment? (interview 2)
- The cost of the care might become more important than the quality (interview 2).
- One might no longer offer integrated care, with all aspects of the care spread over different health professionals (interview 2). In this context one expert had some reserve about the diabetes labs (interview 5).
- In the future diabetes care might differ from one region to another (interview 2).

The role of the nurses will become more important (interview 1).

With a diabetes prevalence which doubles every 10 years, the big challenge for the future will be to develop sufficient capacity to treat patients. Possible solutions are: more emphasis on prevention; greater role for primary care so that 99% of the patients are treated in primary care. In secondary care only a few centres of excellence should remain to treat the most problematic patients (interview 4).

7.3 Conclusions

The Netherlands used to have a combination of a mandatory contribution-based public health system and a voluntary private system for people with an annual income above 32 600€. However by 2006 this will be replaced by one contribution-based public system in which people will be able to choose between different health care packages (Ministry of Public Health, Welfare and Sports 2005). The public health system used to cover most costs for diabetes patients. Under the new system the basic package will no longer cover podiatric services (interview Netherlands 2).

More than half of the GP's work in group practices. They are supported by practice assistants, and often also practice nurses. Practices co-ordinators are nurses specifically employed to support chronic disease management. They are involved in health education and clinical follow-up of diabetes patients. 45% of the GP's work also with a diabetes specialist nurse (Baan 2003). Almost all GP's have a diabetes register (interview Netherlands 2). Diabetes clinics – usually by the practice co-ordinator – and call/recall systems are common (interview Netherlands 2). In some regions GP's are also supported by diabetes labs which e.g. organise regular check-ups of the patients, send reminders to patients, etc (Baan 2003). About 75% of all diabetes patients are treated in primary care (Baan 2003). The well structured primary care was seen as a major strength of the diabetes care organisation (interview Netherlands 1, 4).

Nurses (practice nurses, practice co-ordinators and diabetes specialist nurses) have had a positive impact on diabetes care (interview Netherlands 1, 5). They are involved in health education and clinical follow-up. Diabetes specialist nurses mostly intervene for starting patients on insulin. One quarter of all diabetes patients had at least once contact with a diabetes specialist nurse (Baan 2003).

Shared care protocols are common, but their coverage is not nationwide and their content can differ very much from one place to another (Baan 2003). All experts thought that the shared care protocols are often not well implemented and/or evaluated (interview 1, 2, 3, 4, 5). Typically the shared care protocols have been developed in a bottom-up approach: local health professionals met and tried to structure diabetes care. A feeling of local ownership is important for the succesful implementation of a shared care protocol will (interview Netherlands 4). Lack of IT capacity and finances is seen as a major obstacle to promote shared care (interview Netherlands 1, 4).

The new policy on diabetes care groups and the diagnosis-treatment chain should streamline these protocols and give them proper financial support (Taakgroep Programma Diabeteszorg 2005). Its implementation might still take two years or more (interview Netherlands 1). The main elements of this new policy are:

- Specific contracts on diabetes care between health insurers and diabetes care groups. The diabetes care groups bring together general practitioners, diabetes nurses, dieticians and podiatrists.
- The health insurers will monitor the quality of care within the diabetes care group. Quality-based payments are expected to be part of the contracts (interview 5).

- Development of the IT for an electronic diabetes record.
- The establishment of a national diabetes knowledge centre (Diabeteskenniscentrum).

In general the experts were positive about the expected policy changes (interview Netherlands 1, 2, 3, 5). One expert expressed concerns about the capacities of health insurers for quality monitoring and the risk of fragmentation of care (interview Netherlands 2).

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2. Prof. Dr. G.E.H.M. Rutten, Department of Family Medicine, University of Utrecht
3. Dr. R. Dijkstra, Research Assistant at Department of Family Medicine, University of Utrecht
4. Prof. R. J. Heine, diabetologist at the Free University of Amsterdam
5. Dr. Klaas Reenders, General Practitioner

8 Spain

8.1 *Overview of the health system*

All information in this section is retrieved from “Health Care Systems in Transition: Spain” (Rico 2000), unless indicated otherwise.

8.1.1 Introduction

Spain has a population of nearly 40 million inhabitants and in 2002 a Gross Domestic Product per capita of 22 827 USD Purchasing Power Parity. Life expectancy at birth was 83.5 years for females and 75.8 years for males (OECD 2005). The country is divided in 17 Autonomous Communities.

8.1.2 Organisational structure of the health system

Management of the health care system

The national Ministry of Health and Consumer Affairs drafts the health policy and any basic regulations in health issues. The Autonomous Communities have large powers in policy-formulation and implementation. Though the decentralisation process started in 1980, it is only since 2002 that all Autonomous Communities have taken their full responsibilities (Fundación para la Diabetes 2002).

Each Autonomous Community has a publicly-financed National Health Service. The National Health Services' Interterritorial Council has representatives of all 17 Autonomous Communities and of the national administration. Though it only has an advisory function, it does play an important co-ordinating role.

The local municipalities still own some health care facilities from the past, though the management authorities were transferred to the Autonomous Communities. As a compensation for this transfer local municipalities got a (mainly advisory) role to play in the regional health care management.

The Autonomous Communities are divided in health areas of by average 200 000 to 250 000 inhabitants. Each health area provides primary care, specialized ambulatory care and hospital care. They are managed by an area manager, though hospitals have their own managerial team. The health areas are divided in basic health zones of 5 000 to 25 000 people. The basic health zones are organised around one primary health care centre.

Provision of health care is mostly publicly owned: this applies to all general practitioners and primary health care centres, outpatient specialized clinics and physicians and to almost 80% of hospital care. The remaining

hospitals are mainly private non-profit institutions. The National Institute for Health and several Autonomous Communities have launched legislation to enhance a progressive separation of purchaser and provider. The National Institute for Health and most regional health services have established contracts with hospitals which define the type and volume of health services to be purchased.

Coverage

94.8% of the population is covered under the mandatory affiliation to the national health system. Civil servants (4.6%) can choose health care within the National Health Service or coverage through private institutions. The remaining 0.6% consists mainly of (affluent) self-employed liberal professionals and employers.

The National Health Service covers all primary and specialized health care. Co-payments for drugs amount to 40% of the cost. For drugs for chronic diseases co-payment is limited to 10% (and ceiled). Pensioners and all people living with them, receive drugs for free. For orthopaedic products there are some co-payments. There is only limited coverage of dental care.

For diabetes patients dietetic and podiatric services are for free in hospital. However, these services are often not available, so that patients have to go to private practice, which is not covered by the National Health Service (interview 2, 3). Physicians distribute test strips for free to the patients following the recommendations on self-regulation (interview 2, 3).

In 1997, according to official data, about 8.9% of the population had a complementary voluntary health insurance - though this might be an underestimation. The voluntary health insurances usually offer services not-covered or not effectively delivered by the National Health services (e.g. dental services, preventive gynaecological services). 1.9% of the Spanish population has an employer-purchased private insurance. Typical for the Spanish private health insurers is their strong integration in health care provision (either through shared ownership or long-term contracts). Most private insurances are based on the direct provision of health services rather than re-imbursement.

Human resources

The Spanish health system had in 1998 1.8 practising specialists and 6.1 practising nurses per 1000 inhabitants (OECD 2005). The OECD database doesn't give data for GP's. The database of the British Royal College of General Practitioners gives for 1992 a GP density of 0.5/1000 inhabitants (Rico 2000).

Specialists are salaried. For GP's there exist two payment systems:

- In the traditional system, which still covers 15% of the GP's, GP's work part-time in solo practices, providing only curative care. They are paid a capitation fee. These contracts are being phased out (interview 2, 3).
- Since 1984 a new model of primary health care centres was introduced in which GP's, paediatricians and nurses work in a primary care team. They are responsible for health promotion, preventive,

curative and rehabilitative care. They are paid by a combination of salary and capitation fee (about 15% of the income).

Spanish GP's have by average 39 patient contacts a day, which is 40% above the European average (Rico (2000)).

8.1.3 Health financing and expenditure

For the main characteristics see table 2.

Table 1. Health financing in the Spain in 2002

<u>Public health expenditure (% of total health expenditure)</u>	71.3%
Taxes (% of total health expenditure)	66.0%
Other public sources (% of total health expenditure)	5.3%
<u>Private health expenditure (% of total health expenditure)</u>	28.7%
Private insurance schemes (% of total health expenditure)	4.1%
Out-of-pocket payments (% of total health expenditure)	23.7%
Other private expenditure (% of total health expenditure)	0.9%

Source: OECD Health Data (OECD 2005).

The relatively high out-of-pocket payments are mainly due to: co-payments for drugs (40%); payment for private outpatient care - including nursing care (57%) (Rico 2002).

Table 2. Health expenditure in Spain in 2002

Health expenditure per capita (USD PPP)	1 666 USD
Health expenditure as % of GDP	7.3%

Source: OECD Health Data (OECD 2005).

Oliva et al (Oliva 2004) estimated the cost of diabetes care at 6.3 – 7.4% of the total health budget. With a prevalence of 5 – 6% this corresponds to an annual cost per patient of 1 290 – 1 476 . 35 – 39% was due to

hospital costs, 43 – 49% for drugs, 8 – 10% for primary care visits, 5 – 6% for outpatient endocrinology services and dialysis and 3 – 4% for test strips, syringes and needles.

The CODE-2 study estimated the direct cost of diabetes care at 1305 per patient per year. Hospital costs amounted to 417, ambulatory care costs to 334 and drug costs to 555 per patient per year. Based on an estimated prevalence of 3.9%, the total diabetes costs represented 5.3% of the total health budget in 1997 (Jönsson 2002).

8.2 Organisation of diabetes care

8.2.1 Overview of the diabetes care organisation

General organisation

There are no data on the share of diabetes patients between the primary and secondary care. The overall situation is that the majority of type 2 diabetes patients are seen in general practice by both GP and nurse, while almost all type 1 diabetes patients are seen in secondary care (Oliva 2004, Consejería de Salud de Andalucía 2003).

National policy

In 1991 a national conference on diabetes was held in Madrid. This conference resulted in the “Consenso para la atención a las personas con diabetes” in 1993 and the “Ordenación de Recursos para la Atención Sanitaria de las personas con Diabetes” in 1996 (Ministerio de Sanidad y Consumo 1996). The latter document was drafted by a panel of experts from the primary and secondary care, patients’ organisations and the administration. In the field of the organisation of diabetes care they note a large variability of competences between health professionals of the same level and the lack of co-ordination between primary and secondary care. They plead for the use of clinical protocols and referral guidelines, more attention to health education and systematic evaluation and quality control.

Since the '80's the health responsibilities have been decentralised to some Autonomous Communities. By 2002 all Autonomous Communities took full responsibility for health policies. Several Autonomous Communities have a regional diabetes committee who advises the policy-makers. Most Autonomous Communities produce health plans in which diabetes is prioritized (Fundación para la Diabetes 2002). For example, some of the objectives in the field of diabetes in the health plan of Murcia are: the formulation of a diabetes plan, efforts for prevention and early diagnosis of diabetes, development of training programmes for diabetes educators and the development of an information system that enables to monitor the prevalence of diabetes and its complications (Consejería de Salud de Murcia 2003). The Autonomous Community of Andalucía has a specific diabetes plan (Consejería de Salud de Andalucía 2003). The highlights of these plan are: the introduction of a model of shared care with the use of diabetes registers and reminder systems; investment in technology required for e.g. retinopathy screening; development of day hospital services; training of health professionals in diabetes care; a

diabetes research plan; the development of a diabetes register at regional level to monitor prevalence, patient flow and quality of care; the introduction of a “Historia Única de Salud”, a common electronic medical record for all health professionals.

Diabetes patients

The diabetes prevalence observed in several studies in Spain varies between 4.8% and 18.7%. In a recent meta-analysis the prevalence of type 2 diabetes (both known and unknown) is estimated to be 8% for women and 12.5% for men. The prevalence for type 1 diabetes varies between 0.08% and 0.2% (Ramos 2006). About half of all diabetes patients would be undiagnosed (Goday 2002).

Preliminary results of a study in País Vasco, show that diabetes patients with a lower socio-economic status have a poorer diabetes control and a higher risk for complications (Ramos 2006).

The Community of Madrid has a diabetes register since 1999. Other Communities, e.g. Andalucía, Aragón and País Vasco, are developing a diabetes register. Catalunya has since 1989 a type 1 diabetes register, which is part of a European register (Eurodiab) (Consejería de Salud de Andalucía 2003).

Each region has a regional diabetes patients' organisation, but there is no national umbrella organisation.

Guidelines

The Study Group for Diabetes in Primary Health Care (Grupo de Estudio de la Diabetes en Atención Primaria – GEDAPS), which is a working group within the Catalan branch of the Spanish Association of Family and Community Medicine (Sociedad Española de Medicina Familiar y Comunitaria - SEMFYC) has published several guidelines for type 2 diabetes (GEDAPS 2002), with a recent update in 2004.

The Spanish Association of Family and Community Medicine and the Spanish Diabetes Association (Sociedad Española de Diabetes - SED) also produced a consensus document on the combined drug therapy for glycaemic control in diabetes in 2001, which was updated in 2003 (Goday 2001).

8.2.2 Structure

Primary care

85% of the GP's work under the new contracts in primary health care centres, where they form a multidisciplinary team with nurses and paediatricians. The GP's who work under the part-time traditional contracts, work sometimes in the same primary health care centres. Nearly all GP's use electronic medical records. In most Autonomous Communities the electronic medical records are used for quality monitoring (interview 2, 3).

Dieticians and podiatrists can only be accessed in some hospitals or in private practice. The nurses in the primary health care centres also give dietetic advice. There are usually no diabetes educators in primary care (interview 2, 3).

Andalucía recently introduced the “Historia Única de Salud”. This is a common electronic medical record for all primary and secondary care health professionals which can be assessed with the patient’s health card (Consejería de Salud de Andalucía 2003). In Valencia a similar system is being developed (interview 4).

There are no systematic screening programmes for diabetes retinopathy. Most Autonomous Communities are purchasing digital cameras for retinopathy screening in the primary health centre. In the future each health centre should have a camera (interview 2, 3).

Intermediate level

Hospital doctors also work in ambulatory care centres, offering specialised care for patients referred from general practice. Diabetic care centres are staffed by endocrinologists, but sometimes also diabetes educators or podiatrists (interview 3, 4).

Secondary care

Spain has 1.7 endocrinologists per 100 000 inhabitants. 16% of the hospitals don’t have an endocrinologist. 49% of the hospitals have a nutrition department which was not integrated in the endocrinology department (Torres 2004). Most hospitals have a dietician, but rarely a podiatrist (interview 4). Waiting times are usually not a problem in diabetes care (interview 4).

Most hospital diabetes services have a diabetes educator, i.e. a nurse with a specific postgraduate training. They give health education and do clinical follow-ups (interview 4).

8.2.3 Process

All patients are registered with a GP. The GP has a gatekeeper function. From a nation-wide sample of type 2 diabetes patients followed up in primary care, each patient had by average 3 contacts per year with the GP and 5.4 with a nurse. He/she attended by average 1.8 educational sessions per year (Mata 1998). Nurses are involved in both health education and clinical follow-up (Lafita 1998).

Most GP's have a diabetes register. All primary health care centres use call/recall systems for flu vaccination, and sometimes also for chronic diseases as diabetes. They usually don't organize diabetes clinics (interview 2, 3).

Formal shared care protocols are unusual. In some areas endocrinologists hold regularly clinical meetings with the staff of primary health care centres in the area of responsibility of their hospital, resulting in some local consensus on shared care (interview 4), but only some centres (e.g. those who function as a teaching centre) participate in these meetings (interview 2). A diabetes passport is not commonly used (interview 2, 4).

Hospitals often organise group-based health education for several types of diabetes patients (interview 4). Nurses in primary health care centres can also organise group-based health education, but this depends on the local initiative and the targets for the quality-based payments (interview 2, 3).

8.2.4 Outcome

Outcome of diabetes care

The Study Group for Diabetes in Primary Health Care (GEDAPS), a working group in the Catalanian branch of the Spanish Association of Family and Community Medicine, took in 1993 an initiative to measure the quality of primary care. They developed indicators for organisation, process and outcome of diabetes care as well as an information system to facilitate data collection. This project gradually spread to all branches of the Spanish Association of Family and Community Medicine (Lafita 1998). The results of a sample of 5781 patients in 1996 are shown in table 3 and 4.

Table 3. Process indicators for type 2 diabetes patients in primary health care in 1996

HbA1c level at least twice a year	22%
Cholesterol level at least once a year	79%
Weight control at least three times a year	60%
Eye examination at least once a year	49%
Foot examination at least once a year	48%
Patients on auto-analysis	26%

Source: GEDAPS (GEDAPS 2005).

Table 4. Intermediate outcome indicators for type 2 diabetes patients in primary health care in 1996

HbA1c < 8%	57%
Cholesterol < 250mg%	75%
Blood pressure < 140/90 mmHg	59%
BMI < 30	61%
Smokers	15%

Retinopathy	34%
Foot lesions	5%
Micro-albuminuria	11%
Amputations	2%

Source: GEDAPS (GEDAPS 2005).

Quality assurance

Since 2002 primary care workers (both doctors and nurses) in Catalunya receive quality-based payments, which include diabetes care. The results for several quality indicators (e.g. HbA1c) are monitored using information extracted from the electronic medical records (interview 2). Quality-based payments for primary health care - including diabetes care - are also in place in most other Autonomous Communities: the "cartera de servicio" is a set of indicators for both physicians and nurse in primary health care. The quality indicators and the target values vary from one year to another. The Interterritorial Committee is working on a common set of quality indicators (interview 3).

There is a system of voluntary accreditation for physicians (Pardell 2003).

8.2.5 Strengths and weaknesses

The content from this section is derives from the experts' interviews.

The experts mostly agreed on the strengths of the system:

- Diabetes care is sufficiently available and accessible; diabetes care is almost for free (interview 2, 3, 4).
- Diabetes care is integrated in the general health care activities of the primary health care centre, ensuring continuity of care (interview 2, 3).
- Diabetes care is rooted in primary care (interview 2); the primary care physician has sufficient access to diagnostic tests to monitor the diabetes patient himself (interview 3).
- Diabetes care is provided by a team of both physicians and nurses (interview 2).
- Primary health care is well developed in Spain, with a considerable level of research activity (interview 3).
- Physicians are well trained (interview 4), specifically in diabetes care (interview 3).

Several problems in diabetes care were mentioned:

- Insufficient availability of dietetic and podiatric services in the hospital (interview 2, 3, 4). Podiatric services are available in private practice, which is not covered by the National Health System (interview 4). In general there is a lack of attention for foot care (interview 2).
- Overuse of test strips (interview 3).
- Long waiting times, mostly in secondary care (interview 2).
- High work load for the GP, who can spend only a limited time per patient. This is partially compensated by the nurse consultation (interview 2).
- Lack of co-ordination of diabetes care, especially between primary and secondary care (interview 3). At the other hand the endocrinologist thought that there was a loose relationship between health workers in primary and secondary care, e.g. through clinical meetings. (interview 4).

8.2.6 Expected changes in the future

The content of this section is derived from the experts' interview.

The experts expect that a monitoring system for diabetes incidence and prevalence will be developed (interview 2, 4). The immigration of people from regions with a high diabetes incidence (e.g. Asia) could have an important impact on the national diabetes incidence (interview 2). Patients will be diagnosed in an earlier phase; screening programmes might be introduced (interview 4).

Facilities for retinopathy screening will become more available in both hospitals and primary health care centres (interview 2, 3, 4). New diabetic drugs will become available (interview 4).

Patients' organisations will get more involved in policy making, development of protocols etc (interview 3).

One expert was afraid that diabetes might become more specialist-centred in the future (interview 3).

8.3 *Conclusions*

In the health care reforms of the '80's Spain choose for a tax-based National Health System that was responsible for both the management and the provision of health care. At the same time Spain went through a process of far-going decentralisation. Since 2002 all 17 Autonomous Communities have become the central managers and providers of health care (Rico 2000, Fundación para la Diabetes 2002).

The diabetes prevalence is estimated to be 8% among women and 12.5% among men, of which about half is undiagnosed. The immigration of people from regions with a high diabetes incidence (e.g. Asia) could have an important impact on the national diabetes incidence (interview Spain 2). Several Autonomous Communities have regional diabetes registers. The experts expect systems for monitoring diabetes prevalence and incidence to become generalised in the future (interview Spain 2, 4).

Diabetes care is often included in the health plans of the Autonomous Communities. Policy proposals concern issues as e.g. shared care, development of IT, training programmes for health professionals and the establishment of regional diabetes registers. Several Autonomous Communities have a specific diabetes committee that advises policy-makers (Fundación para la Diabetes 2002).

The National Health System in each Community covers well the medical and nursing care and the drug costs for diabetes patients. Test strips are dispensed for free in the primary health care centre, but one expert felt too much strips were used, causing an important waste of resources (interview Spain 3). Dietetic and podiatric services are in principle for free, but they are not sufficiently available - only in some hospitals (interview Spain 2, 3, 4). For podiatric services many patients go to private practice, which is not covered (interview Spain 3).

All patients are registered with a GP. The GP has a gatekeeping function. The establishment of primary health care centres was one of the key elements of the health care reforms of the '80's. Presently 85% of the GP's work within health care centres. These centres offer a strong basis for chronic disease management: they work within a multidisciplinary team of GP's, paediatricians and nurses, they use electronic medical records, usually keep diabetes registers. GP's often have a high work load, which makes they can't spend enough time with the patient, but this can be compensated by the nurse consult (interview Spain 2).

Retinopathy screening in primary health care centres, using digital cameras, is presently being piloted. Experts expect that this screening programme will cover all primary health care centres in the future (interview Spain 2, 3, 4).

Secondary care is offered in the hospital environment and in ambulatory care centres, that specifically deal with patients referred from general practice. The waiting times for an endocrinology consult can be long (interview Spain 2). The endocrinologist thought there was a close relationship between the health workers at the different levels, e.g. through clinical meetings, resulting in some consensus on shared care (interview Spain 4), but one GP felt the co-ordination of care could be improved (interview Spain 3). There are usually no formal shared care protocols (interview Spain 2, 3).

Group-based health education is common in secondary and - to a lesser extent - also in primary care (interview Spain 2, 3, 4).

The Study Group for Diabetes in Primary Health Care (GEDAPS), a working group in the Catalan branch of the Spanish Association of Family and Community Medicine, took in 1993 an interesting initiative to measure the quality of primary care. They developed indicators for organisation, process and outcome of diabetes care as well as an information system to facilitate data collection. This project gradually spread to all branches of the Spanish Association of Family and Community Medicine (Lafita 1998).

Presently most Autonomous Communities monitor the quality of primary health care in general through a set of indicators called the "cartera de servicio". This "cartera de servicio" is adapted every year. It includes targets for both physicians and nurses (interview Spain 2, 3).

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Interviewed persons:

2. Dr. F. Xavier Cos, general practitioner, Collaborative Network on Preventive Services and Health Promotion in Primary Care (redIAPP), Barcelona

3. Dr. J. Gervas, general practitioner, leader of the CESCA team (a non-profit scientific organisation)

4. Prof. Dr. J. Ampudias, Department of Endocrinology, University of Valencia

9 United Kingdom

9.1 *Overview of the health system*

All information in this section is retrieved from “Health Care Systems in Transition: United Kingdom” (Robinson, 1999), unless indicated otherwise.

9.1.1 Introduction

The UK has a population of nearly 60 million people and in 2002 a GDP per capita of 28 894 USD Purchasing Power Parity. Life expectancy at birth was in 2002 80.5 years for females and 75.9 years for males (OECD 2005). The UK is made up of four constituent countries: England, Wales, Scotland and Northern Ireland.

9.1.2 Organisational structure of the health system

Management of the health care system

The UK has a tax-based health care system managed by the National Health Service (NHS), which is a branch within the Department of Health. England, Wales, Scotland and Northern Ireland have each their own Department of Health. We will describe mainly the health care system in England.

Before the reforms of 1991 all institutions were directly managed and financed by the National Health Service and its regional and district offices. Under the NHS and Community Care Act of 1990 the responsibility for purchasing or commissioning health services in the NHS was separated from the responsibility for providing them.

Since 1991 the NHS has gone through several reforms. At present, in England, the Primary Care Trusts (PCT's) group all primary care workers in a region of by average 180 000 people. They are the pivotal structures at local level, responsible for the provision of primary care, the commission of secondary care and the organisation of public health interventions (Walshe 2004).

In 2006 the PCT's will go through another reform. The PCT's will merge into larger entities and loose their commissioning authorities to the general practices. (Groups of) general practices will receive a budget to commission themselves secondary care services (Department of Health 2004).

Hospitals could also get some greater autonomy through their transformation into NHS Foundation Trusts, but this still represents a minority of the hospitals.

Wales, Scotland and Northern Ireland have structures similar to the PCT's (respectively the Local Health Groups, the Health Care Cooperatives and the Primary Care Commissioning groups), though not all of them have commissioning authority. They are collectively known as the Primary Care Organisations (PCO's).

The NHS coverage

All people are covered by the NHS. The NHS offers a comprehensive package of free care. Co-payments are in place for dental care, ophthalmology and pharmaceuticals. The average co-payment on pharmaceuticals is 5.8£ (about 57% of total prescription cost), but many people are exempted e.g. elderly and people with chronic diseases. Diabetes patients get drugs, podiatric and dietetic services for free. Patients get test strips for free, but there is sometimes a problem of supply by the PCO (see www.diabetes.org.uk/new/mar04/testing.htm). Insulin pumps (CSII) are free for patients who fit the criteria set by NICE (interview 3).

In 1996 10.8% of the population had a private health insurance. 59% of the privately insured took part in an employment-based company insurance. Private health insurance packages usually cover only acute hospital care. The UK had in 1996 230 independent hospitals taking care of privately insured patients.

Human resources

The UK has 0.6 GP's, 1.4 specialists and 9.5 nurses per 1000 inhabitants (OECD 2005).

Since 2004 the GP payment has been thoroughly changed, with the introduction of quality-based payments. There are two types of contracts: the nationally negotiated General Medical Services (GMS) contract and the locally negotiated Personal Medical Services (PMS) contract.

The key points of the GMS contract are (NHS confederation 2003, NeLH 2005):

- It's a practice-based contract. As a result practices get more freedom contracting the number and type of personnel they want.
- Practices are more able to control their workload by opting out for out-of-hours coverage and additional services (e.g. antenatal care, cervical cancer screening and contraceptive services).
- The contract wants to encourage practice to provide a wider range of services, the so-called "enhanced services" (e.g. alcohol misuse or minor injury services).
- Payments to the practice are divided into: 1) weighted capitation fee per registered patient; 2) quality-based payments using the Quality and Outcomes Framework, though these are not obligatory; 3) payments for providing enhanced services. The quality-based payments represent about 40% of the total payment.
- The Quality and Outcomes Framework is a set of 146 indicators in four domains: clinical standards, organisational standard, standards on additional services and patients' experience. Diabetes care is covered by 18 indicators, representing about 10% of all points that can be gathered.
- Funds to improve the GP premises and to develop free IT hardware for GP practices.

A minority of the GP practices in England work under PMS contracts (interview 3). The PMS contracts are locally negotiated and more flexible than the GMS contracts. They can also participate to the Quality and Outcomes Framework (NHS 2005).

The introduction of the GMS and PMS contracts represent a rise in the budget for primary care of 33% between 2002-3 and 2005-6.

Hospital doctors are employed by the NHS on a salary basis. Full-time specialists are allowed to earn up to 10% of their NHS salary from private practice. Part-time employed specialists can engage in private practice without restrictions. Selected consultants can also receive merit awards, allocated by a peer review process. These merit awards can represent a considerable extra income. They are mainly based on research performance (and less on clinical performance).

9.1.3 Financing and expenditure of the health system

Table 1. Health financing in the UK in 1995

<u>Public health expenditure (% of total health expenditure)</u>	93.8%
National taxes (% of total health expenditure)	84.0%
Other public expenditure (% of total health expenditure)	9.8%
<u>Private health expenditure (% of total health expenditure)</u>	6.2%
Private insurance schemes (% of total health expenditure)	3.5%
Out-of-pocket payments (% of total health expenditure)	2.7%

Source: Health Systems in Transition (Robinson 1999).

Table 2. Expenditure on health in the UK in 1996

Health expenditure per capita (USD Purchase Power Parity)	2 231 USD (2002)
Health expenditure as % of Gross Domestic Product	7.7% (2002)

Source: OECD Health Data (OECD 2005). Note that the most recent data on health financing and expenditure date from 1995-1996.

The PCO's, who are responsible for purchasing secondary care, are funded through weighted capitation.

The cost of diabetes care is estimated to be 5% of the total health expenditure (National Service Framework 2001). The CODE-2 study estimated the direct cost of diabetes care at 2214 per patient per year. Assuming a diabetes prevalence of 2% this represents 2.5% of the total health expenditure. Hospital costs amounted to 769 , ambulatory care costs to 835 and drug costs to 579 per patient per year (Jönsson 2002).

9.2. *Organisation of diabetes care*

9.2.1. Overview of the diabetes care organisation

General organisation

In the 90's became more and more the central caregiver for most type 2 diabetes patients. 90% of the general practices provide routine care for more than 80% of their Type 2 diabetes patients. Specialists mainly see patients on referral by the GP or for annual review; and much less for routine care. Type 1 diabetes patients, on the contrary, are mostly taken care of at secondary care. Services like podiatrist, dietician and optometrist are present in most hospitals and in about a third of the general practices. The division of responsibilities between the primary and secondary care can differ considerably from one area to another (Audit Commission 2000). One interviewed expert noted that the number of patients treated at secondary care remained rather constant in the recent past, but that the rise in prevalence of known diabetes caused in an increase of patients mainly in primary care (interview 4).

National Policy

In 2001 the Department of Health drafted the National Service Framework (NSF) for Diabetes (National Service Framework 2001). The NSF for diabetes sets out the NHS policy on diabetes, emphasizing on evidence-based interventions, patient-centeredness and equitability of care, but it does not provide specific clinical guidelines.

A National Clinical Director for diabetes has been appointed to oversee the implementation of the NSF for diabetes at national level. The national clinical director published in 2004 the report "Improving diabetes services: the NSF two years on" (Roberts 2005). The National Diabetes Support Team has been set up in 2003 and provides practical support to local diabetes networks.

The National Institute for Health and Clinical Excellence (NICE) is an independent organisation that provides national guidance on best clinical practice. The NICE has produced detailed and regularly updated guidelines for both Type 1 and Type 2 diabetes (see www.nice.org.uk). The guidelines of the NICE are usually translated in local guidelines and shared care protocols at PCO level. The Scottish Intercollegiate Guidelines Network (SIGN) is a similar institution in Scotland, which also produced widely spread guidelines for both type 1 and type 2 diabetes (SIGN 2001).

The Chronic Disease Management Programme (CDMP) was set up in the beginning of the 90's to enhance the management capacities in primary care. Under the CDMP for diabetes the GP practices received an incentive of approximately 400£ per year for activities like keeping diabetes registers and having diabetes clinics. The scheme usually didn't set expected standards of care. 98% of the practices in England and Wales took part in this scheme (Audit Commission 2002). This programme has now been replaced by the Quality and Outcome Framework.

The quality of health care is known to be worse in the more deprived areas. Khunti showed in 1997 that GP practices in more deprived areas are less well structured (Khunti 2000). Reducing the socio-economic inequalities in health is a priority for the Labour government, as e.g. demonstrated in the Health Action Zones Programme, which gives extra funding to 26 deprived regions. The National Service Framework for Diabetes also states equity as a priority, but hasn't taken any specific initiative yet.

Diabetes patients

Under the CDMP most GP practices had diabetes registers. These registers had to be aggregated in a diabetes register at PCO level. In 2002, 69% of the PCO's had a diabetes register (Williams 2002). Very recently, in the context of the Quality and Outcomes Framework, a national diabetes register was established.

The results of the Quality and Outcomes Framework statistics showed a diabetes prevalence of 3.2% (Health and Social Care Information Centre 2005b). It is thought that up to half of all cases of diabetes may be undiagnosed, so the true prevalence may be much higher (Audit Commission, 2002). 10% of the people aged over 65 suffer from diabetes (British Diabetic Association 1996). People from African, Afro-Caribbean or Asian origin have a higher risk for diabetes (Audit commission 2002).

Diabetes UK – previously called the British Diabetes Association – is a powerful patients' organisation, representing about 10% of the diabetes patients. Through its local branches it is strongly rooted in the community. It also has a large professional section which organises an annual scientific conference, which is well attended by physicians, educationalists and researchers. It plays a role in diabetes research, lobbying and policy making, e.g. by research grants, journals like "Diabetic Medicine", the representation in the local diabetes networks, etc. They formulated guidelines on what patients should expect from good quality care. They were also involved in the National Diabetes Audit (Health and Social Care Information Centre 2005).

9.2.2. Structure

Information on diabetes care is derived from the following surveys:

- A survey of 1873 GP practices in England and Wales in 1997 (Pierce 2000). The response rate was 70%.
- A survey in 1997 of 307 GP practices of 3 PCO's in England with a response rate of 81% (Khunti 2000).
- A Diabetes UK funded survey into all 579 PCO's and 5854 GP practices in the UK in 2001 (Williams 2002). The response rate was 79% for the PCO's but only 40% for the GP practices.
- An audit by the Audit Commission in 2000 (Audit Commission 2002). The audit consisted of three parts:
 - Structured visit to nine hospital trusts, selected on expert advice.

- Postal interview to 250 GP's in the districts corresponding to the trusts, with a response rate of 45%.
- Postal interview to 1396 patients (one-third receiving care from a hospital trust, two-third receiving care from a GP), with a response rate of 66%.
- A survey by the Association of British Clinical Diabetologists in 2000 to all secondary care providers of diabetes services (Winocour 2002a). Response rate: 77%.

One should note that in some surveys in primary health care the response rate is particularly low. Non-responders are likely to be less well organised practices, thus creating some bias in the figures. All studies are at least 5 years old. Seen the big changes in diabetes care organisation in recent years, the situation might have changed since then.

Primary care

The GP practice is the pivotal structure in the primary care. Less than 10% of the practices are single-handed; 63% have four or more GP's. The average GP list size was 1866 in 1998 (Robinson 1999). Most GP practices have a practice nurse, often with a specific training in diabetes. Dieticians and podiatrist are available each in about 20-44% of the practices, optometrists and diabetes specialist nurses in not more than 10% of the practices (Khunti 1997, Audit Commission 2002). Some practices also provide psychological care. Usually there is one person within the practice who takes the lead for diabetes care, but his/her function differs from practice to practice.

Patients can be referred to podiatrists and dieticians who work for the hospital trust, or sometimes for the PCO. Patient can also opt to go to a private podiatrist. Private dieticians are rare (interview 3).

Diabetes specialist nurses are working in hospital but have also responsibilities in primary care, e.g. for home visits and diabetes clinics which function as an intermediary structure between primary and secondary care. In the survey of the Audit Commission they also provided training and support to 10% of the general practices (Audit Commission 2002).

A recent reform has broadened the task of the pharmacists by providing funds for: medicine use review (discussing with the patient (side-)effects of drugs, compliance); screening and medicine monitoring services for diseases selected by the PCO; etc. (Department of Health 2005).

96% of the GP practices have an active diabetes register, of which 77% was computerised and (Pierce 2000). 35% of the practices hold meetings to discuss diabetes management (Williams 2002).

Intermediate level of diabetes care

The PCO's have a co-ordinating role at local level, by keeping diabetes registers, formulating clinical guidelines and shared care protocols. The Performance Executive Committee gathers the health professionals and has an

advisory role to the PCO. At present 89% of the PCO's in England are part of a diabetes network (Roberts 2005). The content of these networks vary from region to region, but their general objective is to bring together all local stakeholders (professionals and patients) in diabetes care.

About 50% of the PCO's have a screening programme for diabetic retinopathy, with a coverage of around 60% (Younis 2002). The National Screening Programme for Sight Threatening Retinopathy has set standard for quality insurance, has developed education packages for patients and agreed on a national policy for purchasing digital cameras and related equipment (Roberts 2005).

Secondary care

The secondary care diabetes team typically consists of a consultant endocrinology, one or more doctors in training posts, a diabetes specialist nurse, a podiatrist, a dietician and associated specialists for particular complications. Most hospitals face important staff shortages. In 2000 36% of the services had only one physician with an interest in diabetes (Winocour 2002a). All units had diabetes specialist nurses, but only 13% met the recommended target of 4 nurses per 250 000 people. The diabetes specialist nurse may have responsibilities in service management, diabetes clinics (starting patients on insulin, follow-up of patients), health education and research. They often have a liaison role with the primary care practice nurses (Winocour 2002b). 73% of the services had a dietician, but only 45% were able to see new patients within one month (Winocour 2002d). A state-registered podiatrist was available in almost every hospital. In 66% of the hospitals they provide at least 3 podiatric clinics a week. They also attend people with diabetes not under hospital care (Winocour 2002c).

The hospital services are affected by long waiting times: of the 29 NHS trusts listed on the NHS website for England 18 (62%) had a minimal waiting time of more than 30 days for an outpatient appointment in diabetic medicine (www.nhs.uk, accessed 17/08/2005). In the sample of the audit commission diabetes patients most often mentioned waiting time as the aspect of care that needed improvement (Audit Commission 2002).

Training of health staff

There is no recognised specialist qualification in diabetes for nurses. Diabetes specialist nurse is a job title rather than a qualification. All podiatrists – even those working in private practice – must be NHS trained (interview 3).

9.2.3. Process

Nearly all patients are registered with a GP practice, with the GP having a gatekeeper function. About 70% of the GP practices have specific diabetic clinics, run by nurses and, in about two thirds of the practices, together with the GP (Pierce 2000, Williams 2002). Where available there also regular dietetic and podiatric clinics. The majority of GP practices use their diabetes register for call/recall follow-up of their patients (Pierce 2000).

In several pilot projects diabetologists are also part of the multidisciplinary team on primary care (Roberts 2005).

Diabetes care is mostly concentrated on primary care, with support of secondary care for specific cases (shared care model). The NHS gives incentives to the PCO's to formulate protocols for primary and secondary care. In a survey in 2001 39% of GP practices had such a protocol (Williams 2002). Usually the diabetes lead figure within the PCO takes the initiative and involves GP's, specialists and diabetes specialist nurses.

The importance of patient education is strongly emphasized in the NSF for Diabetes. In the survey of the Audit Commission 67% of the patients didn't receive any education or support and 40% no dietary advice in the past year (Audit Commission 2002). Four national group-based education programmes – one for type I diabetes and three for type II diabetes - have been developed. There exist also several local programmes. The National Diabetes Support Team has formulated criteria which such an education programme should meet (Roberts 2005).

9.2.4. Outcome

Outcome of diabetes care

The NSF for diabetes emphasizes the importance of evaluation. In 2004 the Healthcare Commission funded a National Diabetes Audit (NDA) in England covering the period of January 2003 up to March 2004 (Health and Social Care Information Centre 2005a). Information about more than 250 000 diabetes patients (both type I and II) – representing about 20% of all patients - have been collected through the primary and secondary care organisations. It gives information on several process and outcome indicators.

Table 3. Incidence of diabetes complications over 15 months in the National Diabetes Audit

Angina	2.19%
Cardiac failure	1.15%
Myocardial infarction	0.59%
Stroke	0.47%
Diabetic retinopathy	0.23%
Renal failure	0.20%
amputation	Minor: 0.12%; major: 0.07%

Source: National diabetes audit (Health and Social Care Information Centre 2005a).

Table 4. Proportion of patients achieving the targets in diabetes care.

HbA1c	< 6.5%: 23%
	< or = 7.5%: 56%
Cholesterol level	< 190 mg%: 61%
Blood pressure	< or = 135/75 mmHg: 21%
	< 160/100 mmHg: 84%

Source: National diabetes audit (Health and Social Care Information Centre 2005); CODE-2 study (Liebl 2002).

Other important findings of the NDA are:

- Only 77% of the people predicted by epidemiological studies to have diabetes, are actually registered at GP practices, suggesting that a large number of people remain undiagnosed or don't receive routine care.
- Less than 50% of the patients received an eye check in the period 2003/4.

Quality assurance

The Quality and Outcomes Framework in the new GMS contract is an important tool for quality measurement at general practice level and quality-based payments. The process is supported by the development of national IT system, the Quality Management and Analysis System (QMAS). General practices can send automatically their data for clinical quality indicators to the QMAS. Other indicators (on practice organisation, patient's experience, etc.) are entered directly into QMAS via a web-browser over a NHS intranet (see www.ic.nhs.uk/services/qof/).

The Quality and Outcome Framework includes an important section on diabetes care (see table 5). The indicators measure process or intermediate outcomes for weight, smoking, glycaemia, retinal screening, foot examination, creatinine, micro-albuminuria, blood pressure, cholesterol and influenza vaccination. The threshold for maximum score for glycaemia, blood pressure and cholesterol control correspond to the averages measured in the NDA. The target for retinal screening exceeds by far the performance described in the NDA (compare table 4 and 5). In the first evaluation for 2004/5 the average points achieved by general practices was 959, representing 91.3% of the total 1050 points available, which was considerably higher than expected. The average score for the diabetes indicators was 92.3% of the total points available (Health and Social Care Information Centre 2005b). The results for the individual indicators are not yet available.

Table 5. Indicators, target values and points for diabetes care in the Quality and Outcome Framework.

Indicator	Points	Threshold
DM 1.The practice can produce a register of all patients with diabetes mellitus	6	
DM 2.The percentage of patients with diabetes whose notes record BMI in the previous 15 months	3	90%
DM 3. The percentage of patients with diabetes in whom there is a record of smoking status in the previous 15 months except those who have never smoked where smoking status should be recorded once	3	90%
DM 4. The percentage of patients with diabetes who smoke and whose notes contain a record that smoking cessation advice has been offered in the last 15 months	5	90%
DM 5. The percentage of diabetic patients who have a record of HbA1c or equivalent in the previous 15 months	3	90%
DM 6. The percentage of patients with diabetes in whom the last HbA1C is 7.4 or less (or equivalent test / reference range depending on local laboratory) in last 15 months	16	50%
DM 7. The percentage of patients with diabetes in whom the last HbA1C is 10 or less (or equivalent test / reference range depending on local laboratory) in last 15 months	11	85%
DM 8. The percentage of patients with diabetes who have a record of retinal screening in the previous 15 months	5	90%
DM 9.The percentage of patients with diabetes with a record of presence or absence of peripheral pulses in the previous 15 months		90%
DM 10. The percentage of patients with diabetes with a record of neuropathy testing in the previous 15 months	3	90%
DM 11. The percentage of patients with diabetes who have a record of the blood pressure in the past 15 months	3	90%
DM 12. The percentage of patients with diabetes in whom the last blood pressure is 145/85 or less	17	55%
DM 13. The percentage of patients with diabetes who have a record of micro-albuminuria testing in the previous 15 months (exception reporting for patients with proteinuria)	3	90%
DM 14. The percentage of patients with diabetes who have a record of serum creatinine testing in the previous 15 months	3	90%
DM 15. The percentage of patients with diabetes with proteinuria or micro-albuminuria who are treated with ACE inhibitors (or A2 antagonists)	3	70%
DM 16.The percentage of patients with diabetes who have a record of total cholesterol in the previous 15 months	3	90%
DM 17.The percentage of patients with diabetes whose last measured total cholesterol within previous 15 months is 5 or less	6	60%
DM 18.The percentage of patients with diabetes who have had influenza immunisation in the preceding 1 September to 31 March	3	85%

Source: The GMS contract: England (National Electronic Library for Health).

Until 2004 doctors received a Postgraduate Education Allowance when having collected enough points for education. This has been replaced by a system of appraisal without financial incentives:

- The Department of Health introduced a system in which the PCO's and hospital trusts organise an annual appraisal of all medical doctors by a peer: for GP's: a GP trained as appraiser; for clinical consultants: the clinical director in the institution. The appraisal is seen as a supportive process in which appraiser and appraisee agree on the developmental needs of the appraisee, resulting in a personal development plan. The appraisal should encompass medical practice and training needs, but also relationship with patients and colleagues, probity and personal health. (www.dh.gov.uk/PolicyAndGuidance/HumanResourcesAndTraining/LearningAndPersonalDevelopment/Appraisals/fs/en, accessed 26 September 2005).
- At the same time the General Medical Council has organised a 5-yearly revalidation for all licensed doctors. Doctors have to submit proves of adherence to good medical practice. Their report should include the annual appraisal reports. The process is mediated by the local authorities, but the final decision on continued registration remains with the General Medical Council (General Medical 2004).

Besides the quality assurance systems at national level, local authorities also perform quality assessment. In a survey of 2001 75% of the PCO's had carried out some kind of audit on diabetes care in the past 5 years and 35% of the GP practices held regularly meetings to discuss diabetes management (Williams 2002). DiabetesE is a nationally provided web-based tool to perform a diabetes audit in a standardized way (Roberts 2005).

The Workforce Development Confederations, dependent on local branches of the NHS, are responsible for organising continuous medical education at regional level. PCO's can also opt to fund some educational activities.

There are several training courses available in the UK, e.g. Warwick Diabetes Care has provided a 30 hour training course to more than 5000 health professionals (mostly GP's and practice nurses) (interview 3). In 1997 80-90% of the GP's and the practice nurses had attended a diabetes course in the past three years, but for the GP's most of these courses were relatively short, i.e. maximum one day (Khunti 2000, Pierce 2000).

9.2.5 Strengths and weaknesses

The content of this section is derived from the experts' interviews.

Despite a tendency towards a more market-driven health care system, the UK continues to have one (public) system which offers health care largely for free (interview 2, 3, 4). The experts positively appreciated the well structured general practice (interview 4) and the fact that type 2 diabetes care is now firmly rooted in primary care (interview 2). The general impression is that the quality of diabetes care has increased considerably over the past 15 years with e.g. a unmistakable decrease in the number of cases of blindness due to retinopathy (interview 4).

The NHS took in recent years several initiatives to improve diabetes management: the National Service Framework for diabetes, the National Diabetes support team with a national diabetes clinical director, the National Diabetes Audit etc. It is generally believed that these activities had a positive effect by increasing the interest of both public and professionals in diabetes care (interview 1, 2, 3, 4). The National Service Framework for diabetes and the NICE guidelines provide a clear framework for diabetes care (interview 2).

Thanks to the Quality and Outcomes Framework these directives have been linked to a proper financing (interview 2, 3). The Quality and Outcomes Framework represented a potential major increase in GP income. General practices did all what it took to obtain the highest possible scores, e.g. by employing extra staff, training staff etc. As a result the measured quality of care exceeded by far the expectations. The Quality and Outcomes Framework is not only a tool for quality measurement and payment, it also resulted in the establishment of a national register for diabetes and other chronic diseases. Even if the results of the Quality and Outcomes Framework have only just been published, its impact seems to be huge (interview 2). At the other hand, one expert also expressed some fear that the emphasis on data collection and recording could go at the expense of the patient-centeredness (interview 2).

Despite all these national directives the clinicians continue to have 100% prescribing freedom. A physician is allowed to deviate from guidelines as long as he can justify it (interview 2).

The diabetes specialist nurses had a large impact on diabetes care (interview 1, 4). Diabetes specialist nurses are much more frequent and have a much broader field of action than in most other countries (4).

The experts also valued:

- The high research activity which enhances the quality of diabetes care. (interview 3, 4).
- The impact of Diabetes UK, with strong local branches (interview 1).

Concerns were raised about:

- The great variation in quality of care across the country, especially in general practice. How can the quality care be assured in primary care (interview 1, 3, 4)?
- Does the Quality and Outcomes Framework measure the right indicators? (interview 1)
- The rapid sequence of reorganisations in the NHS consumes a lot of efforts within the system (interview 2, 3). After the introduction of the Quality and Outcomes Framework, most general practices ask for a pause, but they are already in 2006 faced with another fundamental change: the practice-based commissioning (interview 2).
- There is still resistance to the shift of diabetes care from the hospital to primary care (interview 3). Diabetes care is still too much hospital based (1). The diabetologist questioned whether GP's will be able to manage diabetes in the future, as treatment becomes more and more complicated (4).
- Lack of dietetic services (interview 2, 4), podiatric services and health education (interview 4).
- Insufficient provision of training for health professionals (interview 3)
- The limited use of electronic medical records at secondary care (interview 4).

Waiting times were never mentioned as a major problem.

9.2.6 Expected changes in the future

The content of this section is derived from the experts' interviews.

Diabetes care will become more multidisciplinary and health professionals will have to be more flexible: e.g. nurses and pharmacists will provide more and more diabetes care. (interview 1, 2). One expert raised concerns about this shift of professional boundaries, as diabetes care might become more fractioned, with e.g. private companies offering diabetes services (interview 2).

The further expansion of the use of IT will create new possibilities (interview 3, 4). The diabetologist foresaw the development of a national electronic patient record, where all primary and secondary care health workers would be part of one virtual diabetes team (interview 4).

The impact of practice-based commissioning could be important, but is still unclear now (interview 2, 3). One expert raised concerns about the fact that general practices can keep themselves the money they didn't spend on buying secondary care. This could affect the quality of care as e.g. they would decide to limit the commissioning of insulin pump services. Therefore he foresaw very soon changes in the practice-based commissioning (interview 2).

The Quality and Outcomes Framework is likely to be adapted. The targets will probably become tougher (interview 2). There is some critique that the framework includes too many process indicator and too few outcome indicators (interview 1).

Health education will become even more important (interview 3).

To cope with the rising prevalence of diabetes will remain a major challenge (interview 1).

9.3 *Conclusions*

Traditionally the National Health Service (NHS) was the prototype of a tax-based, top-down organised system offering free health care. In the past 15 years, the organisation has gone through a series of reorganisations that have thoroughly changed the outlook of it, by - among others - the introduction of some free market aspects. But diabetes care has remained almost for free, which experts saw as an important strength (interview UK 2, 3, 4).

Diabetes care is a priority area for the NHS. The national policy was set out in the National Service Framework (NSF) for diabetes in 2001 (National Service Framework 2001). A national clinical director was appointed to overlook the implementation of the NSF for diabetes. A National Diabetes Support Team has to provide practical support to local diabetes networks.

The strong leadership of the NHS has been important in drawing the attention of both public and professionals to diabetes (interview UK 1, 2, 3, 4). However concerns were also raised about the constant, repeated reorganisations which consume a lot of efforts within the system (interview UK 2, 3).

The process of decentralisation in the '90's resulted in Primary Care Organisations with a reasonable autonomy. The Primary Care Organisations have become the pivotal players in the organisation of diabetes care at local level. Through the local diabetes networks they bring together all stakeholders in diabetes care – both professionals and patients. They initiate shared care protocols, organize continuing medical education, provide support to the general practices by organising dietetic and podiatric services, etc (Roberts 2005).

General practice is very well structured, characterised by patients' listing and a gatekeeper function. Most practices organise diabetes clinics and have a diabetes register which is used for call/recall of patients. GP's often work in multidisciplinary teams. When not available within the practice, GP's can refer their patients for dietetic and podiatric services to the Primary Care Organisation or secondary care. Primary care health workers have many opportunities to follow specific trainings in diabetes care.

The introduction of the diabetes specialist nurses seems to be the most important change in secondary care in recent years. Diabetes specialist nurses are active in the diabetes clinics providing health education, starting patients on insulin and doing the follow-up of patients. They are also more and more present in primary care, having a liaison role with the primary care practice nurses, doing home visits and organising diabetes clinics as an intermediary structure between the primary and secondary care (Winocour 2002b). Experts highly valued the impact of the diabetes specialist nurses (interview UK 1, 4).

PCO's received incentives to organise shared care protocols. These protocols have shifted the care for the type 2 diabetes patients more and more from secondary to primary care.

Outcome measurement, both at individual level (the Quality and Outcomes Framework) as at aggregated level (the repeated national and local audits) ensure the quality of diabetes care. The Quality and Outcomes Framework represented a potential major increase in GP income. General practices did all what it took to obtain the highest possible scores, e.g. by employing extra staff, training staff etc. As a result the measured quality of care exceeded by far the expectations. The Quality and Outcomes Framework is not only a tool for quality measurement and payment, it has also resulted in the establishment of a national register for diabetes and other chronic diseases. Even if the results of the Quality and Outcomes Framework have only just been published, its impact seems to be huge (interview UK 2). At the other hand, one expert also expressed some fear that the emphasis on data collection and recording could go at the expense of the patient-centeredness (interview UK 2). It is important to note that the Quality and Outcomes Framework has only been possible thanks to the availability of powerful IT systems in general practice.

The interviewees also emphasized the importance of the strong research basis in ensuring a high quality of care (interview UK 2, 3). The National Institute for Clinical Excellence has become an internationally reputed institution which has produced nation-wide accepted guidelines for both type 1 and 2 diabetes.

Experts expect diabetes care to become more multidisciplinary in the future. Health professionals will have to be more flexible: e.g. nurses and pharmacists will provide more and more diabetes care. (interview UK 1, 2). One expert raised concerns about this shift of professional boundaries, as diabetes care might become more fractioned, with e.g. private companies offering diabetes services (interview UK 2).

The further expansion of the use of IT will create new possibilities (interview UK 3, 4). The diabetologist foresaw the development of a national electronic patient record, where all primary and secondary care health workers would be part of one virtual diabetes team (interview UK 4).

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Interviewed persons:

1. Dr. Michael Sobanja, Chief Officer of the NHS Alliance
2. Dr. Eugen Hughes, Chairman of the Primary Care Diabetes Society
3. Prof. Hillary Hearnshaw, psychologist at the university of Warwick
4. Prof. Dr. Philip Home, diabetologist at the university of Newcastle

Transcriptions of the interviews

Denmark

Interview Denmark I: Mr. Mikkel Grimmeshave

Senior advisor, National Board of Health, Denmark

2 November 2005

I. Do you have any comments/corrections to make on the document describing diabetes care in the Denmark? Are there any important issues we forgot to mention?

- p.2: the effect of decentralisation: there are indeed regional differences in terms of input, but we don't know if this is also reflected in differences in output.
- Along with the merging of the counties into five regions, the number of municipalities will also be reduced from about 300 to about 100. This will make health care easier to manage.
- p.3: Waiting times: looking to the debate in the press, it is not so much an issue anymore. There are no waiting times in primary (patients sometimes have to wait one – two weeks for a non-acute problem, but there are not really waiting lists). Waiting times are mostly a problem in eye care. Ambulatory services in hospitals don't have significant waiting times, but the hospital capacity to treat diabetes patients does influence how diabetes patients are actually treated e.g.: there was recently a discussion that each type 2 diabetes patients should have a control in the hospital once a year, but with the present hospital capacity this is simply not possible.

Question: Is there a risk of diabetes patients being kicked out of the hospital because of lack of capacity?

Presently it is not very well structured when a diabetes patient should be seen in primary health care or in a diabetes clinic. Thus we can't really know if there is a problem.

- After the HTA for diabetes the government issued an action plan on diabetes. A national steering group was put in place, under the chair of the National Board of Health. The HTA was actually a starting point. The action plan is what we try to implement.
- The National Board of Health issued some recommendations in 1994. These are still the official recommendations of the board.
- The action plan states that a national register for diabetes patients should be established. We are actually working on it. The register will have two legs:
 - I) Register to follow prevalence/incidence of diabetes, based on the previous national register (this estimates values on basis of the number of hospital admission, laboratory tests, GP attendances, using an algorithm).

2) A clinical database to monitor the quality of treatment. They are planning three databases: one for diabetes in adults, one for diabetes in children and adolescents and one for eye complications.

- p.8: quality assurance: we are pushing for a more systematic monitoring of quality; the clinical databases will be instrument to that.
- The National Board of Health has also started a general project on chronic care. The project tries to develop a strategy for:
 - Which treatment should be offered to the patient?
 - How should chronic care be organised? The idea is to start from a stratification of the patients according to the seriousness of the illness.

The chronic care project should provide a general model for all chronic diseases which should be made operational in each single disease. The action plan for diabetes was developed before the chronic care project started, but they are consistent with each other.

2. Do you think there is a good co-ordination between the different caregivers (diabetes clinics, GP's, home nurses, dieticians, podiatrists)?

The co-ordination of care is not that good. The chronic care project wants to establish an organisation of care where co-ordination would be the key point, starting from patients' stratification. For diabetes the stratification will probably be more or less as follows:

- Majority of diabetes patients are taken care of by the GP. The GP is the focal point, when necessary, he can get support.
- Middle group which needs closer care. The plan is to establish a new organisational structure for which we are looking at US and Dutch experiments with nurse-led care. The GP would remain the focal caregiver.
- For complicated patients, the plan would opt for a case manager to co-ordinate the care.

3. Shared care protocols seem to exist in most places, but their content varies. Who takes the initiative to organise them. Is there a need for more uniform shared care protocols?

The protocols are typically negotiated at county level. They are usually not very advanced. There is need for more developed protocols. Disease management programmes are being discussed for the moment but we are not yet through with it.

4. What systems are presently in place to monitor the quality of care at GP and specialist level?

Diabetes will probably be a pilot disease for quality monitoring. Indicators will be monitored for both hospital and general practice care. The database for eye complication will monitor both the hospital eye clinics and the specialised practices.

But for the moment there is not much monitoring of quality of care.

5. Which are according to you the strengths of the organisation of diabetes care in Denmark?

Following the recommendations of the National Board of Health of 1994, all counties have a diabetes committee. These committees are a major strength as organisational focal points in a very decentralised health system.

6. What are today the major problems in the organisation of diabetes care in Denmark?

The major challenge for the health system is how to transform a system that was developed to manage acute disease into one able to take up the long-term care for chronic diseases.

7. Which changes in the organisation of diabetes care do you expect in the future?

See above.

Interview Denmark 2: Prof B. Flemming

Professor in Family Medicine

13 October 2005

1. Do you have comments/corrections to make on the document? Are there any important issues we forgot to mention?

- Patients have to pay co-payments for the podiatrist.
- Recently new guidelines were formulated by the GP's society (DASM); check website.

2. There seems to be a fragmentation of responsibilities between GP's, county-funded hospitals and municipality-funded home nurses, dieticians and podiatrists. Is this indeed a problem in diabetes care? If yes, what is done about it?

It is a problem indeed:

- The traditional situation was:
 - Type I diabetes are mostly treated in secondary care. This is still more or less like that.

- Type II diabetes: for insulin patients were usually referred to secondary care. This is still now the case. When they were referred, or you never saw them back, or they were kicked out of the hospital because of lack of resources.
- Shared care protocols have been established at county/local level; they are +/- everywhere, but in some counties they are more formalised.
- The GP's association started a system of GP consultants attached to a hospital department. They should co-ordinate between primary and secondary care. They might function as shared care co-ordinator in the future.

3. Do you think there is a need for shared care protocols?

The general sense is that there is need for more co-ordination but the way things are structured is not supportive for this: e.g. there are no incentives for shared care protocols; payment systems don't remunerate investment of time in shared care protocols.

According to me the solution is the establishment of co-ordinating centres of excellence outside the hospital in which both GP's and endocrinologists are represented. They should organise some shared care model, but with attention for the patient's perspective. The shared care should be flexible. I 'd rather talk about service packages than shared care protocols. Finally one needs enough staff and finances to establish these systems.

4. Who organises and funds continuing medical education for GP's?

During negotiations between the GP's and the county about the budget, a specific budget is put aside for CME. Each GP can spend +/- 1000 per year on CME. If they don't spend it, the money goes back to the county funds. There are very few criteria on the type of CME that should be attended. There is no individual certification procedure.

There are two types of CME: company sponsored training: till now probably still the most prevalent; training organised by the medical associations (of GP's and specialists).

5. What systems are in place to monitor the quality of care at GP and specialist level?

There is no systematic quality assurance in diabetes care, except for the glucometers: they can be sent to a central organisation for gauging.

The Danish GP's association has set some indicators for diabetes care, but there is no "stick and carrot" attached to it (no incentives/disincentives).

6. What is the role of the Danish Diabetes Association? Does it have a real impact on health policy?

- Plays mainly a role for networking between patients

- Not of major influence of health policy
- Dominated by specialist doctors who are member of the board, etc.
- They pushed at some time for general screening in the pharmacy, without success.

7. What are according to you the strengths of the organisation of diabetes care?

- Listing of patients (there are no real diabetes registers at GP practice, though some GP's use the ICPC coding system)
- Gatekeeping function of the GP
- Most services are free of charge.
- There is one health system. There doesn't exist a parallel private system

8. What are the major problems in the organisation of diabetes care?

- Lack of shared care/co-ordination
- Lack of lifestyle change support programmes which are easily accessible for the GP

Note: the diabetes schools work well, but are still isolated initiatives. They are attached to secondary care. We don't know what their cost-effectiveness is? Something out of the hospital might be more cost-effective. We should pay attention to the patient's perspective: what does he want? Flexibility in education is needed.

9. Which changes in the organisation of diabetes care do you expect in the future?

- Further development of IT as a vehicle for the shared care approach. Some counties are working on a common electronic file, but these are still initiatives per county.

Interview Denmark 3: Prof. N.F. Olivarius

Associate Professor in Family Medicine, University of Copenhagen

25 October 2005

1. Do you have any comments/corrections to make on the document? Are there any important issues we forgot to mention?

- last paragraph p.4: actually we started in primary care improving care e.g. study Olivarius started 1988.
- DACEHTA doesn't produce guidelines but technology assessments. the Danish College of GP's formulated a new guideline in 2004 based on the HTA for diabetes

- Conclusions of DACEHTA:
 - On screening: not correct, to be checked
 - To add: persons with micro-albuminuria or atherosclerosis should be treated with multipharmacological treatment
- Numbers of diabetes patients mentioned in the text: these figure are not very reliable
- The Danish Diabetes Association had actually an important impact by urging for the HTA to be written. Several diabetologists are member – with the chair being a diabetologist ; this is probably one of the reasons why it has an impact.
- Research of 2001 gave the following figures about staff at general practice:
 - 3600 GP's
 - 1900 secretary staff (translated in full-time)
 - 140 laboratory technologists
 - 600 nurses
 - 400 others
- There are indeed no multidisciplinary centres for the moment, but government might change its policy in the future.
- Outcome
 - Figures study Olivarius not correct; see text.
 - Conclusions are very difficult to make. Note that in the study of Olivarius the normal range for HbA1C was 5.5 – 7.4%, which is high. The Steno study only included micro-albuminuria patients.
- 2. There seems to be a fragmentation of responsibilities between GP's, county-funded hospitals and municipality-funded home nurses, dieticians and podiatrists. Is this indeed a problem in diabetes care? If yes, what is done about it?

There is not really fragmentation. Actually the lines of referral are clear: the GP is the gatekeeper. He can refer patients to primary care dieticians/podiatrists/nurses. When they are not available patients can be referred to the diabetes clinics (more and more GP's can refer directly to dieticians / podiatrists in these clinics)

3. Do you think there is a need for shared care protocols?

Shared care protocols are usually in place, but the content of the agreements differ from area to area. GP's are still often hesitant to refer because diabetes clinics used to "steal" patients in the past. With the present work load this is no longer the case, but the feeling still lives among GP's.

4. Who organises and funds continuing medical education for GP's?

Local courses on diabetes are rather common, mostly organised by the GP association or other medical associations. There are no government regulations about CME.

5. What systems are in place to monitor the quality of care at GP and specialist level?

- We are presently working on a national database on diabetes patients
- Some GP's participate in diabetes care audits (50-100 GP's per year).
- Indicators for quality of care have been identified, but not yet implemented.

6. What is the role of the Danish Diabetes Association? Does it have a real impact on health policy?

See remarks under 1.

7. What are according to you the strengths of the organisation of diabetes care?

- The GP has a gatekeeper's function, giving him the possibility to identify problem patients (physicians are not allowed to establish a formal call/recall system, but they can find informal ways of contacting patients who don't attend the clinic). It also creates a clear division of responsibilities.
- Medical care is almost for free.
- Diabetes clinics usually offer high quality care.
- There is a long tradition of diabetes research, with the presence of Novo Nordisk in Denmark.

8. What are the major problems in the organisation of diabetes care?

- We are still weak in identifying problem patients.
- There is too little focus on lifestyle changes.

Note: the diabetes schools depend on the diabetes clinics, but are relatively rare. Diabetologists are hesitant to support them. They think they don't work

9. Which changes in the organisation of diabetes care do you expect in the future?

Unfortunately more focus on technology:

- by development of a screening programme for diabetes and diabetes complications
- by emphasis on multi-pharmacological treatment; but are elderly patients ready to take 5-10 pills daily?

Interview Denmark 4: Prof. Dr. Knut Borch-Johnsen

Medical Director Steno Diabetes Centre

6 November 2005

1. Do you have any comments/corrections to make on the document describing diabetes care in the Denmark? Are there any important issues we forgot to mention?
 - As from 1 January 2007 the 14 counties and 275 municipalities will be replaced by 5 regions and about 100 municipalities. This will change the whole decision-making process in the health care system, though the precise structure is still not clear. There will remain only two main levels, the government and the municipalities. The five regions will probably have only responsibility for health care and anything else. They won't be able to collect taxes. So the money will have come from the state, and it is not yet how the decision-making between government and regions will be.
 - The NHSS coverage: More than 98% group I patients. Group II patients are free to choose any GP or ambulatory specialist, but they can only enter hospital after referral by a physician.
 - p. 4: general organisation of diabetes care. The situation is changing rapidly. More and more patients are seen every second or third year for a check-up in a diabetes clinic.
 - p.6: The national diabetes register will be running from 1 January 2006.
 - P. 6: 6 out of 14 counties have a systematic screening programme for retinopathy, but coverage can differ very much, though there are no exact figures. Some counties have close to 100% coverage while e.g. Copenhagen County screens mainly type I patients and only a small fraction of type 2 patients.
 - p.7 Physicians receive 1000 per person for CME. This is only true for PHC physicians. For secondary care professionals there is one common budget for physicians, nurses, people working in the kitchen etc.
2. Do you think there is a good co-ordination between the different caregivers (diabetes clinics, GP's, home nurses, dieticians, podiatrists)?

For the country as a whole, I would say there is no good co-ordination of diabetes care. But the situation differs very much from one county to another. Some counties have a very good system with good exchange of information between primary and secondary care, e.g. the Funen County, Copenhagen and Copenhagen county – representing roughly 30% of the diabetes patients.

At the other hand, in some counties there is no co-ordination at all between primary and secondary care.

3. Shared care protocols seem to exist in most places, but their content varies. Who takes the initiative to organise them. Is there a need for more uniform shared care protocols?

In most counties there are indeed shared care protocols, but they cover only a part of the county. Most patients are not in a formal shared care protocol.

The initiator of a shared care protocol is usually the diabetes steering committee of the county. This committee consists of representatives of the administration, the hospitals, the primary health care and the patients. The committee makes the recommendations to develop a shared care protocol, but the detailed description of the protocol is done between health professionals. The National Diabetes Steering committee can also support the process.

There is certainly need for more shared care protocols to improve quality of care and cost-effectiveness.

4. What systems are presently in place to monitor the quality of care at GP and specialist level?

The National Indicator Programme for Diabetes has developed a set of process parameters. Reporting on these parameters is in principal mandatory but it is very difficult to control in general practice. This started in 2005. The first results will be published end of 2006.

On top of that, there is also information collected on indicators as HbA1c, blood pressure etc. They are not part of the official programme because then they should be published on the web-base. We first want to run a test case and to publish the result only when we are sure they are correct.

Besides that, you have the national diabetes register, which uses an algorithm to calculate incidence and prevalence of diabetes from information of existing databases on diagnosis, number of services and prescriptions. The aim of this register is in the first place to determine incidence and prevalence of diabetes. In the long run it will be used to monitor quality of care.

Both systems will be fully functioning as from 2006.

There also initiatives on quality monitoring at local level.

5. Which are according to you the strengths of the organisation of diabetes care in Denmark?

- High level of general knowledge on diabetes care among nurses and doctors in both primary and secondary care.
- The presence of a diabetes steering committee at county level, which includes primary and secondary care caregivers, patients and the administration.
- The National Diabetes Steering Committee, which is working since two year, got very specific tasks to be completed in a limited period of time. The committee is quite active in formulating regulations/recommendations for the counties.

6. What are today the major problems in the organisation of diabetes care in Denmark?

- Though many GP's wouldn't agree with that, we still have very much two different systems, the primary and secondary care. GP's work on a fee-for-service basis, while all secondary care health staff is employed. This creates two different motivation systems. Primary care payment system motivates GP's to keep patients in primary care. This explains the resistance of GP's to participate in shared care protocols. (The general feeling is that too many diabetes patients remain too long in primary care).
- There are no IT systems that can transfer easily information between primary and secondary care. The present data protection rules make the transfer of patient-sensitive information between hospital and primary care or even patients very difficult.
- Waiting times are usually not a problem for outpatient care. There are more a problem for surgery and other hospital procedures.

7. Which changes in the organisation of diabetes care do you expect in the future?

- Hopefully, we will get more effective shared care systems
- More structured programmes for screening for complications will be developed, e.g. photographic screening programmes for retinopathy. New IT possibilities will make it possible to centralise some activities.
- Stronger involvement of non-medical staff (e.g. nurses) in diabetes care, due to a lack of GP's.

Note: Diabetes nurses

There is no official training for diabetes nurses. Traditionally there was little specialisation possibilities for nurses. Hospitals do train diabetes nurses, but there education differs from one hospital to another. Just recently a formal curriculum for diabetes nurses has been published.

Estonia

Interview Estonia 2, 3: Prof. Dr. Ruth Calda, Dr. Anneli Rätsep

Department of Family Medicine, University of Tartu

This interview is part of project initiated by the Belgian government. We compare the organisation of diabetes care in several European countries, in order to extract recommendation for the Belgian situation.

We offer you a set of closed questions. However, you should feel free to add information if you think some important aspects of diabetes care haven't been considered.

1. Does the Ministry of Health have a specific policy for diabetes care?

- No
- Yes, specify:.

2. Do there exist nationally implemented incentives to improve the quality of diabetes care?

- No
- Yes, specify: *as from 2006*

3. Does there exist within the Ministry of Health a structure for quality insurance (which e.g. provides guidelines, monitors quality of care, does health systems research, etc.)?

- No
- Yes, specify: *planned for 2006.*

4. Does there exist any systematic measurement of the quality of diabetes care?

- No
- Yes

If yes:

3a. Which authority does the measurement?

Health Insurance Fund.

3b. How is the measurement done?

- Benchmarking, specify which indicators were used and how they were selected:
- Clinical audits
- Others, specify: *bonus system promoting quality of care as from 2006.*

3c. Is the outcome linked to financial (dis)incentives?

- No
- Yes, specify: *if certain points collected by performed activities named in bonus system document.*

5. Is there any information on the outcome of diabetes care in Estonia?

- No
- Yes

If yes: where is it available?

6. Under the Estonian Health Insurance Fund, what proportion of the cost is reimbursed for:

- **Dietetic consult:** *performed by the GP or the GP nurse, for free*
- **Podiatric consult:** *for free if podiatrist is contracted by the Health Insurance Fund.*
- **Metformin:** *75%*
- **Sulphonylureas:** *75%*
- **Insulin:** *100%*
- **Glucometer:** *patient covers all.*
- **Test strips:** *200 sticks per month if more than 3 injections of insulin.*

7. What is the role of the Estonian diabetes patient's association (several answers possible)?

- **Patient's health education**
- **Networking between patients**
- **Lobbying with the policy makers**
- **Participating in the policy making process**
- Participating in the process of quality assurance (e.g. by taking part in the formulation of guidelines)
- Others, specify:

8. In a GP practice, which staff is usually available (besides the GP and the practice nurse)?

- **Administrative staff (secretary, etc.)**
- **Others, specify:** *depends on how many doctors share the working setting; if alone, usually no.*

9. Does the practice nurse get a specific training to work in a GP practice?

- No
- Yes

If yes, specify: special programs for GP nurses provided by medical schools.

10. How are these staff members financed?

- **From the GP's income**
- From other sources, specify:

11. Which proportion of the GP's do you estimate to use electronic medical records?

- **More than 75%**
- 50-75%
- 25-50%
- Less than 25%

12. Are electronic medical records regularly used for (several answers possible):

- **Communication with other health professionals**
- Keeping a chronic disease register
- Quality assurance during consultation (e.g. through the use of a structure diabetes consultation record)
- **Audits of clinical management**

13. Are nationally accepted diabetes guidelines available for primary care?

- No

- **Yes**

If yes:

13a. Who wrote these guidelines?

The EFD guidelines adapted by the Estonian Society of Family Doctors in collaboration with the Estonian Endocrinology Society.

13b. Are they intended for:

- **Primary care only**
- Primary and secondary care

I3c. To what extent do you think these guidelines are known and followed by the GP?

About 80% of the GP's have the guidelines, and about the same proportion state following them.

I4. Do GP's usually keep a diabetes register?

☐ No

☒ Yes

If yes:

I4a. Does the GP get any financial incentive to keep a diabetes register? Yes / No

If yes, specify: will be adopted in 2006; voluntary for GP's.

I4b. Is the diabetes register regularly updated? Yes / No

Yearly, if GP joins the quality assessment system in 2006.

I4c. Is the diabetes register used for call/recall systems? Yes / No

Can be used, not evaluated to what extent doctors use it.

I5. Does a diabetes register exist at any other level (hospital, regional, national)?

☒ No

☐ Yes, specify:

I6. Do GP's usually hold diabetes clinics?

☒ No

☐ Yes

If yes: I6a. Who usually does the diabetes clinics?

☐ The GP

☐ The practice nurse

☐ The GP and the practice nurse together

I7. For what proportion of the type II diabetes patients do you estimate that the GP is the central caretaker?

☒ More than 75%

- 50-75%
- 25-50%
- Less than 25%

18. Which of the following groups of type 1 diabetes patients are usually taken care of by the GP (several answers possible)?

- Diabetes patients on diet
- Diabetes patients on oral antidiabetics
- Diabetes patients on insulin without complications
- Diabetes patients on insulin with complications

Referral system exists. GP is a gatekeeper. Patients are referred when needed.

19. For what proportion of the type 1 diabetes patients do you estimate that the GP is the central caretaker?

- More than 75%
- 50-75%
- 25-50%
- Less than 25%

We do not have exact data. Type 1 diabetes patients can get long-term referrals from GP's to endocrinologist. Who is the caretaker, depends on the region. In town, where specialist care is easily available, the patients are mostly treated by specialists, but in rural areas mostly by GP's.

20. Can a GP refer a patient directly to a dietician (without intervention of a secondary care specialist)?

- No
- Yes

If yes:

20a. Are enough dieticians available?

- No
 - Yes

20b. Where do these dieticians work (several answers possible)?

- In hospital
- Privately
- Others, specify:

21. Can a GP refer a patient directly to a podiatrist (without intervention of a secondary care specialist)?

- No
- **Yes**

If yes: 21a. Are enough podiatrists available?

- **No**
- Yes

21b. Where do these podiatrists work (several answers possible)?

- **In hospital**
- **Privately**
- Others, specify:

22. Do diabetes specialist nurses exist in the health system?

- No
- **Yes**

If yes:

22a. What kind of training do diabetes specialist nurses get?

Special courses.

22b. For what type of patients does the diabetes specialist nurse work:

- For primary care diabetes patients only
- For secondary care diabetes patients only
- **For primary and secondary care diabetes patients**

22c. What tasks does the diabetes specialist nurse perform?

- **Health education**
- Holding diabetes consultations

- Co-ordinating diabetes care
- **Training health staff on diabetes**
- Others, specify:

22d. Can a GP have direct access to a diabetes specialist nurse (without going through secondary care)?

- No
- **Yes**

22e. How wide-spread is the use of diabetes specialist nurses?

We have a lack of specialist nurses. General practice nurses can give health education advice as well. Special courses are available. Participation to course is voluntary.

23. Do there exist any “shared care protocols” (i.e. any procedures to co-ordinate care between the different health professionals) for diabetes care?

- **No**
- Yes

If yes:

23a. How wide-spread are these protocols?

23b. Which professionals usually take part in these protocols (several answers possible)?

- GP
- Endocrinologist
- Diabetes specialist nurse
- Practice nurse
- Dietician
- Podiatrist
- Others, specify:

23c. What do these protocols cover (several answers possible)?

- Division of responsibilities between primary and secondary care
- Locally adapted clinical guidelines for diabetes

- Procedures to facilitate communication between health professionals, specify:
.....
- Others, specify:

23d. Who usually takes the initiative for these protocols?

- Health professionals, specify:
- Health authorities, specify:
- Others, specify:

23e. Are these protocols financially supported?

- No
- Yes, by who?

23f. Do you think these shared care protocols contribute to the quality of diabetes care?

24. Are there any government regulations for continuing medical education for GP's (e.g. specific government budget, financial incentives for GP's, certification system)?

- No
- Yes

If yes: which regulations?

Ministerial decree; contract of Health Insurance with GP's.

25. Who organises continuing medical education (several answers are possible)?

- Medical associations
- Pharmaceuticals companies
- University
- Others, specify: *hospitals*

18a. Who is the most common organiser?

University.

26. Which systems of quality assurance for diabetes care exist in general practice?

- Benchmarking, specify:
- **Audits, specify:**
- Peer review, specify:
- **Others, specify:** *bonus system promoting quality of care from 2006.*

27. Which are according to you the strengths of the organisation of diabetes care in Estonia?

(not answered)

28. are today the major problems in the organisation of diabetes care in Estonia?

(not answered)

29. Which changes in the organisation of diabetes care do you expect in the future?

(not answered)

Interview Estonia 4: Prof. Dr. Margus Lember

Head of Department of Internal Medicine, Tartu University

This interview is part of project initiated by the Belgian government. We compare the organisation of diabetes care in several European countries, in order to extract recommendation for the Belgian situation.

We offer you a set of closed questions. However, you should feel free to add information if you think some important aspects of diabetes care haven't been considered.

1. Does the Ministry of Health have a specific policy for diabetes care?

- **No**
- Yes, specify:

2. Do there exist nationally implemented incentives to improve the quality of diabetes care?

- **No**
- Yes, specify:

3. Does there exist within the Ministry of Health a structure for quality insurance (which e.g. provides guidelines, monitors quality of care, does health systems research, etc.)?

- No
- Yes, specify:

4. Does there exist any systematic measurement the quality of diabetes care?

- No
- Yes

If yes:

4a. Which authority does the measurement?

4b. How is the measurement done?

- Benchmarking, specify which indicators were used and how they were selected:
- Clinical audits
- Others, specify:

4c. Is the outcome linked to financial (dis)incentives?

- No
- Yes, specify:

5. Is there any information on the outcome of diabetes care in Estonia

- No
- Yes

If yes: where is it available?

6. Under the Estonian Health Insurance Fund, what proportion of the cost is reimbursed for:

- Dietetic consult:
- Podiatric consult:.....
- Metformin:.....
- Sulphonylureas:

- Insulin: *100%*.
- Glucometer: *special regulations depending on the number of insulin injections per day (treatment regimes)*.
- Test strips: *idem as glucometer*.

7. What is the role of the Estonian diabetes patient's association (several answers possible)?

- Patient's health education
- Networking between patients
- Lobbying with the policy makers
- Participating in the policy making process
- Participating in the process of quality assurance (e.g. by taking part in the formulation of guidelines)
- Others, specify:

8. Are nationally accepted diabetes guidelines available for secondary care?

- No
- **Yes**

If yes:

8a. Who wrote these guidelines?

Specialists + GP's participation.

8b Are they intended for:

- Secondary care only
- **Primary and secondary care**

8c. To what extent do you think these guidelines are known and adhered to?

Known about 80%. Adhered to 70-80%.

9. Do hospitals usually keep a diabetes register?

- **No**
- Yes

If yes:

9a. Does they get any financial incentive to keep a diabetes register? Yes / No

If yes, specify:

9b. Is the diabetes register regularly updated?

Yes / No

9c. Is the diabetes register used for call/recall systems?

Yes / No

10. Are dieticians usually available at hospital level?

- ☐ No
- **Yes; not everywhere.**

11. Are podiatrists usually available at hospital level?

- ☐ No
- **Yes; not in all hospitals.**

12. Are there usually diabetes clinics at hospital level?

- ☐ No
- ☐ Yes

If yes: 5a. Who is usually available in such a diabetes clinic (at the same time, so that the patient doesn't have to come back for each different consult?

- ☐ endocrinologist
- ☐ ophthalmologist
- ☐ nurse
- ☐ dietician
- ☐ podiatrist
- ☐ others: specify

At hospital level diabetes patients are taken care of by endocrinologist or internist at out-patient clinic. The above mentioned specialists are available when needed.

13. For what proportion of the type II diabetes patients do you estimate that the endocrinologist is the central caretaker?

- ☐ More than 75%
- ☐ 50-75%
- ☒ **25-50%**
- ☐ Less than 25%

14. Which of the following groups of type I diabetes patients are usually taken care of by the endocrinologist (several answers possible)?

- ☐ Diabetes patients on diet
- ☐ Diabetes patients on oral antidiabetics
- ☒ **Diabetes patients on insulin without complications: +/-**
- ☒ **Diabetes patients on insulin with complications**

15. For what proportion of the type I diabetes patients do you estimate that the endocrinologist is the central caretaker?

- ☒ **More than 75%**
- ☐ 50-75%
- ☐ 25-50%
- ☐ Less than 25%

16. Do diabetes specialist nurses exist in the health system?

- ☒ **No**
- ☐ **Yes**

If yes:

16a. What kind of training do diabetes specialist nurses get?

Nurses' education + special courses.

16b. For what type of patients does the diabetes specialist nurse work:

- ☐ For secondary care diabetes patients only
- ☐ For primary care diabetes patients only
- ☒ For primary and secondary care diabetes patients

16c. What tasks does the diabetes specialist nurse perform?

- ☒ Health education
- ☐ Holding diabetes consultations
- ☐ Co-ordinating diabetes care
- ☒ Training health staff on diabetes
- ☒ Others, specify: *diet.*

16d. How wide-spread is the use of diabetes specialist nurses?

In secondary care centres.

17. Do there exist any “shared care protocols” (i.e. any procedures to co-ordinate care between the different health professionals) for diabetes care?

- ☒ No
- ☐ Yes

If yes:

17a. How wide-spread are these protocols?

17b. Which professionals usually take part in these protocols?

- ☐ Endocrinologist
- ☐ GP
- ☐ Diabetes specialist nurse
- ☐ Other nurses
- ☐ Dietician
- ☐ Podiatrist
- ☐ Others, specify:

17c. What do these protocols cover?

- Division of responsibilities between primary and secondary care
- Locally adapted clinical guidelines for diabetes
- Procedures to facilitate communication between health professionals, specify:
.....
- Others, specify:

17d. Who usually takes the initiative for these protocols?

- Health professionals, specify:
- Health authorities, specify:
- Others, specify:

17e. Are these protocols financially supported?

- No
- Yes, by who?

17f. Do you think these shared care protocols contribute to the quality of diabetes care?18. Are there any government regulations for continuing medical education for specialists (e.g. specific government budget, financial incentives for specialists, certification system)?

- No
- Yes

If yes: which regulations?

Certification system. This is voluntary. CME costs included in the GP's contract.

19. Who organises continuing medical education (several answers are possible)?

- Medical associations
- Pharmaceuticals companies
- University
- Others, specify

19a. Who is the most common organiser?

20. Which systems of quality assurance for diabetes care exist at secondary care?

- Benchmarking, specify:
- **Audits, specify:**
- Peer review, specify:
- **Others, specify:** *chart reviews.*

21. Which are according to you the strengths of the organisation of diabetes care in Estonia?

(not answered)

22. What are today the major problems in the organisation of diabetes care in Estonia?

(not answered)

23. Which changes in the organisation of diabetes care do you expect in the future?

(not answered)

France

Interview France 1: Michel Varroud-Vial

Association Nationale Co-ordination Réseaux Diabète

1. Est-ce qu'un généraliste peut adresser directement un patient à un diététicien, un pédicure-podologue ou un conseiller en diabète (non médecin)? Oui. Un conseiller en diabète n'existe pas.

Avec ou sans accord préalable par un spécialiste de seconde ligne ? Sans.

2. Est ce que le système de santé rembourse :

- Consultations du diététicien? Non.
- Consultation du podiatre podologue? Non pas vraiment : 2 sur 25 à 30 de tarif moyen.
- Glucomètre? Oui.
- Les tigettes? Oui.

3. Y a t-il une personne qui joue un rôle d'éducation à la santé pour les diabétiques et explique ou effectue

- Des visites à domicile? Non, pas hors des réseaux
- Des cours pour les médecins? Oui, dans le cadre de la Formation Professionnelle Conventionnelle financée par l'Assurance Maladie ou de Formations plus locale, mais ce n'est pas obligatoire.
- Une co-ordination des soins aux diabétiques? Non sauf existence d'un réseau.

4. Dans quelle proportion des cabinets y a t-il des personnes qui aident le généraliste dans son cabinet ?

- Personnel administratif? 20%
- Infirmière? insignifiant
- Diététicien? nul
- Podiatre Podologue? nul
- Autres

L'exercice de la médecine en France est traditionnellement et réglementairement individuelle, hélas !

5. Par qui sont financées ces personnes ?

Les secrétaires sont salariées par le médecin sur ses honoraires. Rien n'est prévu pour les autres

6. Au niveau coût , quelle partie des frais le patient doit-il payer lui-même?

Pour les médicaments 0% pour les médicaments liés au diabète, à ces complications et autres FR CV (exonération totale du ticket modérateur sur demande du médecin traitant), diététicien totalité à la charge du patient, les diététiciens ne sont pas reconnus par l'Assurance Maladie, podologue 95% à la charge du patient pour les soins, mais les orthèses sont remboursées à environ 75% du coût et les chaussures sur mesure sont remboursées complètement en cas de malformation majeure ou d'amputation après avis médical de la Caisse , matériel de contrôle 0%, même chose que pur les médicaments ?

7. L'organisation en « réseau de soins » tel que le REVEdiab du Val de Marne

(http://www.ors-idf.org/etudes/Pdf/4_pages2002/REVEdiab2003.pdf)

et autres projets expérimentaux couvre quel pourcentage de la population des diabétiques ?

Actuellement seulement 2% des diabétiques traités sont usagers d'un réseau, qui demeure une structure financée par l'Assurance Maladie mais sans obligation ni même incitation de sa part.

8. Qui organise la formation continue pour les généralistes et spécialistes ?

L'Assurance Maladie finance et organise la FPC pour les médecins libéraux à partir d'un fond financé par leurs cotisations et géré paritairement avec leurs représentants syndicaux (OGC). Jusque là la FPC n'était pas obligatoire, mais elle le devient avec la nécessité d'accumuler des points de formation. L'industrie pharmaceutique intervient également dans la formation.

9. Y a-t-il des mécanismes de contrôle de qualité dans la première ligne de soins aux diabétiques ?

L'évaluation des Pratiques Professionnelles est devenue obligatoire en 2004 et se met en place progressivement sous l'égide de la Haute Autorité de Santé et des Unions Régionales de médecins libéraux. La prise en charge des diabétiques devrait en constituer un des thèmes essentiels et nous travaillons sur ce point.

10. Quels sont aujourd'hui les points forts et les difficultés majeures dans l'organisation des soins aux diabétiques en France ?

Le point fort est le bon remboursement des traitements pharmacologiques et des examens nécessaires au suivi et au traitement

Les points faibles sont

- l'absence de remboursement de l'éducation en particulier diététique et des soins podologiques
- l'absence de co-ordination structurée des soins
- les difficultés d'accès aux ophtalmologistes, motivant la mise en place de rétinographes pour le dépistage de la rétinopathie diabétique

11. Quels changements d'organisation espérez vous dans le futur ?

- une procédure obligatoire d'assurance qualité basée sur le bilan annuel de prise en charge des diabétiques. Ceci est en train d'être mise en place avec la réforme de l'Assurance Maladie et le parcours de soins définissable chaque année par le médecin traitant pour les maladies chroniques bénéficiant de l'exonération du ticket modérateur comme le diabète.
- un panier de soins comprenant la prise en charge de l'éducation diététique (au moins 3 consultations la première année et 1 ensuite), des soins podologiques pour les diabétiques à risque et un accès à l'éducation de groupe ; ceci devrait comporter une délégation aux paramédicaux pour ces tâches d'éducation : diététiciennes, infirmières, podologues...

- la mise en place de co-ordinations régionales pour la prise en charge des complications comme le risque de lésion du pied avec un accès rapide et fléché à une structure hospitalière spécialisée en cas de lésion.

Interview France 2: Prof. Dr. Gwénola Levasseur

Professeur associée de médecine générale

Faculté de médecine

2 avenue du Pr Léon Bernard

CS 34317, 35043 Rennes Cedex

1. Avez vous des corrections, ajouts ou commentaires à propos du document ?

Non.

2. Est-ce qu'un généraliste peut adresser directement un patient à un diététicien, un podiatre-podologue ou un conseiller en diabète (non médecin) (si cela existe ?)
avec ou sans accord préalable par un spécialiste de Seconde ligne ?

Oui.

3. Est ce que le système de santé rembourse :

- Consultations du diététicien : non sauf dans les réseaux (dérogation tarifaire)
- Consultation du podiatre podologue : non sauf dans les réseaux (dérogation tarifaire)
- Glucomètre : oui
- Les tiges : oui

4. Y a t-il une personne qui joue un rôle d'éducation à la santé pour les diabétiques et explique ou effectue

- Des visites à domicile : non
- Des cours pour les médecins : non
- Une co-ordination des soins aux diabétiques : oui mais uniquement dans les réseaux.

5. Dans quelle proportion des cabinets y a t-il des personnes qui aident le généraliste dans son cabinet ?

- Personnel administratif : 0
- Infirmière : 0
- Dietéticien : 0
- Podiatre Podologue : 0
- Autres :
-

6. Par qui sont financées ces personnes ?

7. Au niveau coût , quelle partie des frais le patient doit-il payer lui même :

Pour les médicaments, diététicien, podologue, matériel de contrôle ?

Si le patient a un traitement en général il peut être pris en charge à 100% et du coup les médicaments et le matériel sont remboursés. Le diététicien et le podologue ne sont gratuits que pour les patients inclus dans un réseau ou hospitalisés.

8. L'organisation en « réseau de soins » tel que le REVEdiab du Val de Marne

(http://www.ors-idf.org/etudes/Pdf/4_pages2002/REVEdiab2003.pdf)

et autres projets expérimentaux couvrent quel pourcentage de la population des diabétiques ?

Très peu : en Ile et Vilaine par exemple ce sont moins de 200 patients qui sont pris en charge par le réseau diabète 35

9. Qui organise la formation continue pour les généralistes et spécialistes ?

Les associations de FMC, il existe aussi des formations qui sont assurées par les réseaux mais celles-ci ne touchent que les adhérents aux réseaux.

10. Y a-t-il des mécanismes de contrôle de qualité dans la première ligne de soins aux diabétiques ?

En pratique aucun. Il existe quelques groupes qualité chez les médecins généralistes mais ceux-ci choisissent librement leur thème de travail. Dans les réseaux existent des protocoles qui sont en principe suivis par les médecins qui adhèrent aux réseaux. La sécurité sociale produit aussi de temps à autre des rappels de bonne pratique.

I 1. Quels sont aujourd'hui les points forts et les difficultés majeures dans l'organisation des soins aux diabétiques en France ?

Les points forts :

- la prise en charge des soins par la sécurité sociale.
- La possibilité de dérogations tarifaires dans le cadre des réseaux.

Les points faibles :

- L'absence de coopération entre les différentes professions de santé.
- L'isolement et l'individualisme des praticiens.
- Leur allergie presque épidermique à toute forme de contrôle et/ou d'évaluation des pratiques.
- Le paiement à l'acte contre productif lorsqu'il s'agit d'activités de prévention et/ou d'éducation du patient et antithétique du travail en réseau.

I 2. Quels changements d'organisation espérez vous dans le futur ?

Une pratique plus « organisée », moins isolées avec plus de collaboration entre les différents professionnels. Voire et pourquoi pas un changement de mode de rémunération.

Interview France 3: Dr. Sylvie Aulanier

Présidente du Réseau Diabète de l'Estuaire
le Havre

Représentant le Dr Samuelson

I. Est-ce qu'un généraliste peut adresser directement un patient à un diététicien, un podiatre-podologue ou un conseiller en diabète (non médecin) (si cela existe ?)? Avec ou sans accord préalable par un spécialiste de seconde ligne ?

Tout généraliste peut adresser un patient à un e diététicienne ou un podologue en ambulatoire mais ces prestations ne sont pas pris en charge par l'assurance maladie dans ce cas . Sauf si le patient le médecin adhèrent à un réseau de soin pour les diabétiques ou les obèses. Ce réseau de soins dispose d'un protocole de prise en charge pour ces praticiens qui sont salariés du réseau.

Le généraliste peut avoir accès aux services de diabétologie des hôpitaux lorsque ceux-ci ont mis a disposition la consultation diététique en accès direct, ou une consultation pied. Ceci dépend de la politique des hôpitaux de région.

2. Est ce que le système de santé rembourse :

- Consultations du diététicien?

Oui dans les réseaux, et lorsque la consultation hospitalière est ouverte a l'accès direct.

- Consultation du podiatre / podologue?

Oui dans les réseaux, et lorsque la consultation hospitalière est ouverte a l'accès direct.

- Glucomètre?

Si le patient a bénéficié d'un **protocole d'examen spécial** entre le médecin généraliste et le médecin contrôleur de la sécurité sociale, il bénéficie de l'exonération du ticket modérateur

- Les tigettes?

Si le patient a bénéficié d'un **protocole d'examen spécial** entre le médecin généraliste et le médecin contrôleur de la sécurité sociale, il bénéficie de l'exonération du ticket modérateur pour les soins de santé recommandés par l'ANAES (HAS) . Des protocoles plus précis sont en cours d'élaboration.

3. Y a t-il une personne qui joue un rôle d'éducation à la santé pour les diabétiques et explique ou effectue

- Des visites à domicile?

Oui dans les réseaux.

- Des cours pour les médecins?

Oui dans les réseaux et un peu dans les associations nationales de Formation Médicale Continue, conventionnée par les Tutelles et l'Assurance maladie.

- Une co-ordination des soins aux diabétiques

Dans les réseaux seulement.

4. Dans quelle proportion des cabinets y a t-il des personnes qui aident le généraliste dans son cabinet ?

- Personnel administratif?

En général : une secrétaire mi-temps par médecin dans les cabinets de groupe.

- Infirmière?

Jamais.

- Diététicien?

Jamais.

- Podiatre / Podologue?

Jamais.

- Autres?

5. Par qui sont financées ces personnes ?

Par les médecins.

6. Au niveau coût , quelle partie des frais le patient doit-il payer lui même :

Pour les médicaments, diététicien, podologue, matériel de contrôle ?

Pour les médicaments, le matériels, les recours secondaires vers les diabétologues, médecins nutritionnistes, cardiologues, les ophtalmologues, chirurgiens, néphrologues etc la prise en charges est totale au titre de l'ALD (affections de longue durée) après PES (protocole d'examen spécial). Il faut retenir l par consultation depuis 8/2005.

La consultation de diététique et les soins podologiques de prévention primaires et secondaires sont à la charge du patient sauf dans les réseaux de soins.

7. L'organisation en « réseau de soins » tel que le REVEdiab du Val de Marne

(http://www.ors-idf.org/etudes/Pdf/4_pages2002/REVEdiab2003.pdf)

et autres projets expérimentaux couvre quel pourcentage de la population des diabétiques ?

Je pense que l'Entred pourrait donner des chiffres.

8. Qui organise la formation continue pour les généralistes et spécialistes ?

Quelques universitaires spécialistes autour des CHU, avec les Firmes pharmaceutiques

Les organismes conventionnées par l'OGC et le CNFMC qui habilitent des formations de 48 heures pour les médecins généralistes qui sont indemnisés pour leur perte de ressource.

Les réseaux qui organisent des formations pluri professionnelles, localement avec leurs experts en pédagogie, et en spécialistes du thème.

9. Y a t-il des mécanismes de contrôle de qualité dans la première ligne de soins aux diabétiques ?

Les médecins ont l'obligation d'effectuer une Evaluation des pratiques professionnelles tous les 5 ans, que ce soit dans ou hors réseaux. Les Union Régionale des Médecins Libéraux sont responsables de la mise en œuvre de groupe d'EPP et aussi du contrôle de la qualité des initiatives locales (réseaux, groupe de pairs, groupes de FMC, etc)

10. Quels sont aujourd'hui les points forts et les difficultés majeures dans l'organisation des soins aux diabétiques en France ?

Les réseaux sont un point fort pour l'optimisation des ressources des soins de prévention et de dépistage des complications du diabète de type 2 mais il reste un effort à faire pour homogénéiser les pratiques et surtout pour rendre accessible à tous les diabétiques une qualité des soins suffisantes.

Le manque d'accès à certaine spécialité : ophtalmologie surtout, soins des pieds.

C'est un mode de financement non pérenne, plutôt forfaitisé dont la gestion repose en grande partie sur le bénévolat, la participation des patients et des soignants de premiers recours, ainsi que les établissements de santé plutôt publics

11. Quels changements d'organisation espérez vous dans le futur ?

Un financement pérenne, et une souplesse dans l'organisation des soins de premiers recours ; Un diffusion des réseaux de proximité adaptés aux conditions locales pouvant aller du financement de paramédicaux pour un cabinet de groupe en milieu rural ou urbain, jusqu'à des structures régionales pouvant prendre en charge la formation, les évaluations etc.

Interview France 5: Dr. Anne Fagot-Campagna

Institut de Veille Sanitaire

Programme Diabète

Département des Maladies Chroniques et Traumatismes

12 rue du Val d'Osne

94415 Saint Maurice Cedex

1. Est-ce qu'un généraliste peut adresser directement un patient à un diététicien, un podiatre-podologue ou un conseiller en diabète (non médecin) (si cela existe ?)

Oui, mais les soins de podologie et les consultations diététiques ne sont pas remboursés, hors hôpitaux et réseaux diabète.

Avec ou sans accord préalable par un spécialiste de Seconde ligne? Sans.

2. Est ce que le système de santé rembourse :

- Consultations du diététicien? Non.
- Consultation du podiatre / podologue? Non.

- Glucomètre? Oui.
 - Les tigettes? Oui.
3. Y a t-il une personne qui joue un rôle d'éducation à la santé pour les diabétiques et explique ou effectue
- Des visites à domicile? Non, en dehors des médecins généralistes.
 - Des cours pour les médecins? Il existe des formations via les universités et les réseaux, sur volontariat des médecins.
 - Une co-ordination des soins aux diabétiques? Au sein des réseaux et des hôpitaux.
4. Dans quelle proportion des cabinets y a t-il des personnes qui aident le généraliste dans son cabinet ?
- Personnel administratif? Aucune idée des %, mais presque toujours un secrétariat.
 - Infirmière? Rare.
 - Diététicien? Extrêmement rare.
 - Podiatre Podologue? Extrêmement rare.
 - Autres?
5. Par qui sont financées ces personnes ?

Par le médecin.

6. Au niveau coût , quelle partie des frais le patient doit-il payer lui même :

Pour les médicaments, diététicien, podologue, matériel de contrôle ? 2 possibilités : la personne diabétique a fait ou non l'objet d'une prise en charge à 100% (demande à faire auprès de l'Assurance maladie par le MG, systématiquement acceptée si traitement oral. Mais 77% seulement des diabétiques traités en bénéficiaient en 2001) : les médicaments (pour le diabète) sont remboursés à 100%, sinon en général 70% et complément par la mutuelle privée. Diététiciens et podologues, non hors hôpital et réseaux. Matériel de contrôle oui.

7. L'organisation en « réseau de soins » tel que le REVEdiab du Val de Marne

(http://www.ors-idf.org/etudes/Pdf/4_pages2002/REVEdiab2003.pdf)

et autres projets expérimentaux couvre quel pourcentage de la population des diabétiques ?

Voir dans modification dans le texte de base envoyé par mail.

8. Qui organise la formation continue pour les généralistes et spécialistes ?

Les universités.

9. Y a-t-il des mécanismes de contrôle de qualité dans la première ligne de soins aux diabétiques ?

Programme diabète de l'Assurance maladie en 1998-2000 ; étude Entred en 2001-2003. Actuellement, mise en place d'un suivi des ALD30 diabète par la Haute Autorité en Santé.

10. Quels sont aujourd'hui les points forts et les difficultés majeures dans l'organisation des soins aux diabétiques en France ?

Difficultés :

- Individualisme des médicaux.
- Peu de formation continue.
- Absence de remboursement de la podologie et diététique et éducation.
- Absence de système de contrôle qualité direct auprès des médecins.
- Faible prise de conscience de la gravité de la maladie par la population et les médecins.

Points forts :

- accès aux soins pour tous ou presque,
- ALD30 avec prise en charge à 100 %.
- Accès direct à l'hôpital et aux réseaux.

11. Quels changements d'organisation espérez vous dans le futur ?

- Informatisation des dossiers médicaux avec autocontrôle par le médecin lui-même en premier lieu (check-list des actes à réaliser et rappels) ;
- Renforcement du rôle et des connaissances du médecin généraliste avec meilleure relation au spécialiste ;
- Remboursements des actes de diététique, podologie et éducation ;
- Renforcement des systèmes généraux de contrôle et d'évaluation des ALD30.

Germany

Interview Germany I: Prof. Dr. H. H. Abholz

Department of Family Medicine, Heinrich Heine University of Duesseldorf

24 October 2005

1. Do you have any comments/corrections to make on the document? Are there any important issues we forgot to mention?

The text is mainly correct but gives a too positive view; reality is often different.

The leitlinien are criticised by the GP's as being too much biased towards secondary care specialists. Now more evidence-based guidelines are being written.

2. Which professions are usually working at a GP practice: administrative staff; practice nurse; dietician; podiatrist; other?

Usually per GP 2 full-time administrative employees are working. They also received a basic medical training of 1h/ week during two years; they e.g. do the blood specimens, ECG, plasters, etc. They are paid from the GP's payment by fee-for-service.

Note: the fee-for-service system has recently changed; e.g. GP's now have only 10-15 different fees they can use; note also that the total budget is capped.

3. Can the GP directly access a dietician, podiatrist or diabetes adviser (without referring the patient to secondary care)?

It is not financially interesting to have dieticians, podiatrists in general practice, though GP's can refer their patients to private dieticians, podiatrists.

4. Does the statutory health insurance subsidize: dietetic consult; podiatric consult; glucometer; test strips?

Dieticians, podiatrists are paid for. Patients on insulin get glucometer + test strips for free. Patients not on insulin usually can get the glucometer from a company, but have to pay for the test strips.

5. Sickness funds can give their members a bonus if they access secondary care through their GP. Is this often done?

Since 2005 the GP has a gatekeeping function, though there is no official registration. The patient gets registered with the first GP he visits every quarter of a year. When by-passing the GP the specialist will charge the patient 10 extra, which will go back to the health insurance.

Parallel to this national regulation many sickness funds give bonuses to patients who access secondary care through their GP.

6. Do specialist in internal medicine and paediatricians registered as GP really take up the function of a family doctor?

Internal medicine specialists registered as GP do act as GP's, though they might be less trained in some aspects of care. Paediatricians registered as GP only treat children.

7. Which of the following roles does the diabetes adviser take up: health education; home visits; training health staff; co-ordinating diabetes care?

I don't know them very well.

Actually seem to play a marginal role in the system; they exist in secondary care diabetes clinics and also sickness funds have them. They are non-medicals, and mainly give advice on social issues as e.g. the type of support they can get, referring to self-help groups, etc.

The original idea was to make them case-managers, but only for the non-medical aspects of care.

8. How do you assess the impact of the Disease Management Programme?

Before the DMP several counties had already DMP-like programmes. What the DMP actually did, is spreading these initiatives to the whole country.

The DMP means a real structural change, defining standards, division of responsibilities. Doctors are unhappy because of the bureaucracy going with it.

The impression is that the standards of care are improving thanks to the DMP. We also know from the programmes that preceded the DMP that standards of care usually improve.

There are indeed about 300 DMP's on just one topic - according to the number of sickness funds-, but they are all +/- the same. They only differ in the extra's the sickness funds offer.

9. To what extent do health professionals adhere to the DMP guidelines?

There is actually no real adherence: there are no strict rule but rather description of regular pathways. There is always a possibility within the DMP to make an exception, but it has to be documented.

10. Are structured health education programmes presently available for all patients within the DMP? Are many patients prepared to follow these programmes?

Structured health-education programmes are offered by secondary care, some primary care surgeries and by sickness funds. +/- 60% of the pts had at least one educational curriculum (8 sessions of 1.5 hours).

11. Do we know already something about the outcome of diabetes patients in the DMP programme.?

We don't have results yet, but there are already outcomes known from the DMP-like programmes – which usually indicate an improvement in quality of care.

12. Who funds/organises continuing medical education for GP's?

Since 2005 physicians have to collect a number of CME points over 5 years, but it's rather easy to get them.

Physicians working within the DMP have to follow 6hrs of refresher courses per year.

13. Are there any mechanism for quality assurance in place for diabetes care outside the DMP?

Quality circles gather on different topics at least 4 times a year on a voluntary basis. From personal research it appears they usually don't work very well. 35% of the GP's attend at least one circle in a year, but they are rather unsystematically organised..

Surgeries can get a certificate of quality of care. Every surgery should get it in the next years. It's a form evaluation of quality of care (for chronic patients) by the Ärztekammer (self-regulation).

14. What are according to you the strengths of the organisation of diabetes care in Germany?

The DMP for diabetes is creating more structured, but is at the same time flexible enough to allow exceptions.

GP's get a strong basic education. They get 5 years postgraduate training with at least 2-3 years internal medicine, e.g. most GP's start patients on insulin on their own without secondary care support.

Interview Germany 3: Dr J. Gensichen

Department of Family Medicine, Goethe-University, Frankfurt

28 November 2005

1. Do you have any comments/corrections to make on the document describing diabetes care in the Germany? Are there any important issues we forgot to mention?

- The GP training will change very soon. Document will be mailed.
- As from 2006 new legislation concerning SHI clinics will come into force. Up till now every GP/internist/paediatrician could be paid from the Primary Health Care Fund. From 2006 internists will no longer be able to register as GP. This means a strengthening of the general practice.
- The problem with the guideline is that the cut-offs for referral are sometimes very strict. Many of the patients who are referred to secondary care, come back to the GP after some time, because secondary care wasn't successful neither.
- Quality circles: when focusing on pharmacotherapy they can be very effective.

2. Which proportion of GP's use electronic medical records? Are electronic medical records used for:

- Establishing a diabetes register
- Communication between health workers
- Quality assurance
- All GP's use EMR for budgeting.
- About 60% use EMR for clinical purposes, episode documentation
- Less than 10% uses this for specific diabetes care (e.g. diabetes registers), for communication or quality assurance.

3. Can a GP get the support of a diabetes nurse? If yes, what are her tasks (health education, clinical follow-up)?

Diabetes nurses are mostly used for health education. Clinical follow-up is done by the GP as the GP has to see the patient to be paid. Diabetes nurses can only be contacted through referral to secondary care.

4. Do GP's usually have diabetes registers? If yes, are they used for call/recall?

See above.

5. Do GP's usually organise specific diabetes clinics?

Less than 10%

6. Do specialists in internal medicine and paediatricians registered as GP really take up the function of a family doctor? Would you consider them as working on the first or secondary care?

In terms of diabetes care GP's and internists working in diabetes clinics are very similar. While GP's working in general practice (be it people trained as GP or internist), sometimes provide poorer diabetes care. See also mailed document.

7. How do you assess the impact of the Disease Management Programme and the integrated care programme on diabetes care?

It is very important. Previously we had the programmes of Professor Berger, which were implemented in several Länder. Thanks to the DMP, these programmes are now generalised.

The DMP has an impact on two levels:

- Quality of care: everybody has to provide 6-monthly reports and the outcome for some quality indicators.
- Implementation of new chronic care aspects as e.g. systematic follow-up, use of guidelines and quality indicators and – we might hope in the future – diabetes registers.

8. The DMP requires that there should be structured training programmes for diabetes patients? Are these programmes presently available for all patients within the DMP? Are many patients prepared to follow these programmes?

The GP decides who might benefit from a structured training programme – it should not be offered to everybody. All over the country there is enough capacity to train all diabetes patients, but not all patients get it. These programmes are usually either hospital-based or diabetes clinic-based. Patients usually seem to like these programmes.

9. Are there any mechanisms for quality assurance in primary care in place? How is quality assurance done within the DMP?

Each GP should get an individualised feed-back report from the sickness funds. In some regions this report is well written (e.g. Baden-Württemberg), but in other regions these reports hardly make sense. As a result the GP has the feeling he has to do a lot useless work (for documentation). The reports are neither linked to incentives, so many colleagues don't care about it.

Personally I think the documentation should be decentralised to the general practice level, so that it can be useful for the GP himself. GP's find the present documentation requirements terrible, but some documentation would be OK for them.

The financial incentives for entering a patient in the DMP are small.

10. Which are according to you the strengths of the organisation of diabetes care in Germany?

We have good structures, e.g. the diabetes clinics offer good care. The referral system works well (though the corridor for referral for the GP is too narrow). The outcome of diabetes care is actually better than in most other European countries, in terms of HbA1c and blood pressure control.

11. What are today the major problems in the organisation of diabetes care in Germany?

The main limitations of the system lay in the management of co-morbidity as e.g. cardiac failure, COPD, asthma.

12. Which changes in the organisation of diabetes care do you expect in the future?

- The electronic health card will be introduced, but many GP's are not used to work with it.
- We will need a non disease-specific DMP dealing with multi-morbidity and providing integrated care.
- DMP will continue to be linked to risk-adjustment, which might be a problem. Risk adjustment is actually the main reason the DMP was developed. The problem is that hardly any GP understands the mechanism of risk adjustment, and only sees the DMP as a tool for quality improvement (while the sickness funds are mainly interested in the risk adjustment).

Interview Germany 4: Prof. Dr. W.A. Scherbaum

Endocrinology Department, Heinrich-Heine University, Duesseldorf

25 November 2005

(comments on the text were provided in written form)

1. How do you assess the impact of the Disease Management Programme and the integrated care programme on the diabetes care?

The DMP sets very basic standards of care. It did not help patients who had been treated well before. The DMP encourages care for everybody – also for patients who didn't know about diabetes at all. In general, with the DMP the HbA1c went down, though we don't have good data.

From the point of view of the hospital, not much has changed. We don't see more patients than before, as the diabetologists who should refer inadequately controlled patients to the hospital, can always find reasons not to refer. However the DMP did change care at the level of the GP's and the diabetes clinics.

Patients are encouraged to follow group-based training programmes, which was not the case before.

The DMP represents only a small incentive for the doctor (about 25 per patient every three months). In the beginning the doctor has to fill a lot of forms, and it has to be filled properly otherwise reimbursement is refused. So the DMP goes with a lot of formalism. The DMP will get more and more integrated in the software packages of the doctors, so it will become easier in the future. The real incentive is that, once patients entered the DMP, they will come back regularly.

Sickness funds encourage patients to go to doctors who participate in the DMP, as sickness funds get extra money for patients in the DMP. Doctors feared that patients would therefore change doctor if they didn't qualify as inscribing doctor in the programme. About half of all doctors are inscribers.

The original idea was only to include patients who would take advantage of the DMP. But the sickness funds, because of the financial incentives, encouraged the patients to inscribe – also patients who are e.g. on diet only and who don't need 3-monthly control. On the other hand the GP budget is capped, resulting in the reimbursement per service going down. However this is now levelling off.

2. To what extent do health professionals adhere to the shared care protocols?

They have to adhere because they have to document. E.g. if a patient with a creatinine of 1.5 is not referred to the nephrologists, the sickness fund will see it.

However one can question the reliability of the documentation. It's mostly filled in by non-medical personnel and its quality is not checked.

Note: DMP criteria for hospitals

The criteria are very low, because the hospital associations wanted to include nearly all hospitals, as the representatives in the associations are elected by the hospitals. Most hospitals that applied for a DMP Klinik were accepted. The rules of the DDG are more strict. Note that patients only have direct access to hospital clinics within strict limitations, though there is a political wish to open them up.

3. Who organises continuing medical education for GP's and specialists? Who funds it?

The Artzkekammer are responsible for the CME. They check the content and give allowances. It more and more the case that Artzkekammer don't give allowance to company-sponsored activities.

4. Are there any mechanisms for quality assurance in secondary care in place?

Not in the DMP, unfortunately. However, before the DMP diabetologists already transferred their data to a central board, so that they compare with each other.

5. Which are according to you the strengths of the organisation of diabetes care in Germany?

- Type 1 diabetes care is at a very high level. +/- 85% are cared for by the diabetologist.
- Type 2 diabetes care has improved very much in outpatients departments. Within the diabetes services there are now stringent diabetes programmes. Diabetes care in diabetes hospitals is usually excellent, but when a diabetes patient comes in contact with other departments in the hospital, the care is poorly organised.
- Outpatient diabetes care: metabolic control is good – Germans are world champions of insulin therapy. Blood pressure control is not so good - this is a matter of budget to pay for the drugs. In general it is well organised. The DMP improved the system a lot.
- GP's work as family doctors, who have much responsibility for the patient. In cities GPs are more and more working in health centres, where they are employed. As a result the responsibility for the patient is less.

6. What are today the major problems in the organisation of diabetes care in Germany?

The co-ordination between the specialties is still difficult. This can be addressed in the integrated care programmes. But they are still really focal, e.g. we have an integrated care programme for the diabetes foot syndrome. In this programme we negotiated that when a patient was amputated without being seen at a diabetes foot clinic, the amputation would not be paid for by the sickness funds. The problem of the integrated care programmes is that they are local; they don't exist everywhere. Ideally would be if a model that was tried out and worked well, would be implemented nationwide.

7. Which changes in the organisation of diabetes care do you expect in the future?

- Diabetes care will be more integrated in the overall care.
- Doctors will be trained more in diabetes care.
- Nurses will have greater impact. The basic care will shift to the non-academic people e.g. nurses will visit patients at home. The doctor will be the decision-maker, he will make the diagnosis, plan the therapeutic intervention and then only intervene when there are problems. It is still general practice in Germany that patients address the doctor even with small medical problems. Basic care provided by non-academic people makes sense.

The Netherlands

Interview The Netherlands I: Dr. C.A. Baan

Epidemiologist at the Centre for Prevention and Health Care Research

15 November 2005

1. Hoe evalueert u de impact van de afstemmingsafspraken op de diabeteszorg?

De impact is heel moeilijk te kwantificeren. Zodra er afstemmingsafspraken zijn, verbeter de procesindicatoren, maar op de outcome indicatoren zie je veel minder effect. Er zijn bovendien nog veel hiaten in het onderzoek bv. rond patiënten tevredenheid en zorgbelasting voor zorgaanbieders in de context van afstemmingsafspraken. We hebben wel het gevoel dat de afstemmingsafspraken goede resultaten opleveren, maar er is nog onvoldoende outcome evaluatie gebeurd om dit hard te maken. Dat is ergens ook logisch, want degenen die de afstemmingsafspraken implementeren zijn gewone zorgaanbieders, die weinig kaas hebben gegeten van outcome evaluatie.

2. Hoe worden afstemmingsafspraken gefinancierd?

Momenteel gebeurt de financiering ad hoc. De keten-dbc-diabetes moet voor een meer gestructureerde financiering zorgen. Volgend jaar worden een aantal pilootprojecten hier rond opgestart. Na anderhalf à twee jaar zou dit moeten leiden tot een beleidsbeslissing binnen het ministerie.

3. In welke mate wordt ICT gebruikt in de eerste lijn voor: opstellen van diabetes register; communicatie tussen gezondheidswerkers; kwaliteitsbewaking?

Er zijn zeer veel verschillende initiatieven, waar ik geen goed zicht op heb. Er zijn wel vragen om ICT meer te stroomlijnen, want ICT is vaak het knelpunt in afstemmingsafspraken. Iedereen vindt in elk geval dat het voor de hierboven vermelde activiteiten zou moeten gebruikt worden.

4. Bestaat er van overheidswege een systeem van kwaliteitsbewaking voor diabeteszorg?

Er is de inspectie die moet instaan voor de veiligheid van zorgen.

Voor de ziekenhuiszorg wordt er vanuit het ministerie gewerkt aan indicatoren. Maar men is daar nog mee bezig.

We hebben net zelf indicatoren ontwikkeld die zouden gepubliceerd worden in december 2005. Er zou een diabeteskenniscentrum opgericht worden dat voor die kwaliteitsbewaking zou instaan. De vraag is vooral wat wij willen weten en wat de zorgverzekeraars zelf in de gaten moeten houden.

5. Wat zijn volgens u de sterke punten van de diabeteszorg in Nederland?

Op vlak van outcome parameters scoren we vrij goed; HbA1c is vrij laag, bloeddruk en cholesterol scoren gemiddeld.

De zorg is niet slecht door de sterke betrokkenheid van de huisarts en de diabetesverpleegkundige. Er valt wel nog wat te verbeteren aan de multidisciplinaire aanpak van risicofactoren.

6. Wat zijn volgens u de knelpunten?

De knelpunten voor het ontwikkelen van afstemmingsafspraken zijn vooral de financiering en de ICT.

Daarnaast is er de domein-discussie tussen eerste en tweede lijn: wie doet wat? Waar moet het primaat van de behandeling liggen? Hoe groot is de taak van de huisarts?

7. Hoe denkt u dat de organisatie van de diabeteszorg in de toekomst zal evolueren?

We gaan naar een meer structurele en landelijke dekking van de afstemmingsafspraken. Dit zal gepaard gaan met taakverschuivingen en een grotere rol voor de diabetesverpleegkundige.

Interview The Netherlands 2: Prof. G.E.H. Rutten

Departement huisartsgeneeskunde, Universiteit Utrecht

24 november

I. Hebt u opmerkingen bij de tekst? Zijn bepaalde beweringen in de tekst niet correct? Werden belangrijke aspecten van de diabeteszorg niet vermeld?

- p.4: Huisartsen krijgen extra incentives voor o.a. 1) gebruik van elektronisch medisch dossier, 2) het opstarten van patiënten op insuline. Er is de laatste tien jaar een evolutie aan de gang waarbij fee for service in de huisartsenpraktijk werd geïntroduceerd. Het nieuwe betalingssysteem dat vanaf 2006 geldt, komt niet zomaar uit de lucht gevallen.
- p.7: Vervang National GP Association door Dutch College of GP's (NHG); het eerste is het huisartsensyndicaat. In de lente van 2006 zal het NHG trouwens een nieuwe diabetesstandaard publiceren.
- p.8: Driemaandelijke controles gebeuren meestal door de praktijkverpleegkundige. De diabetesverpleegkundige is een externe hulp die vooral tussenkomst bij het opstarten van insuline. We hebben recent afspraken gemaakt rond een taakverdeling in die zin tussen praktijkverpleegkundige en diabetesverpleegkundige. Financiering van

diabetesverpleegkundigen verschilt van regio tot regio. In de toekomst zullen die waarschijnlijk betaald worden vanuit de diabeteszorggroepen.

- p.8: thuisverpleegkundigen zijn in Nederland wijkverpleegkundigen.
- p.9: Wolfenbuttel et al: dit komt van een symposium. Er is wel een boek gepubliceerd door Van Nunen, waarschijnlijk te verkrijgen bij NovoNordisk Nederland.
- We hebben recente outcome data van diabetespatiënten in de huisartsenpraktijk van 5 grote representatieve netwerken:
 - gemiddelde HbA1c: 7.1%
 - Cholesterol: 5.3 mmol/l
 - Systolische bloeddruk: 146 mmHg
 - Diastolische bloeddruk: 83 mmHg
- De laatste vijftien jaar is er een toenemende samenwerking tussen huisartsen en diabetologen tot stand gekomen. Diabetologen werken mee aan guidelines voor de eerste lijn. De populatie van diabetespatiënten in het ziekenhuis is in die vijftien jaar ook sterk veranderd: ze bestaat hoofdzakelijk nog uit patiënten op insuline, met complicaties of met langdurige diabetes; m.a.w. patiënten die op de tweedelijns thuishoren.

2. Werken huisartsen routinematig met diabetessprekuren, diabetesregistratie- en oproepsystemen? Hoe vaak zijn diëtisten of podologen beschikbaar binnen een huisartsenpraktijk?

We hebben een recent een grote landelijk enquête gehouden onder heel veel huisartsen. Daaruit bleek dat 66% van de huisartsen diabetessprekuren hielden, 99.7% een diabetesregister had en ongeveer call/recall systemen gebruikte. Citeer als Van Avendonk, Gorter, van der Linden Rutten, publicatie in voorbereiding.

Podotherapeuten en diëtisten zijn niet beschikbaar binnen de huisartsenpraktijk. Huisartsen hebben wel rechtstreeks toegang tot deze diensten zonder tussenkomst van de tweede lijn. Vanaf 2006 zal podotherapie niet meer deel uitmaken van de basisverzekering.

3. Afstemmingsafspraken tussen huisartsen, specialisten en andere gezondheidswerkers zijn wijdverspreid in Nederland. Hoe evalueert u de impact van deze afspraken?

Afstemmingsafspraken bestaan op grote schaal maar werden nauwelijks geëvalueerd. We zijn momenteel bezig een dergelijke afstemmingsafpraak te evalueren. Ik ben er nogal sceptisch over. Vaak gaat het om éénrichtingsverkeer (huisartsen houden zich aan de afspraken, maar het is niet te traceren wat specialisten doen). Afstemmingsafspraken verschillen vaak enkel in details van de nationale richtlijnen. Wat is dan de zin van deze regionale afspraken. Al bij al zijn deze afspraken tamelijk vrijblijvend. Voordeel is wel dat huisartsen en endocrinologen/internisten elkaar door deze afspraken beter leren kennen, zodat de communicatie beter verloopt.

Een probleem is dat de tweede lijn eigenlijk geen echte protocollen heeft voor bv. beginnende nierfunctiestoornissen, patiënten op insuline met slechte glycemiecontrole etc. Er bestaan geen goede gegevens over de zorg in het ziekenhuis. Als je afstemmingsafspraken maakt, moet je weten van elkaar wat je doet, zodat je het kan evalueren. Het is momenteel nauwelijks te traceren of specialisten in het ziekenhuis afstemmingsafspraken opvolgen (bv. in verband met het terugverwijzen van patiënten naar de eerste lijn).

4. Hoe kan het nieuwe beleid van diabetesketenzorg en het oprichten van diabeteszorggroepen bijdragen tot een betere coördinatie van de diabeteszorg?

Ik hoop het, maar ik ben er niet zeker van. Wat wel zal gebeuren, is dat de vrijblijvendheid van deze afstemmingsafspraken zal verdwijnen. Nu kan de ene huisarts zijn zaken heel goed doen, terwijl een andere er zich niet veel van aantrekt. Deze variabiliteit in kwaliteit zal verminderen door de ketenzorg.

Kwaliteitsbewaking vraagt echter geld en mensen. Zorgverzekeraars zouden dit op zich moeten nemen, maar dat zal een grote investering vragen, bv. een zorgverzekeraar in Israël heeft tientallen mensen die voor een groep van 180 000 diabetespatiënten de kwaliteit van zorgen opvolgt.

5. In welke mate wordt de ict-technologie op de eerste lijn gebruikt voor: 1) opstellen van een diabetesregister; 2) communicatie tussen gezondheidswerkers; 3) kwaliteitsbewaking?

- Opstellen diabetes register: cfr. supra.
- IT wordt gebruikt voor communicatie tussen eerste en tweede lijn, in beide richtingen.
- IT wordt soms gebruikt voor kwaliteitsbewaking op praktijkniveau. In het kader van de ketenzorg zal dit ook op regionaal niveau moeten ontwikkeld worden.

6. Bestaat er van overheidswege een systeem van kwaliteitsbewaking voor diabeteszorg?

Een systeem van kwaliteitsbewaking is er nog niet, maar er zijn wel tendensen voor het opzetten van een nationale kwaliteitsbewaking (naast de activiteiten van de zorgverzekeraars binnen de diabeteszorggroepen).

7. Wat zijn volgens u de sterke punten van de diabeteszorg in Nederland?

- De registratie van patiënte maakt patiënten traceerbaar, en daardoor de zorgen evalueerbaar zonder selectiebias.
- Diabeteszorg staat al meer dan 10 jaar op de agenda.
- Goede samenwerking tussen de eerste en de tweede lijn.

8. Wat zijn volgens u de knelpunten?

- De vrijblijvendheid van de afstemmingsafspraken
- Het ontbreken van protocollen en diabetesregisters op de tweede lijn.
-

9. Hoe denkt u dat de organisatie van diabeteszorg in de toekomst zal evolueren?

Binnen de diabeteszorggroepen: als de zorgverzekeraars hun rol opnemen van kwaliteitsbewakers, zal de vrijblijvend van de afstemmingsafspraken verminderen. Dit zal ook een impuls zijn om IT verder te ontwikkelen.

Hieraan zijn echter ook een aantal potentiële gevaren verbonden:

- Fragmentering van de zorg: in elke regio is de zorg anders
- Men gaat vooral op de kostprijs van zorg gaan letten, en niet meer op de kwaliteit.
- Zorg wordt categoriaal (en niet meer integraal).

Interview The Netherlands 3: Dr. R. Dijkstra

Huisarts onderzoeker, UMC St. Rombout, Utrecht

25 november 2005

I. Hebt u opmerkingen bij de tekst? Zijn bepaalde beweringen in de tekst niet correct? Werden belangrijke aspecten van de diabeteszorg niet vermeld?

- p. 6: in de stuurgroep die de richtlijnen van NHG opstelden, zaten ook twee internisten
- p. 6: de CBO richtlijn dateert van 1998
- p. 6 National Diabetes Federation moet Dutch Diabetes Federation zijn
- first/secondary care; is in het Engels waarschijnlijk primary and secondary care.
- p.7: "Half of all diabetes patients would be undiagnosed": is waarschijnlijk nu achterhaald door sterkere screening.
- p. 7: diëtisten en podotherapeuten: inderdaad niet in de huisartsenpraktijk maar huisartsen hebben er wel toegang tot deze diensten (vaak via de dienst thuiszorg)
- p. 8: thuisverpleegkundige is in Nederland een wijkverpleegkundige
- p. 10: de outcome cijfers op p. 10 kloppen niet meer met de huidige situatie

2. Werken huisartsen routinematig met diabetessprekuren, diabetesregistratie- en oproepsystemen?
Hoe vaak zijn diëtisten of podotherapeuten beschikbaar binnen een huisartsenpraktijk?

- Ongeveer 1/3 van de huisartsen houdt diabetessprekuren, maar dit is snel aan het veranderen doordat meer en meer praktijken werken met een praktijkondersteuner. Het is gewoonlijk de praktijkondersteuner die diabetessprekuren houdt. De huisartsen doen dit niet routinematig.
- Oproepsystemen: geen data, maar relatief beperkt.
- Beschikbaarheid van podotherapeuten/diëtisten: hangt af van de setting, meestal werken ze in dienstverband voor de dienst thuiszorg.

3. Afstemmingsafspraken tussen huisartsen, specialisten en andere gezondheidswerkers zijn wijdverspreid in Nederland. Hoe evalueert u de impact van deze afspraken?

Er zijn veel regionale verschillen wat betreft afstemmingsafspraken. Over het algemeen valt het niet zomaar te zeggen of ze goed werken of niet. Een kritiek op de afstemmingsafspraken is dat ze geen gesloten kwaliteitssysteem hebben dat feed-back geeft naar de huisarts over de kwaliteit van zorgen.

De financiering van afstemmingsafspraken verschilt van streek tot streek. Ofwel worden die gefinancierd door de zorgverzekeraar, of worden ze helemaal niet gefinancierd.

4. Hoe kan het nieuwe beleid van diabetesketenzorg en het oprichten van diabeteszorggroepen bijdragen tot een betere coördinatie van de diabeteszorg?

Ik denk het wel. Het zal in elk geval zorgen voor een gesloten kwaliteitssysteem.

5. In welke mate wordt de ict-technologie op de eerste lijn gebruikt voor: 1) opstellen van een diabetesregister; 2) communicatie tussen gezondheidswerkers; 3) kwaliteitsbewaking?

Het gebruik van ICT in de huisartsenpraktijk is zeer wisselend. +/- 80% van de praktijken hebben een elektronisch medisch dossier, maar wat dokter daarmee doen, is nog zeer wisselend en nog vatbaar voor verbetering.

- Opstellen van een diabetesregister: bijna elke praktijk heeft nu een diabetesregister.
- Gebruik van ICT voor communicatie staat nog in de kinderschoenen.
- ICT wordt weinig gebruikt voor kwaliteitsbewaking.

6. Bestaat er van overheidswege een systeem van kwaliteitsbewaking voor diabeteszorg?

De overheid heeft kwaliteitsindicatoren opgesteld maar laat het aan de zorgverzekeraars om daar iets mee te doen.

7. Wat zijn volgens u de sterke punten van de diabeteszorg in Nederland?

Grootste deel van de diabeteszorg zit in de eerste lijn, dit is laagdrempelige zorg dicht bij huis.

8. Wat zijn volgens u de knelpunten?

Er is nog steeds een onduidelijke organisatie van de zorgen, met nog vaak onduidelijke taakverdelingen. De afstemmingsafspraken zijn er, maar in welke mate worden die ook geïmplementeerd?

9. Hoe denkt u dat de organisatie van diabeteszorg in de toekomst zal evolueren?

Er zal zich een goed kwaliteitssysteem ontwikkelen dat coherent en transparant is. De huisarts zal regelmatig feed-back krijgen over de kwaliteit van zorgen.

De ketenzorg zal de diabeteszorg in belangrijke maten wijzigen. De huisarts neemt niet langer alle taken op zich, maar wordt de coördinator van de diabeteszorg. Groepjes van 15-20 huisartsen zullen zich vormen om de zorg te coördineren en te monitoren.

Interview The Netherlands 4: Prof. Dr. R.J. Heine

Diabetoloog Vrije Universiteit Amsterdam

1 november 2005

1. Hebt u opmerkingen bij de tekst? Zijn bepaalde beweringen in de tekst niet correct? Werden belangrijke aspecten van de diabeteszorg niet vermeld?

- Vanaf 1 januari 2006 zal de gezondheidszorg volledig veranderen. Het onderscheid private/publieke verzekering vervalt. Er komt een basispakket voor +/- 1000 voor iedereen. Daarnaast kan men zich voor bijkomende pakketten verzekeren. Wat er in het basispakket komt voor bv. diabeteszorg is nog niet duidelijk. Maar het totale budget blijft onveranderd, dus verwachten we dat het pakket ongeveer hetzelfde zal zijn als nu.
- Diabetes prevalentie: 3.5% (RIVM); dit is een verdubbeling over 10 jaar.
- De resultaten voor de metabole factoren zijn nu duidelijk beter dan vermeld in de tekst. Hierover meer gegevens bij : Henk Biló Isala ziekenhuis Zwolle; Giel Nijpels, Hoorn (g.nijpels@vumc.nl).
- Eerstelijnsdiabeteszorg wordt steeds belangrijker. Het model dat hierbij meer en meer gebruikt wordt is dan het huisarts-lab. De huisarts blijft de patiënt behandelen, maar het huisarts-lab coördineert een aantal elementen als educatie, screening voor retinopathie, diëetiek. Het lab ziet de patiënt bv. 1x per jaar en stuurt hierover een rapport naar de huisarts.

2. Hoe is de tweedelijnsdiabeteszorg gestructureerd? Zijn er specifieke diabetessprekuren? Zijn diëtisten en podotherapeuten meestal beschikbaar?

Organisatie van tweedelijnsdiabeteszorg is zeer variabel. Goed gestructureerde ziekenhuishuizen hebben een uitgebouwde diabeteskliniek met diëtisten, podotherapeuten en diabetologen. Maar dit is lang niet overal het geval.

Wel is er meer en meer een vraag vanuit de zorgverzekeraars om dergelijke multidisciplinaire diensten te organiseren.

3. Afstemmingsafspraken tussen specialisten, huisartsen en andere gezondheidswerkers zijn wijdverspreid in Nederland. Hoe evalueert u de impact van deze afspraken?

Afstemmingsafspraken bestaan op papier, maar de dagelijkse praktijk lijkt toch meer weerbarstig. Onze indruk blijft dat nog veel patiënten op de verkeerde plaats terechtkomen, vooral teveel patiënten nog in de tweede lijn. Dit is omdat ofwel de afstemmingsafspraken niet goed zijn of omdat de eerste lijn de afstemmingsafspraken niet volgt.

4. Hoe worden afstemmingsafspraken gefinancierd?

Verschilt van regio tot regio. Meestal worden afstemmingsafspraken opgezet op initiatief van de zorgverzekeraar. Die financiert dan ook deze afspraken.

5. Hoe kan het nieuwe beleid van diabetesketenzorg en het oprichten van diabeteszorggroepen bijdragen tot een betere coördinatie van de diabeteszorg?

De zorggroepen zijn belangrijk. Het is belangrijk om iedereen (eerste lijn, tweede lijn, zorgverzekeraar) bij de ketenzorg betrokken is. Pas wanneer afspraken door iedereen gedragen zijn, kan men een succesvolle implementatie verwachten.

6. In welke mate wordt de ict-technologie op de tweede lijn gebruikt voor: 1) opstellen van een diabetesregister; 2) communicatie tussen gezondheidswerkers; 3) kwaliteitsbewaking?

Het is een nachtmerrie. Iedereen onderschat de moeilijkheden waarmee men geconfronteerd worden bij het ontwikkelen van een EPD. Enerzijds zijn er de technische problemen, anderzijds wordt ook onvoldoende in geïnvesteerd.

Op vlak van EPD zijn de huisartsen al heel wat verder.

7. Betaalt de diabetes patiënt voor

- a. Diabetes medicatie;
- b. Glucometer en strips;
- c. Consult diëtist;
- d. Consult podotherapeut?

Podotherapeut: hangt af van het type verzekering; vaak moet er een eigen bijdrage betaald worden.

Strips zijn vrij tot een maximum, afhankelijk van het type therapie. Patiënten die op maximaal orale antidiabetica staan en binnenkort moeten overschakelen op insuline, krijgen ook een beperkt aantal strips gratis.

Diëtist is gratis. Er is een tendens in de ziekenhuizen om alle patiënten voor dieetconsult terug te verwijzen naar de eerste lijn, vanuit het idee dat de diëtist op de eerste – en niet de tweede – lijn thuishoort. Maar de meeste ziekenhuizen behouden wel nog een beperkt aanbod van dieetconsult.

8. Hoe wordt de bijscholing van artsen door de overheid geregeld? Wie organiseert en financiert de bijscholing?

The DESG (diabetes education study group), een afdeling binnen de NDF, organiseert voor diabetologen een tweedaags symposium één maal per jaar. Voor assistenten in opleiding is er 2 à 3 maal per jaar een tweedaagse bijscholing.

Daarnaast is er een generisch accreditatiesysteem.

9. Bestaat er van overheidswege een systeem van kwaliteitsbewaking voor diabeteszorg?

Zorgverzekeraars vragen meer en meer om de kwaliteit van diabeteszorg te monitoren. In ons ziekenhuis gebeurt dit sinds dit jaar. Dit is zeer zeker toe te juichen.

10. Wat zijn volgens u de sterke punten van de diabeteszorg in Nederland?

Sterk gestructureerde eerstelijnszorg.

11. Wat zijn volgens u de knelpunten?

Er zijn te weinig middelen voor diabeteszorg.

Er is geen wil om een goede diabeteszorg in de tweede/derde lijn uit te bouwen.

Informatietechnologie: een EPD is nog niet voor morgen.

12. Hoe denkt u dat de organisatie van diabeteszorg in de toekomst zal evolueren?

De diabetesprevalentie verdubbelt om de tien jaar en een groot aantal patiënten zijn nog niet gediagnosticeerd. We zullen in de toekomst te maken krijgen met een probleem van capaciteit. De enige oplossing ligt op public health niveau: veel meer nadruk op preventie. Daarnaast moet de eerste lijn nog meer capaciteit ontwikkelen om diabetespatiënten op te volgen. 99% van de patiënten zouden in de eerste lijn moeten behandeld worden. Enkele topziekenhuizen in het hele land zouden dan de probleempatiënten moeten opvolgen.

Interview The Netherlands 5: Dr. Klaas Reenders

Huisarts

25 november 2005

I. Hebt u opmerkingen bij de tekst? Zijn bepaalde beweringen in de tekst niet correct? Werden belangrijke aspecten van de diabeteszorg niet vermeld?

- p. 3: "Each sickness funds chooses which provider to contract, thus limiting the choice of the physician": dit gebeurt feitelijk niet. Elke ziekenfondspatiënt is even vrij om een huisarts, specialist of ziekenhuis te kiezen als een privaat verzekerde. Men heeft altijd gestreefd naar een zo gelijkwaardig mogelijke behandeling van de twee groepen verzekerden. Wel is het zo dat het soms lastig is om van huisarts te veranderen door het beperkt aanbod aan huisartsen.
- p. 3: "Most specialists are paid on a fee-for-service basis": inderdaad maar er zijn toch ook vrij specialisten die in dienstverband werken. In universitaire ziekenhuizen werken ze altijd in dienstverband; in niet-academische ziekenhuizen is de situatie wisselend.
- p. 6: Bij het opstellen van NHG standaarden waren ook twee specialisten betrokken. Vermeld hierbij ook de zorgstandaard van het NDF. Toen het NHG zijn standaard formuleerde, was het CBO tegelijkertijd ook richtlijnen aan het ontwikkelen over bepaalde aspecten van de diabeteszorg. Om te zorgen dat de CBO standaarden niet in contradictie waren met de NHG standaarden, zat in elke groep die aan een richtlijn werkte, ook een huisarts die betrokken was geweest in de ontwikkeling van de NHG standaard. Daarna kwam de vraag van de overheid om deze richtlijnen te vereenvoudigen zodat ze bruikbaar waren als basis voor het afsluiten van een contract. Op vraag van de overheid heeft het NDF daarop in 2003 de zorgstandaard opgesteld. Zie www.diabetesfederatie.nl.
- "Half of all diabetes patients are unknown." Dit komt uit een studie in Hoorn van rond 1995. Dit is achterhaald. Het werkelijke cijfer ligt waarschijnlijk rond de 30 – 40%.

2. Werken huisartsen routinematig met diabetessprekuren, diabetesregistratie- en oproepsystemen? Hoe vaak zijn diëtisten of podotherapeuten beschikbaar binnen een huisartsenpraktijk?

Hierover heb ik geen precieze gegevens. Maar huisartsen organiseren wel in toenemende mate de diabeteszorg. Dit proces is sterk afhankelijk van de aanwezigheid van praktijkondersteuners; deze houden wel routinematig diabetessprekken. Momenteel heeft ongeveer de helft van de huisartspraktijken een praktijkondersteuner.

Diëtisten zijn overal beschikbaar, zowel privaat als in dienstverband (meestal van een thuiszorg organisatie). Nu is het zo dat de communicatie tussen diëtist en huisarts vaak gebrekkig verloopt. In de diabeteszorggroepen zal een huisarts een contract moeten sluiten met een diëtist. Hierbij zal vlug het kaf van het koren gescheiden worden – want niet alle diëtisten zijn even vertrouwd met diabetes.

Hetzelfde kan gezegd worden voor de podotherapeuten, behalve dat ze lang niet overal beschikbaar zijn. Ook hier is er vaak nog onvoldoende communicatie, maar zullen de diabeteszorggroepen waarschijnlijk beterschap brengen.

3. Afstemmingsafspraken tussen huisartsen, specialisten en andere gezondheidswerkers zijn wijdverspreid in Nederland. Hoe evalueert u de impact van deze afspraken?

Bijna elk ziekenhuis heeft nu wel zijn afstemmingsafpraak. Probleem is de evaluatie. Er wordt in Nederland veel samengewerkt, maar weinig geëvalueerd. De inhoud wordt vaak nogal bepaald door de initiatiefnemer, dikwijls de plaatselijke endocrinoloog. Afstemmingsafspraken zijn in de ene regio veel beter geformaliseerd dan in de andere.

Dit zal ongetwijfeld verbeteren met de eerstelijns DBC voor diabetes. Men is momenteel op een tiental plaatsen bezig met het opstarten van een diabetesketenzorg. Maar het kost wel moeite om een diabeteszorggroep op te richten en een goed contract met de zorgverzekeraars af te sluiten.

4. Hoe kan het nieuwe beleid van diabetesketenzorg en het oprichten van diabeteszorggroepen bijdragen tot een betere coördinatie van de diabeteszorg?

De diabetesketenzorg zou moeten leiden tot een betere coördinatie. De huisarts zal moeten contracten afsluiten met de diëtist, podotherapeut, oogarts, enz., maar het mandaat voor de zorgen blijft bij de huisarts. De huisarts zal betaald worden op basis van kwaliteitsindicatoren, waarvan hij dan de diëtist, podotherapeut, enz. zal moeten betalen. De NDF zorgstandaard ondersteunt dit proces (bevat o.a. een voorstel voor zorgindicatoren).

5. Bestaat er van overheidswege een systeem van kwaliteitsbewaking voor diabeteszorg?

Nu bestaat er geen systeem. Binnen de DBC zal de huisarts wel jaarlijks zijn resultaten moeten doorgeven aan de zorgverzekeraar.

6. Wat zijn volgens u de sterke punten van de diabeteszorg in Nederland?

Nederland heeft richtlijnen die door de huisartsen en de internisten samen werden ontwikkeld.

- Het NDF is een belangrijk spreekpartner voor de overheid. Doet ook heel wat PR/ lobbywerk. De zorgstandaard werd opgesteld door een groep waarin vertegenwoordigers van de huisartsen, internisten, diëtisten, diabetesverpleegkundigen, het diabetesfonds (dat diabetesonderzoek financiert) en de voorzitter van de DVN (Diabetesvereniging Nederland) zetelden.
- Invoering van praktijkondersteuners in de huisartsenpraktijken (1 praktijkondersteuner per 3 huisartsen). Voordien had je al diabetesverpleegkundigen, maar die zaten vooral op de tweede lijn. Dan kwam er een akkoord tussen overheid en huisartsen, waarbij huisartsen – als compensatie voor zuiniger voorschrijfgedrag – konden aanspraak maken op een praktijkondersteuner. Die zou vooral ingezet worden in het opvolgen van chronische zieken. Om een praktijkondersteuner te krijgen moet een praktijk aan een aantal voorwaarden voldoen en een aanvraag indienen. Wordt die aanvaard, dan krijgt de praktijk extra geld voor een praktijkondersteuner.

Binnen de diabeteszorggroepen zal men met het geld van de ketenzorg zoveel praktijkondersteuners kunnen aanvaarden als men wil.

Naast de diabetesverpleegkundigen en de diabeteszorggroepen bestaan er ook nog de diabetes labs. Ze worden geleid door huisartsen en zorgen voor bv. de jaarlijkse controle bij de diabetespatiënten. Wij vinden toch dat het vooral de huisarts is die dit moet doen. Hij moet toch minstens 1x per jaar de diabetespatiënt zien, omdat hij ook zich heeft op bv. de co-morbiditeit.

7. Wat zijn volgens u de knelpunten?

- De scheidingslijn tussen eerste en tweedelijnszorgen blijft moeilijk. De diabetespopulatie in het ziekenhuis is heel verschillend van die in de huisartsenpraktijk, wat maakt dat endocrinologen een heel andere kijk hebben op diabeteszorg. Dit leidt van tot afgeven op elkaar en negatieve beeldvorming. Aan beide kanten overheerst nog vaak het domeindenken.
- Taakomschrijving van diabetesverpleegkundige en praktijkondersteuner. Er is ook hier vaak een domeindiscussie tussen:
 - huisarts en diabetesverpleegkundige: bv. mag een diabetesverpleegkundige medicatie voorschrijven?
 - diabetesverpleegkundige en praktijkondersteuner. Slechts ongeveer de helft van de diabetesverpleegkundigen zijn gecertificeerd. Ze hebben dus niet noodzakelijk veel meer kennis dan een praktijkondersteuner. Ze hebben wel vaak kennis opgebouwd door vele jaren ervaring. Hierbij rijzen ook juridische problemen.

Waarschijnlijk zal binnen de diabeteszorggroepen dit probleem vanzelf verdwijnen, omdat men dan met een specifieke persoon te maken heeft, met specifieke competenties – en men dus beter kan inschatten welke taken hij op zich kan nemen.

8. Hoe denkt u dat de organisatie van diabeteszorg in de toekomst zal evolueren?

Met de ketenzorg en de diabeteszorggroepen ziet de toekomst er goed uit. Men heeft eindelijk de huisartsenvakbond over de streep gekregen. Die wilde dat iedereen dezelfde betaling, onafhankelijk van de kwaliteit van zorgen, maar heeft uiteindelijk toch the ketenzorg aanvaard.

Spain

Interview Spain 2: Dr. F. Xavier Cos

General Practitioner, member of Collaborative research network on preventive services and health promotion in primary care (redIAPP)

7 December 2005

1. Do you have any comments/corrections to make on the document describing diabetes care in the Spain? Are there any important issues we forgot to mention?

- p.1: decentralisation actually started in 1980.
- p.2, paragraph 1: we only have one level above us to which we have to report; most data are computerised which makes reporting easier. There are no longer many different management levels in the health care system.
- p.2: "no coverage of home nursing": is actually not correct; home nursing is taken up by the nurse of the PHC team. For dental care only examination and tooth extraction are covered; for the other interventions people have to go to private practices.
- p. 2: "8.9% have complementary voluntary health insurance". My impression is that the figure is higher. Traditionally more people are privately insured in the north than in the south.
- p. 2: there exist official data on the density of GP's (should be about 1 per 2000).
- p. 3, paragraph 1: "in the traditional system GP's work part-time with little administrative and diagnostic support". This is not correct. In PHC centres GP's with both types of contracts work in the same building with the same facilities. In the traditional system people only work two hours per day in the centre (they usually work also in hospital or other places), but they are very well paid for these two hours. The traditional system is being phased out. The Communities put pressure on the GP's in the traditional system to change to the new system.
- p. 3: as far as I know, I am not paid a capitation fee. Should be checked.
- p. 4: "since 2002 the health responsibilities have been fully decentralised to the Autonomous Communities." Since 2002 health care has been decentralised in all areas, but in some areas

decentralisation started already in the '80's. E.g. in Catalunya: the National Diabetes Council exists since 1986.

- p. 5: Fundación para la diabetes is not known to me. It could be linked to pharmaceutical companies.
- p. 5: GEDAPS has actually published 4 guidelines: in 1993, 1995, 2000, 2004.

2. Do primary health care centres have specific diabetes clinics? Who leads these clinics (doctor / nurse)?

Diabetes clinics don't exist.

3. What proportion of GP's use electronic medical records? Are electronic medical records used for quality assurance?

Nearly all GP's use electronic medical records. They are used for quality assurance: in Catalunya information for several quality indicators is extracted on yearly basis. The cut-off points are determined each year on basis of the results of the past year.

4. Do general practices have diabetes registers? Are they used for call/recall systems?

Most GP's have a diabetes register. But the different Communities use different IT programmes. Call/recall systems are in place in all PHC centres for flu vaccination. A PHC centre could decide to develop call/recall systems e.g. for annual check-up of a chronic patient, but this depends on local initiative (usually by the nurse in the PHC centre).

5. How can dieticians and podiatrist be accessed in primary care?

Dieticians and podiatrists can only be accessed in private and in some hospitals.

Some hospitals have set up a diabetes foot clinic with a podiatrist, but this depends on the initiative of the hospital.

The availability of dieticians still has to improve a lot. The philosophy of involving dieticians more in diabetes care, is gaining field. Now dieticians can only be accessed by referral to hospital, but this is not commonly done. Nurses in PHC centres also give dietetic advice.

6. Do diabetes specialist nurses (i.e. nurses with a specific training in diabetes) exist? If yes:

- How common are they?
- What is their training?
- Where do they work (first/secondary care)?
- What do they do (health education / clinical follow-up / co-ordination)?

Diabetes specialist nurses are only employed in secondary care. They follow postgraduate courses (see FEAED for more information).

7. What do diabetes patients pay for:

- Dietetic services
- Podiatric services
- Test strips

Dietetic and podiatric services are for free in hospital, but not in private. Test strips are for free. They are distributed in the PHC centres according to the recommendations on self-regulation.

8. How common are shared care protocols in diabetes care? Who initiates these protocols?

Shared care protocols are unusual. Some hospitals send out endocrinologists to the PHC centres for clinical sessions in which they discuss cases. Others specialists also do the same. This is common in PHC centres which function as training centres for medical students, elsewhere it is uncommon.

9. Do diabetes patients have a “diabetes passport” (i.e. a medical record kept by the patient to facilitate communication between health workers)?

A diabetes passport is unusual.

10. Is group-based health education common? Who organises?

Some PHC centres organise group-based health education for diabetes patients, but this depends on the initiative of the nurse in the centre. It is not common.

11. Are there any systems of quality assurance in place (audits, peer reviews, individual quality measurement)?

In 1993 we started in Catalunya with audits every two years of a randomized sample of the diabetes patients of a PHC centre. Participation is voluntary. Data collection is computerized.

Since 2002 the Catalanian government gives incentives based on quality indicators. Diabetes care is one of the targets for which incentives are given (e.g. HbA1C < 7% if prevalence of diabetes is above 6-7%; for nurses: foot care).

Other regions are also working on similar systems to provide incentives.

12. Are there specific trainings in diabetes care for health professionals?

No. The usual rotation of GP's involves diabetes care.

13. Which are according to you the strengths of the organisation of diabetes care in Spain?

- Accessibility
- Availability
- Continuity of care
- Teams of doctors and nurses
- Care system centralised in the PHC centres

14. What are today the major problems in the organisation of diabetes care in Spain?

- Foot care is insufficiently developed. We recently organised workshops on diabetes foot care in whole Spain.
- Too crowded lists creating waiting times. This is mostly a problem in secondary care; in primary care only during epidemics. In primary care an emergency visit is done the same day; usual visits after 2 or 3 days.
- Lack of time: GP's spend by average 7 minutes per patient and see 39 - 41 patients per day. So you have to have very clear in mind what you have to do. The nurse plays here an important role as she/he has usually more time for the patient.

15. Which changes in the organisation of diabetes care do you expect in the future?

- More availability of cameras for retinopathy screening. The government recently bought 30 cameras. The target for retinopathy screening is a coverage of 50%, but the ophthalmologic are crowded with diabetes patients only. Therefore cameras are being used more and more. They have already been used in other regions for some time.
- Better knowledge of the epidemiology of diabetes (incidence and prevalence). This should support policies that provide more resources for diabetes patients.
- Spain gets a lot of immigrants from Asia, Africa. We don't know what the impact is of this population on incidence/prevalence. Indians and Pakistani have a high prevalence of diabetes. E.g. in Barcelona there are neighbourhoods with 50% Asians.
-

Interview Spain 3: Dr J. Gervas

General Practitioner, member CESCO team

22 December 2005

1. Do you have any comments/corrections to make on the document describing diabetes care in the Spain? Are there any important issues we forgot to mention?

- p.2: coverage: pensioners are not only people above 65 but is more general e.g. includes also people who stopped working because of illness and their relatives living with them. They don't pay any co-payment.
- The traditional contracting system for GP's has almost disappeared. It probably represent less than 1% of all physicians.
- p.4: the cost of the test strips as % of total diabetes cost seems too low; we actually spend more money on test strips than on medication.
- Type 2 diabetes patients are mostly seen in primary care. A considerable proportion of type 1 diabetes patients is also followed up in primary care, but this varies very much from one primary health care centre to another.
- Electronic medical records are very common all over Spain in both primary and secondary care, even in very rural areas. Certainly more than 90% of the physicians in the public health sector (which covers almost 100% of the population) use electronic medical records. In some regions a common electronic medical record was developed, e.g. in Andalucia, Pais Vasco, Extremadura.
- The text doesn't mention that in Spain a lot a scientific research is happening in primary care. This is not so common in Europe. Of course, the volume of research is not comparable with that in the Netherlands or the UK, but is more than e.g. France, Germany, Italy or Portugal. Internationally the Spanish primary health care system scores very well (see publications by Barbara Starfield - Esturcil C).
- The mortality of diabetes is higher among people of lower socio-economic status e.g. Andalucia, Gran Canaria have the highest diabetes mortality. At present there is in Spain a strong interest in this relationship between socio-economic status and mortality/morbidity, also in diabetes patients.

2. Do primary health care centres have specific diabetes clinics? Who leads these clinics (doctor / nurse)?

No. A few experiments with diabetes clinics didn't give good results. The diabetes clinics became too strong, too much was invested in them at the expense of the other clinical activities. Both patients and professionals prefer to consider diabetes as part of the daily work.

3. What proportion of GP's use electronic medical records? Are electronic medical records used for quality assurance?

See also above. Quality assurance is mandatory. The "cartera de servicio" is a set of indicators which is linked to financial incentives (1000 to 3000 per year). They include an important number of indicators on diabetes care for both physicians and nurses at the primary health centre. The information for the "cartera de servicio" is directly extracted from the electronic medical record. If an electronic medical record is not available, the data are checked for a sample of the medical records at the health centre.

The "cartera de servicio" exists in most or all regions, but the set of indicators might differ from one region to another. The content of the "cartera de servicio" differs also from one year to another. There is still a lot of discussion about which indicators to measure. The Interterritorial Council is trying to build up a common "cartera de servicio".

4. Do general practices have diabetes registers? Are they used for call/recall systems?

Diabetes registers and call/recall system are usually in place.

Diabetes registers are strictly spoken not mandatory, but:

- Patients receive test strips at the primary health care centre. These patients (e.g. all type 1 diabetes patients, but also most type 2 diabetes patients) should be registered.
- To receive an incentive for the "cartera de servicio" a primary health care centre needs a diabetes register.

5. How can dieticians and podiatrist be accessed in primary care?

There is no access to dieticians and podiatrists in primary care. In ambulatory centres specialists from the hospital have outpatient clinics. There is usually one ambulatory centre per area (about 20 primary health care centres). These ambulatory centres sometimes have podiatrists, but no dieticians. Dietetic advice is mainly the task of the nurse in the primary health care centre. In reality patients often go to private podiatrists, which are not covered by the national health system.

6. Do diabetes specialist nurses (i.e. nurses with a specific training in diabetes) exist? If yes:

- How common are they?
- What is their training?
- Where do they work (first/secondary care?)?
- What do they do (health education / clinical follow-up / co-ordination)?

Diabetes specialist nurses work only in hospitals, not in primary health care centres, except for training staff. In many primary health care centres one of the nurses has a special interest in diabetes (without having a specific title).

7. What do diabetes patients pay for:

- Dietetic services
- Podiatric services
- Test strips?

Test strips are for free. Dietetic services are not available. Patients usually go to a private podiatrist, and thus have to pay. Most diabetes patients are pensioners, so they get their drugs for free.

8. How common are shared care protocols in diabetes care? Who initiates these protocols?

Co-ordination of care is a problem in Spain, not only in diabetes. It is actually problem in most countries in Europe. There are nationally accepted guidelines (e.g. from Semfyc) and also some regional protocols were developed. But in practice they are not well followed. The care for chronic patients is often not well co-ordinated.

9. Do diabetes patients have a “diabetes passport” (i.e. a medical record kept by the patient to facilitate communication between health workers)?

A diabetes passport is not commonly used.

10. Is group-based health education common? Who organises?

Group-based health education is relatively common in primary health care. It is sometimes a requirement of the "cartera de servicio". Primary health care centres also have a library for health professionals, with sometimes also information for patients. In the health centre the library is usually the place where group-based health education is held (e.g. diabetes, tobacco stopping, etc.).

11. Are there any systems of quality assurance in place (audits, peer reviews, individual quality measurement)?

The "cartera de servicio", which includes several indicators on diabetes care.

12. Are there specific trainings in diabetes care for health professionals?

Continuing medical education on diabetes care is quite common.

13. Which are according to you the strengths of the organisation of diabetes care in Spain?

Close relationship between patient and GP/nurse.

- Health professionals are well trained in diabetes care (compared with e.g. care for the epileptic patient).
- Diabetes care is almost for free.
- The physician can order any tests he wants without intervention of the specialist.
- Diabetes care is integrated in the general health care activities.

14. What are today the major problems in the organisation of diabetes care in Spain?

- Overuse of test strips which causes a waste of money.
- No good co-ordination of diabetes care, especially with the endocrinologist

15. Which changes in the organisation of diabetes care do you expect in the future?

- More focus on the outcome of diabetes care (e.g. occurrence of myocardial infarction, retinopathy, etc.).
- More patient participation. Patient organisations are growing and will participate more in the future in the development of protocols, specific programmes, etc.
- Introduction of digital cameras for retinopathy screening at the primary health care centre. Some pilot studies have been done so far. The plan is to equip each primary health care centre with such a camera.
- I am afraid that diabetes care might become more specialist-centred in the future.

Interview Spain 4: Prof. Dr. J. Ampudias

Professor Endocrinology, University of Valencia

29 November 2005

1. Do you have any comments/corrections to make on the document describing diabetes care in the Spain? Are there any important issues we forgot to mention?

The draft was not read.

2. Does the policy on diabetes care differ much from one Community to another?

The organisation of diabetes care is more or less the same in all regions, but some regions are more advanced, e.g. in Andalusia all health professionals use a common electronic medical record. All regions follow the same guidelines.

3. What is the availability of dieticians and podiatrist in secondary care?

Most hospitals have a dietician. They are more spread in third line hospitals than in secondary care hospitals.

Podiatrists are usually not available. E.g. a university hospital has a diabetes foot clinic, but no podiatrist. Podiatrists are more common in hospitals in Catalunya. Overall podiatrists are rare and work mostly in private practice.

4. Are there problems of waiting times in secondary care?

Waiting times are not really a problem in diabetes care. Patients can see an endocrinologist in one to two weeks time.

5. Do diabetes specialist nurses (i.e. nurses with a specific training in diabetes) exist? If yes:

- How common are they?
- What is their training?
- Where do they work (first/secondary care?)
- What do they do (health education / clinical follow-up / co-ordination)

Most of the diabetes services in 2nd and 3rd line hospitals have diabetes educators. They are nurses with a postgraduate training organised by the FEAED.

They work in hospitals but specialised care centres which are in close contact with the PHC centres. These centres specifically deal with patients referred from the PHC centres; their aim is to make a short expert intervention and to refer the patient as soon as possible back to the PHC centre.

The diabetes educators give health education and usually also do clinical follow-up. When doing clinical follow-ups, they will measure BP, weight, HbA1c, etc., but when a change of management is needed, they will discuss this with the physician. They can also act on demand of the GP e.g. for starting patients on insulin, giving training to health personnel.

6. What do diabetes patients pay for:

- Dietetic services
- Podiatric services
- Test strips

Dietetic services are for free. Test strips are for free, but the physician decides how many test strips a patient gets. As a result in PHC 90% of the patients on insulin are on self-regulation, and 52% of the patients not on insulin.

Patients only have to pay for podiatric services (in private practice) and dental care

7. How common are shared care protocols for diabetes care? Who initiates these protocols?

We stratify the levels of care: which patients have to be seen in primary care and which in secondary care? There is some regional consensus about this, but this consensus is not similar in whole Spain, e.g. in our region we use very strict rules. The shared care protocols are common, but they are not formalised in a document. The consensus on shared care arises from two- or three-monthly meetings of secondary and primary care physicians, discussing guidelines and specific cases. Each hospital has an area of PHC centres with which it is in close contact. These meetings also exist for other health topics.

8. Do diabetes patients have a “diabetes passport” (i.e. a medical record kept by the patient to facilitate communication between health workers)?

No. There are some programmes to register individual diabetes patients. In Andalusia there is a common electronic medical record for primary care staff and specialists. In Valencia a similar system will be set up in the next month.

9. Is group-based health education common?

Group-based health education is common in hospitals. There are several types of sessions, for patients recently diagnosed with diabetes, for type 1 and type 2 patients, for hypertensive patients, for patients who have difficulties to accept the disease, etc. The sessions are held by diabetes educators and psychologists.

These sessions are usually organised by the hospitals. At PHC level, it depends on the diabetes educator in the specialised care centres whether group-based health education is organised.

10. Are there any systems of quality assurance in place (audits, peer reviews, individual quality measurement)?

Yes. In PHC the quality of care for type 2 diabetes patients has been monitored across Spain since 1993, using special soft ware. Several process and outcome indicators (concerning HbA1c, BP, etc.) are measured,

as well as the rates of complications. Participation to this monitoring system is on voluntary basis. The physicians who participate in the system have probably a specific interest in diabetes care. The programme started in Catalunya and spread to the other parts of Spain.

Besides this, there are no other systematic quality monitoring systems in place.

11. Which are according to you the strengths of the organisation of diabetes care in Spain?

- I worked three years in Germany, where patients have very difficult access to specialist care. In Spain PHC physicians and specialists have a very close relationship. The PHC physicians can easily get support from specialists.
- Physicians are very well trained.

12. What are today the major problems in the organisation of diabetes care in Spain?

- There are not enough dieticians. Dieticians have been trained only since three years.
- Podiatric and dental services are not covered.
- There are restrictions for prescribing some new antidiabetics. In a recent survey among specialists, most thought this was a limitation.

13. Which changes in the organisation of diabetes care do you expect in the future?

- Patients will be diagnosed earlier. Now about half of all patients are undiagnosed. Presently some projects on diabetes screening are running.
- A system will be developed to monitor the incidence and prevalence of diabetes.
- More facilities for retinography, also in secondary care (now only in third line hospitals).
- Availability of new drugs.

United Kingdom

Interview UK 1: Dr. Michael Sobanja

Chairman of the NHS Alliance

22 September 2005

I. Do you have any comments/corrections to make on the document? Are there any important issues we forgot to mention?

In general the health care system has gone through radical changes in the past four years. As older documents were used, some of these changes are not mentioned in the text. Most importantly, new payment arrangements have been established for GP's since 1 April 2004. Quality based payments based on a points system – with mostly process indicators – represent now about 40% of the total GP income.

Other corrections:

- The NSF for diabetes is produced outside the NICE.
- Co-payments start to diverge between the countries: e.g. in Wales they are discussing a proposal to abolishing co-payments.
- *Nearly* all patients are registered with a GP. Not registered are: people who are travelling, prisoner and people in the army.
- National clinical directors have been appointed; there are individuals who are a focal point for disease areas, e.g. for diabetes: Ms. Sue Roberts.

2. To what extent do the PCT's have a real autonomy in organising diabetes care at local level?

PCT's are supposed to be autonomous but there are some difficulties to obtain real autonomy because:

- existing budgets are tied up in existing patterns;
- changing these patterns leads to conflicts with politicians.

PCT's have some room, but their autonomy mainly constrained by politicians.

3. To what extent are local health professionals involved in the management within the PCT?

Local Diabetes Service Groups exist already 15 years, but with little effect.

More important are the Professional Executive Committees: these are clinical forums which should be the engine room for the PCT. In reality their influence depends on the board of director and varies a lot from one to another PCT.

4. As stated in the document, most GP practices have a practice nurse, and about one third a dietician or a podiatrist. Are there any other health workers who are working in a GP practice (e.g. diabetes nurse, psychologist, physiotherapist)?

A GP practice usually consists of one or more GP's and nurses – this is what is financed.

For all other staff available at a general practice there are two possibilities:

- direct employment by GP practice; very few because of finances
- paramedics employed by PCT come to the GP practice; most common but still patchy coverage.

5. Do diabetes specialist nurses play an important role in primary care? If yes, which role?

Diabetes specialist nurses are mostly hospital-based. They are actually paid by hospital and thus considered their property.

There are however intentions to let them go more into the community, support practice nurses, etc.

6. Many PCT's develop shared care protocols. Which professionals are involved in the development and implementation of these protocols (GP, specialist, diabetes nurse, dietician etc.)?

Shared care protocols are developed mostly by medicals (GP, endocrinologist) and the diabetes lead person from the PCT. The PCT is usually the initiator and mediator. Diabetes specialist nurses are often also involved.

The shared care protocols are mostly agreements describing clinical guidelines, prescription and referral arrangements. There is some critique that they are a way of shifting prescription costs from the hospital to the community.

See also the website of national electronic library for some concrete examples.

7. Do health professionals get feed-back on their diabetes management?

Feed-back mostly happens through the Quality and Outcomes Framework: this framework includes indicators for several clinical domains, amongst which diabetes. The payments of the Quality and Outcomes Framework result in 40% of the GP income.

There also locally organised clinical audits.

8. Does there exist any system of peer review? If yes, how is it organised?

Not systematically organised, though there are some local initiatives.

Though there is an alternative system of annual clinical appraisal (by a peer working as GP and trained as clinical tutor, employed by the PCT) and 5 yearly revalidation (by both PCT and national level) The national level performs more of a formal evaluation while the PCT looks more at the concrete management.

9. Which authorities organise continuing medical education?

The strategic health authorities (28 in England), intermediate structures between the NHS and the PCT's, have a workforce development confederation who gets funds to finance CME in the region.

CME is also organised on initiative and funding of PCT's.

10. Which are according to you the strengths of the organisation of diabetes care in the UK?

- NHS structure improved diabetes management.
- Very powerful patient lobby for diabetes, with strong local branches.
- Diabetes specialist nurses have a very important impact.

11. What are the major problems in the organisation of diabetes care in the UK?

- Diabetes management is still too much hospital-based
- We still have to answer: how will quality of care be assured at primary health care level? The Quality and Outcomes Framework means big rise in payment for the GP, but do we measure the right indicators (most are process indicators)?

12. Which changes in the organisation of diabetes care do you expect in the future?

- The main challenge will be how to cope with rising incidence of diabetes.
- Diabetes care will further shift to community
- Diabetes care will become more multidisciplinary: patients will also be seen by nurses, pharmacists (cfr. the new pharmacist contract: they are now paid for some clinical services. Before they used already to organise e.g. diabetes screening services). In general health professionals will have to be more flexible.

Interview UK 2: Dr. Eugene Hughes

General practitioner, member of Primary Care Diabetes society, UK

1. Autonomy of the PCT's

PCT's have almost total autonomy in the organisation of diabetes care in their area. They are guided by:

- The requirements within the NSF: the NSF does some recommendations and also sets a timetable, but this timetable is quite loose (e.g. every PCT must have retinopathy screening programme by 2006, i.e. four years after publication of the NSF).
- The NICE guidelines

But the PCT's will change again in 2006:

- PCT's will merge in larger entities.
- PCT's will no longer commission health services. (Groups of) general practices will be the commissioners (practice-based commissioning). This resembles the previous GP fund holding system, though the government says it doesn't.

In fact GP's are at present very busy to fulfil the requirements of the GMS (the QOF). The question is whether general practices will have enough capacity to manage practice-based commissioning. GP's actually want a period of stability. However, the medical press says that if general practices don't go for practice-based commissioning, the government will go to the private sector to commission health services.

2. Dietician and podiatrist in primary care.

The situation can differ very much from one PCT to another:

- GP's can usually refer patients directly to a dietician in secondary care. Dietetic services are free. However, there is a national shortage of dieticians.
- Podiatrists can be accessed in the same way. They are sufficiently available.
- Some PCT's also employ dieticians/podiatrists.

3. Impact of recent policy changes in diabetes care

They had a huge impact. In the past 12 years lots of guidelines/directives were sent out, but without proper funding and political force. Now the NHS has set diabetes care as a priority, and the QOF makes sure there are enough funds to improve care. Thanks to the QOF, there are now data on the quality of diabetes care, we exactly know the diabetes prevalence and we have at the same time a national diabetes register.

The expected score was 750 points, but the practices did much better. With the funds available, general practices did all what it took to score as much as possible. They employed extra people, trained practice nurses in diabetes etc.

A negative aspect is that as a result of the QOF too much emphasis is put on data collection and recording, at the expense of patient-centeredness.

The national clinical director / the national diabetes support team are not important at GP level, though they might be important at a policy-making level.

Note: control on the QOF score is done by the QMAS: the “points police” comes and checks the results for a sample of the patients. General practices in the GMS have to agree to let them access their files. All general practices use IT systems which can be accessed by QMAS.

4. Strengths

- Diabetes care is now firmly rooted in primary care and properly funded.
- There is still one health system (the NHS), without any parallel circuit. Health care is still mostly for free.
- There is complete clinical / prescribing freedom. A GP should take account of the NICE guidelines, but an individual physician has still the freedom to deviate from the guidelines as long as it can be justified.

5. Problems

- The shifting of professional boundaries might cause problems in the future. Diabetes care is more and more taken up by nurse. Parts of diabetes care might shift away from the general practice to e.g. pharmacies (cfr. the new contract for pharmacists involving them in advice, health education etc.) and private organisations. The risk is that diabetes care might get fractioned.
- Nobody knows what the impact will be of practice-based commissioning. Savings can be kept by the practices. This is a bit worrying e.g. a practice might decide not to buy insulin pump therapy and keep the money for themselves.

Note: waiting times are not a problem in diabetes care. They are mainly a problem for investigations (e.g. MRI) and elective surgery.

6. The future

- The targets in the QOF will change and will probably get a bit tougher.
- The impact of practice-based commissioning remains unclear.

Note: PMS contracts are only marginal phenomenon now. Before the new GMS contract, the PMS contract was more attractive but also demanded more time. With the new GMS contract, there's again a shift from PMS to GMS contract.

Interview UK 3: Prof. Hilary Hearnshaw

Psychologist, Warwick Diabetes Centre

(Answered in written)

1. Do you have any comments/corrections to make on the document describing diabetes care in the UK? Are there any important issues we forgot to mention?

I have made my comment in the document.

2. The reorganisation of the NHS in the '90s resulted in a decentralisation with a pivotal role for the Primary Care Trusts. To what extent do the PCT's have a real autonomy in organising diabetes care at local level?

Very much. Total responsibility for organising diabetes care. To what extent are they determined by top-down directives? Very much as this is where the money comes from.

3. GP practices sometimes offer podiatric and dietician services. If these services are not available within the practice, where can patients obtain them? Do they have to pay for them?

Podiatrists now must be NHS trained – even those in private practice. Private practice for podiatrists is quite common. Private practice dieticians are very rare. Patients can be referred to podiatrists or dieticians, who may work for the community trust or the hospital trust, by GPs. Patients can pay for private consultations (but may have personal private health insurance which would cover the cost)

4. In recent years the NHS took several initiatives to improve the quality of diabetes care (the NSF for diabetes, the Quality and Outcome Framework, the National Clinical Director for diabetes, the National Diabetes Support Team). What do you think is the impact of these initiatives on diabetes care?

Has raised the importance of diabetes in both professional and lay beliefs. There is much activity in just keeping up with the changes, though.

5. Which are according to you the strengths of the organisation of diabetes care in the UK?

These are not in order of importance:

- Priority set at national level
- Financial incentives in primary care to provide diabetes care
- Patient education is required
- Free prescriptions
- High research activity integrated with care provision

6. What are today the major problems in the organisation of diabetes care in the UK?

- Variation in quality across the country
- Provision of training for professionals
- Shift of care from hospital to primary care is not accepted well everywhere
- CONSTANT, REPEATED REORGANISATION!

7. Which changes in the organisation of diabetes care do you expect in the future?

- National and regional diabetes networks for clinical care and research
- Patient education
- Use of IT in the NHS
- Primary Care Trusts will soon (2006) be re-organised again.

NB You might be interested in the online discussion of NHS diabetes care at

<http://www.diabetesdialogue.org.uk/>

Interview UK 4: Prof. Dr. Philip Home

Diabetologist, University of Newcastle

3 October 2005

1. Do you have any comments/corrections to make on the document? Are there any important issues we forgot to mention?

- Prevalence has been recently revised to 3.3% (1 800 000 diabetes patients).
- There is of actual shift of patients from the second to primary care. There are still as many
- patients treated at secondary care, but at primary care more patients are being treated (who didn't get any treatment before).
- Local Diabetes Service Groups have been replaced by the local diabetes networks.
- More emphasis should be put on the role of the NICE guidelines.

2. Diabetes has shifted from the second to primary care. Secondary care personnel are now involved in supporting primary care. How do you see the role of secondary care in diabetes care?

There is still a wide variation in quality of care in primary care. Some GP's still refer most of their patients, some refer none.

Community nurses and diabetologist exist now – they didn't exist previously. They play a role in organising care, health education etc.

3. The NHS took several initiatives to improve the quality of diabetes care. How do you think is the impact of these initiatives on diabetes care?

Many changes didn't influence much the clinical situation, but due to the changes public health experts got more interested in diabetes. One exception where the situation improved, clearly due to NHS involvement, is retinopathy screening.

Quality of care depends more on local organisation of work and personal commitment, less on the organisational structure.

4. To what extent do PCT's have a real autonomy to organise diabetes care at local level?

Basically the flow of patients can't change much: there is only one hospital in most regions which has to offer the required services.

Autonomy to change aspects of diabetes care is more a question of money: is there extra money to do new things?

Changes come usually bottom-up: somebody takes an initiative and looks for funds.

5. Which are according to you the strengths of the organisation of diabetes care in the UK?

All diabetes patients are treated within the NHS. This leads to more integrated and continuous care, e.g. eye screening happens in the same place as the diabetes clinic.

Specifically:

- Well structured general practice
- Strong research basis
- Diabetes specialist nurses are much more frequent and much better organised than in other countries. They play a role in health education, starting patients on insulin, learning how to adapt doses and also follow-up of patients in hospital.

In general outcome has improved dramatically over the last fifteen years, e.g. much less cases of blindness.

6. What are the major problems in the organisation of diabetes care?

Lack of resources to develop:

- More dietetic services
- Computerised records
- More podiatric services
- More patient education

7. Which changes in the organisation of diabetes care do you expect in the future?

The national electronic patient record: plans are there, but might still take five to ten years.

- Would be time saving
- Creates a virtual team: now you have GP-nurse; diabetologist-DSN; podiatrist. They would all come together in one virtual team

Treatment of diabetes will get more complicated. GP's might not be able to cope anymore. This would cause a shift away from PHC.

International comparison of diabetes care organisation

Overview of the health system

Organisational structure of the health system

	Belgium	Canada (Québec)	Denmark
Level of health care management	Centralised management at national and regional level. Fragmentation of responsibilities.	Management centralised mainly at regional level	The county is the most important management level.
Coverage of population by public and private health system	100% public	70% public 30% private	100% public
Level of out-of-pocket payment general	17%	16%	16.5%
Level of out-of-pocket payment diabetes: drugs	Diabetic drugs for free. Antihypertensives/hypglycaemic drugs: reimbursement 75 - 85%	Public health insurance covers 80% of drug costs.	Co-payments of 0 – 85% with an annual maximum of 480€
Level of out-of-pocket payment diabetes: dietetic services	2 dietetic consults per year reimbursed at 75 - 90%; in convention: for free	Considerable co-payments; in Québec: for free in community health centres.	For free
Level of out-of-pocket payment diabetes: podiatric services	2 podiatric consult per year reimbursed at 75 – 90%	Considerable co-payments	Partially subsidised
Level of out-of-pocket payment diabetes: material for self-	Sickness funds usually partially reimburse; in convention: limited	Only covered in private insurances	No data available

	Belgium	Canada (Québec)	Denmark
regulation	number of test strips for free		
GP's per 1000 inhabitants (OECD data))	2.1 ²	2.1	0.9
Specialists per 1000 inhabitants (OECD data)	1.8	1.8	2.0
Nurses per 1000 inhabitants (OECD data)	5.6	9.8	10.3
Payment GP	Mainly fee-for-service; also a limited capitation fee	Fee-for-service.	Capitation fees (+/- 50%) + fee for service
Payment specialist	Mainly fee-for-service	Mainly fee-for-service	In hospital: salary Ambulant: fee for service (FFS)

² Probably an overestimation. A more realistic figure would be 1.4 GP's per 1000 inhabitants (personal communication Prof. J. De Maeseneer)

Organisational structure of the health system (continued)

	Estonia	France	Germany
Level of health care management	Centralised management by the Ministry of Social Affairs and the Estonian Health Insurance Fund	Decentralisation to regional level	High degree of self- regulation by regional sickness funds and medical associations
Coverage of population by public and private health system	94% public (uncovered: the unemployed or not officially employed)	100% public	90% public insurance 10% private insurance
Level of out-of-pocket payment general	19.9%	10.6%	12.2% of total health expenditure
Level of out-of-pocket payment diabetes: drugs	Oral antidiabetics: 25% co-payment Insulin: for free	For free	5 – 10€ per prescription (Patients' co-payments ceiled at 1% of household income)
Level of out-of-pocket payment diabetes: dietetic services	Not available	Not reimbursed (fully reimbursed in care networks)	To be paid for
Level of out-of-pocket payment diabetes: podiatric services	For free	About 10% reimbursed (fully reimbursed in care networks)	To be paid for
Level of out-of-pocket payment diabetes: material for self-regulation	Limited number of test strips for free when >3 injections/day, for children and pregnant women	Fully reimbursed	For free for patients on insulin

	Estonia	France	Germany
GP's per 1000 inhabitants (OECD data))	0.7	1.6	1.1
Specialists per 1000 inhabitants (OECD data)	All physicians: 3.2	1.7	2.3
Nurses per 1000 inhabitants (OECD data)	No data available	7.2	9.6
Payment GP	Basic allowance + capitation fee + fee for service	Fee-for-service	Fee for service, but capped at regional level
Payment specialist	Ambulant: FFS + private practice Hospital: salary	Ambulant: fee-for-service Hospital: salary	Ambulant: fee for service, but capped at regional level Hospital: salary

Organisational structure of the health system (continued)

	Netherlands	Spain	UK
Level of health care management	Centralised management at national level	Centralised management at the level of the Autonomous Communities	Shift of responsibilities from the NHS to the local PCO's; can influence diabetes care at local level Less decentralisation of hospital sector
Coverage of population by public and private health system	70% public insurance 30% private insurance	99.4% (the uncovered are mainly affluent self-employed)	100%
Level of out-of-pocket payment general	5.8%	23.7%	2.7% (1995)
Level of out-of-pocket payment diabetes: drugs	For free	Maximum 10%; pensioners and people living with them, get drugs for free.	For free
Level of out-of-pocket payment diabetes: dietetic services	For free	For free, but hardly available	For free
Level of out-of-pocket payment diabetes: podiatric services	Co-payment depends on type of insurance	For free, but hardly available; patients usually go to private practice (not covered)	For free

	Netherlands	Spain	UK
Level of out-of-pocket payment diabetes: material for self-regulation	For free for patients on insulin or changing to insulin very soon	For free, distributed by the primary health care centre	For free (but not always available)
GP's per 1000 inhabitants (OECD data))	0.5	0.5 (British Royal College of General Practitioners)	0.6
Specialists per 1000 inhabitants (OECD data)	1.5	1.8	1.4
Nurses per 1000 inhabitants (OECD data)	No data available	6.1	9.5
Payment GP	Capitation fees; fee for service for private patients. From 2006: one uniform system of capitation fees + fees for service	Main system: salary + capitation fee	Mixture of capitation fees, quality-based payments (+/- 40%) and incentives for enhanced services.
Payment specialist	Fee for service	Salary	Salaried; often part-time in private practice.

Health financing and expenditure

	Belgium	Canada (Québec)	Denmark
Financing basis of public health system	Mixed: tax- and contribution-based	Tax-based	Tax-based
GDP per capita (USD PPP) in 2002	23 841	29 580	30 042
Health expenditure per capita (USD PPP) in 2002	2172	2845	2 655
Health expenditure as % of GDP	9.1%	9.6%	8.8%
Estimated cost of diabetes as % of GDP	5.3%	No data available	7%
Yearly cost per diabetes patient (€) ³	3 295€	-	657€ (from Aarhus register: excludes treatment for complications and hospital admissions) (DACEHTA 2003)
Diabetes cost hospital care (€)	1 791€	-	No data available
Diabetes cost ambulatory care (€)	603€	-	No data available

³ All information on annual cost per diabetes patient is retrieved from the CODE-2 study (Jönsson 2002), unless indicated otherwise.

	Estonia	France	Germany
Financing basis of public health system	Mainly contribution-based	Mixed: tax- and contribution-based	Mainly contribution-based
GDP per capita (USD PPP) in 2002	12 260	24 213	24 101
Health expenditure per capita (USD PPP) in 2002	574	2 345	2 637
Health expenditure as % of GDP	5.1%	8.8%	10.9%
Estimated cost of diabetes as % of GDP	No data available	4.7%	5 – 9%
Yearly cost per diabetes patient (€) ²	No data available	3 064€	3 576
Diabetes cost hospital care (€)	No data available	1 540€	2 173
Diabetes cost ambulatory care (€)	No data available	683€	388
Diabetes cost drugs (€)	No data available	840€	1015

Health financing and expenditure (continued)

	Netherlands	Spain	UK
Financing basis of public health system	Mainly contribution-based	Tax-based	Tax-based
GDP per capita (USD PPP) in 2002	29 935	22 827	28 894 (1995)
Health expenditure per capita (USD PPP) in 2002	2 775	1 666	2 231 (1995)
Health expenditure as % of GDP	9.3%	7.3%	7.7% (1995)
Estimated cost of diabetes as % of GDP	2 – 3.5%	6.3 – 7.4%	2.5 – 5%
Yearly cost per diabetes patient (€) ⁴	1 827	1 305€	2 214
Diabetes cost hospital care (€)	548	417€	769
Diabetes cost ambulatory care (€)	450	334€	835
Diabetes cost drugs (€)	836	555€	579

⁴ All information on annual cost per diabetes patient is retrieved from the CODE-2 study (Jönsson 2002), unless indicated otherwise.

Organisation of diabetes care

Overview of the diabetes care organisation

	Belgium	Canada (Québec)	Denmark
Usual patient pathways: see 5.2.3.			
Specific national policies on diabetes care	The diabetes convention for diabetes patients on insulin.	<p>The Canadian Diabetes Strategy includes:</p> <ul style="list-style-type: none"> ○ health promotion and prevention ○ specific attention to the First Nations people ○ the development of a National Diabetes Surveillance System. 	<p>An extensive health technology assessment for type 2 diabetes at national level.</p> <p>Several counties have specific diabetes policies</p>
Availability of national co-ordination for diabetes care	No	No, but the Canadian Diabetes Association and Diabetes Québec play a central role.	No
Availability of national guideline on type II diabetes	Yes	Yes	Yes
Target group of guideline (primary/secondary care)	Primary care	Primary and secondary care	Primary and secondary care
Initiator	Medical College of GP's and	Canadian Diabetes Association	General medical association

	Belgium	Canada (Québec)	Denmark
	patients' association (Flanders: WVVH/VDV; Walloon: SSMF)		GP's association
Availability of national guideline on type I diabetes	No	Yes	No
Target group of guideline (primary/secondary care)	-	Primary and secondary care	-
Initiator	-	Canadian Diabetes association	-
Prevalence of known diabetes	2.6 – 3.3%	According to statistics Canada 2002: 4.4%	2 – 3%
Availability of national diabetes register	Only for type 1 diabetes patients	No, but planned in the future.	No (but is planned for 2006)
Membership of patients' organisation	22 500 members in Flanders (5% of all patients) No data for Walloon	Diabetes Québec: 30 000 members (10% of all patients) Canadian Diabetes Association: no data	No data available
Membership of health professionals	Yes	Yes	Yes
Impact of patients' organisation on policy making	Flemish association cooperated in guideline for type 2 diabetes.	Developed guidelines for both type 1 and 2 diabetes	Lobbied for a health technology assessment on diabetes.

Overview of the diabetes care organisation (continued)

	Estonia	France	Germany
Usual patient pathways: see 5.2.3.			
Specific national policies on diabetes care	Voluntary quality-based payment system as from 2006 (see 5.2.4 quality assurance)	Care networks (cover 2% of diabetes patients)	The Disease Management Programme for type 2 diabetes
Availability of national co-ordination for diabetes care	No	No	No
Availability of national guideline on type II diabetes	Yes	Yes	Yes
Target group of guideline (primary/secondary care)	Primary and secondary care	Primary and secondary care	Primary and secondary care
Initiator	GP's association + Endocrinology Society	ANAES (Ministry of Health) AFSSAPS (Ministry of Health)	Medical associations (via Nationales Programm für Versorgungs-Leitlinien) Deutsche Diabetes Gesellschaft (links to pharmaceutical industry)
Availability of national guideline on type I diabetes	No data available	No data available	No
Target group of guideline (primary/secondary care)	-	-	-

	Estonia	France	Germany
Initiator	-	-	-
Prevalence of known diabetes	No exact data; estimated at 1-2%	3.1%	4.2% (but possibly an underestimation)
Availability of national diabetes register	No	No	No
Membership of patients' organisation	No data available	30 000 (1.5-2% of all patients)	40 000 members (0.5- 1% of all patients)
Membership of health professionals	No	No	No
Impact of patients' organisation on policy making	Has impact on policy making process	Supports diabetes research	Actively involved (e.g. development of guidelines)

Overview of the diabetes care organisation (continued)

	The Netherlands	Spain	United Kingdom
Usual patient pathways: see 5.2.3.			
Specific national policies on diabetes care	Diabetes care groups: contracts between GP's and health insurers and between GP's and other caretakers. Still to be implemented.	There is no real national policy on diabetes care due to the decentralisation to the Autonomous Communities.	National Service Framework for Diabetes
Availability of national co-ordination for diabetes care	No, but a Diabetes knowledge centre is planned.	Several Autonomous Communities have diabetes committees which advise policy makers.	National Clinical Director for Diabetes + National Diabetes Support Team
Availability of national guideline on type II diabetes	Yes	Yes	NICE guidelines
Target group of guideline (primary/secondary care)	Primary and secondary care	Primary and secondary care	Primary and secondary care
Initiator	Ministry of Health (CBO) and diabetes federation (NDF) GP's association (NHG)	GP's association + patients' association	Department of Health (National Institute for Clinical Excellence)
Availability of national guideline on type I diabetes	No	No data available	NICE guidelines
Target group of guideline	-	-	-

	The Netherlands	Spain	United Kingdom
(primary/secondary care)			
Initiator	-	-	Department of Health (National Institute for Clinical Excellence)
Prevalence of known diabetes	3.5%	Women: 8%; men: 12.5%, of which about half is undiagnosed.	3 - 3.2%
Availability of national diabetes register	No	Some Autonomous Communities have a regional diabetes register.	No
Membership of patient's organisation	55 000 members (10% of all patients)	No data available (patients organisations are organised at regional level)	About 180 000 members (10% of all patients)
Membership of health professionals	No	No data available	Yes
Impact of patients' organisation on policy making	Via the Dutch Diabetes Federation: involved in guidelines, policy making	Collaborated in guideline development.	Strong impact on policy making Funds research

Structure of diabetes care

	Belgium	Canada (Québec)	Denmark
Primary care			
Proportion of GP's working in group practices	22%	60%	About 2/3
Members of a general practice team (diabetes nurses: see below)	Minority of the GP's employ administrative personnel. Other staff is rare. Access to private dieticians and podiatrists.	Minority of GP's employ administrative staff. Other staff is rare. Access to dieticians for free in community health centres (Québec only).	General practitioner Administrative staff in about half of the practices Paramedical personnel (nurse/lab tech) in about 1/4 of the practices Access to dieticians and podiatrists in primary care or in the diabetes clinics
Availability of EMR	70%	-	87%
Intermediate level			
Support of primary care diabetes team	No Planned in Flanders: SEL (not specifically for diabetes care)	No	In some counties diabetes clinics provide support of primary care by offering dietetic service, organising providers' education
Systematic screening	No	No	6 out of 14 counties

	Belgium	Canada (Québec)	Denmark
programme for retinopathy			
Coverage for retinopathy screening	For patients in the convention: 75-84% in the last 15 months	60% of the patients have an annual eye check.	No data available
Secondary care			
Members of the secondary care team (details on diabetes nurses: see below)	Endocrinologist; diabetes nurse; dietician Able to involve social worker, psychologist and podiatrist In foot clinics: podiatrist, chiropodist, surgeon	Endocrinologist Diabetes nurse Dietician In foot clinics: chiropodist, podiatrist, vascular surgeon	Endocrinologist Nurse Dietician Podiatrist
Training of health staff in diabetes care (diabetes nurses: see below)	No data available	No data available	No data available

Structure of diabetes care (continued)

	Estonia	France	Germany
Primary care			
Proportion of GP's working in group practices	About half	38% of ambulant doctors (both GP's and specialists)	Minority
Members of a general practice team (diabetes nurses: see below)	General practitioner Administrative staff 0.8 practice nurses per GP	GP Rarely administrative staff	By average 2 practice assistants per GP performing administrative and basic medical duties
Availability of EMR	> 75%	No data available	Estimated at 60%
Intermediate level			
Support of primary care team	No	Diabetes care network, when available (covers about 2% of the patients)	No
Systematic screening programme for retinopathy	No data available	No data available	No
Coverage for retinopathy screening	No data available	No data available	No data available
Secondary care			
Members of secondary care team (details on diabetes nurses: see	Endocrinologist or specialist in internal medicine Sometimes diabetes nurse /	No data available	Endocrinologist/diabetologist Diabetes adviser Diabetes assistant

	Estonia	France	Germany
below)	podiatrist / dietician		
Training of health staff in diabetes care (diabetes nurses: see below)	No data available	No data available	GP's training of 4-6 years usually includes 2-3 years of internal medicine. GP's and specialist can follow a 2-years training for diabetologist

Structure of diabetes care (continued)

	The Netherlands	Spain	United Kingdom
Primary care			
Proportion of GP's working in group practices	57% of all GPs	85%	More than 90% of all GP's 63% at least 4 GP's
Members of a general practice team (diabetes nurses: see below)	General practitioner Practice assistant Practice nurse (about half of the practices)	General practitioner Paediatrician Nurses	GP, practice nurse and administrative personnel. Sometimes: dietician, podiatrist, optometrist or diabetes specialist nurse Also access to dieticians and podiatrist in secondary care or at the PCO.
Availability of EMR	More than 80%		77% of the practices
Intermediate level			
Support of primary care diabetes team	Diabetes labs provide technical support to general practice.	Ambulatory care centres staffed by specialists from the hospital, sometimes also diabetes educators or podiatrists	PCO's support/co-ordinate (diabetes register, shared care protocols). Often participate in diabetes network
Systematic screening programme for retinopathy	No	No	50% of the PCO's

	The Netherlands	Spain	United Kingdom
Coverage for retinopathy screening	No data available	49%	47 - 60%
Secondary care			
Members of the secondary care team (details on diabetes nurses: see below)	Diabetologist Diabetes nurse Dietician Podiatrist Wide local variation in composition of the team	Endocrinologist	Endocrinologist Diabetes specialist nurse Dietician (73%) Podiatrist (66%)
Training of health staff in diabetes care (diabetes nurses: see below)	No data available	No data available	All podiatrists are NHS trained.

Note: diabetes nurses

	Belgium	Canada (Québec)	Denmark
Primary care			
Availability of diabetes nurses	“diabetes reference nurse” (outside the practice), for starting patients on insulin therapy	Yes	No
Functions of diabetes nurse	Health education for patients starting on insulin in primary care	Health education Clinical follow-up	-
Training of diabetes nurse	At least 40 hours of theory (no official curriculum)	No data available	-
Secondary care			
Availability of diabetes nurses	Required by convention for revalidation centres; called “diabetes educators”	Yes	Most services
Functions of diabetes nurse	Health education to patients in convention	Health education Clinical follow-up	No data available
Training of diabetes nurse	110 hours of theory and 70 hours of practice (no official curriculum)	No data available	Differs from one centre to another Recently an official curriculum was published

Note: diabetes nurses (continued)

	Estonia	France	Germany
Primary care			
Availability of diabetes nurses	Yes (either diabetes nurse from outside the practice, or – when no diabetes specialist nurse available – the practice nurse)	No, except in the diabetes care networks	No
Functions of diabetes nurse	Health education and dietetic advice Training staff (diabetes specialist nurse only)	-	-
Training of diabetes nurse	Specific postgraduate training for diabetes nurse Practice nurses can follow courses organised by the medical schools.	-	-
Secondary care			
Availability of diabetes nurses	Yes	No data available	Diabetesberaterin (diabetes adviser) Diabetesassistentin (diabetes assistant)
Functions of diabetes nurse	Health education and dietetic	-	Diabetes adviser: health

	Estonia	France	Germany
	advice Training health staff		education + clinical follow-up. Diabetes assistant: Group-based health education.
Training of diabetes nurse	Specific postgraduate training	-	Diabetes adviser: one year training at DDG Diabetes assistant: 184 hours of training at DDG

Note: diabetes nurses (continued)

	The Netherlands	Spain	United Kingdom
Primary care			
Availability of diabetes nurses	Practice nurses function as diabetes nurse (about half of all practices). 45% of GP's work with a diabetes specialist nurse (outside the practice), for e.g. starting patients on insulin therapy	Yes: practice nurses.	Very common; most practice nurses function as "diabetes nurse" 10% access to diabetes specialist nurse
Functions of diabetes nurse	Health education Clinical follow-up	Health education Clinical follow-up	Health Education Clinical follow-up
Training of diabetes nurse	Diabetes specialist nurse: see secondary care		Several training courses (of about 30 hours)
Secondary care			
Availability of diabetes nurses	Diabetes specialist nurses	Yes, diabetes educators	"Diabetes specialist nurses are very common, but understaffed according to policy guidelines.
Functions of diabetes nurse	Health education Clinical follow-up	Health education Clinical follow-up	Health Education Clinical follow-up Service management

	The Netherlands	Spain	United Kingdom
			Liaison with primary care Research
Training of diabetes nurse	Diabetes specialist nurse: 156 hours of theory in 8 months (only about half of them actually followed this training).	Nurse with postgraduate training	Diabetes specialist nurse is a job qualification; no specific training required.

Process of diabetes care

	Belgium	Canada (Québec)	Denmark
Proportion of type 2 diabetes patients mainly followed up by GP.	Of all diabetes patients: 55% exclusively by GP, 28% by both GP and specialist; 9% exclusively by specialist. Most patients on insulin are followed up in secondary care. Almost none of type 1 patients are followed up by the GP.	85%	85% Patients were traditionally referred to secondary care when started on insulin.
Proportion of type 1 diabetes patients mainly followed up by GP		Few	No data available
Registration with GP	No strict patient's listing. Patients can register with GP; actually about 1/3 is registered.	No	Yes
Gate keeping by GP	No	No	Yes
Diabetes register in general practice	No	No	No Some counties have a register at county level.
Call/recall systems	No	Depends on the private insurance.	No
Diabetes clinics in the general practice	No	No	No
Availability of shared care protocols ⁵	Marginal	Rarely	Shared care protocols are

⁵ Shared care protocols are defined as written agreements that outline the responsibilities of each health worker and the lines of referral and referral back.

	Belgium	Canada (Québec)	Denmark
			widespread, but content differs from region to region.
Initiator	-	GP	Often the county.
Financing	-	Medical insurance	The counties
Evaluation of use of shared care protocols	-	-	Sometimes
Use of “diabetes passport” (i.e. medical record kept by patient)	Yes	No	No
Proportion of patients receiving individual health education	No data available	10% of the type 2 and 100% of the type 1 diabetes patients.	No data available
Group-based health education available	No	Diabetes day care centres of the patients organisations.	Diabetes schools linked to the diabetes clinics.
Group-based health education received	-	No data available.	A minority of patients.

Process of diabetes care (continued)

	Estonia	France	Germany
Proportion of type 2 diabetes patients mainly followed up by GP.	About 75%	94.5% of type 1 and 2 patients.	Mainly GP (also for starting patients on insulin)
Proportion of type 1 diabetes patients mainly followed up by GP	Almost none		Mainly secondary care
Registration with GP	68% is registered	No	No formal registration, but patient is enlisted with first GP consulted each term
Gate keeping by GP	Yes	Limited gate keeping function since June 2005	Quasi-gate keeping since 2005
Diabetes register in general practice	Yes	No data available	No. (all patients within the DMP are registered at sickness fund level)
Call/recall systems	No data available	No data available	No
Diabetes clinics in the general practice	No	No data available	No
Availability of shared care protocols ⁶	No	Diabetes care networks cover about 2% of the patients	Yes (DMP)
Initiator	-	Health Insurance	Statutory Health Insurance

⁶ Shared care protocols are defined as written agreements that outline the responsibilities of each health worker and the lines of referral and referral back.

	Estonia	France	Germany
Financing	-	Health Insurance	Sickness funds
Evaluation of use of shared care protocols	-	No data available	Outcome evaluation planned (not yet done)
Use of "diabetes passport" (i.e. medical record kept by patient)	No data available	No data available	An electronic health card for general use of medical information to be introduced in 2006, upon patient's choice
Proportion of patients receiving individual health education	No data available	No data available	No data available
Group-based health education available	No data available	No data available	Yes, it is prerequisite of the DMP for diabetes
Group-based health education received	No data available	No data available	About half of all patients.

Process of diabetes care (continued)

	Netherlands	Spain	UK
Proportion of type 2 diabetes patients mainly followed up by GP.	75% of all diabetes patients Almost none of the type 1 patients are followed in primary care.	Majority of the patients; 18% of patient are referred to secondary care	About 80%; considerable regional differences
Proportion of type 1 diabetes patients mainly followed up by GP		Almost none	Almost none
Registration with GP	Yes	Yes	Almost all patients are registered with a GP.
Gate keeping by GP	Yes	Yes	Yes
Diabetes register in general practice	99.7% of the practices	Most practices	Almost all practices (aggregated in a PCO register in 69% of the PCO's)
Call/recall systems	The majority of the practices	Minority of practices	Most practices
Diabetes clinics in the general practice	66% (mostly done by practice nurses)	No	About 70% of the practices
Availability of shared care protocols ⁷	Yes	Rarely; in health plans of some Autonomous Communities (e.g. Andalusia) In some primary care health centres: regular clinical meetings	Most PCO's

⁷ Shared care protocols are defined as written agreements that outline the responsibilities of each health worker and the lines of referral and referral back.

	Netherlands	Spain	UK
		with local endocrinologist.	
Initiator	Local health care organisations	No data available	PCO
Financing	So far none, but this will change with the diagnosis-treatment chain for diabetes.	No data available	Incentives to the PCO's
Evaluation of use of shared care protocols	Not well known to what extent the programmes are evaluated	No data available	Not routinely
Use of "diabetes passport" (i.e. medical record kept by patient)	No	Not common	No
Proportion of patients receiving individual health education	No data available	In general practice: by average 1.8 sessions per year.	67% didn't receive any health education in the past year
Group-based health education available	Sometimes available	In hospitals and sometimes in primary care health centres.	Several national programmes; standards set by the National Diabetes Support Team.
Group-based health education received	No data available	No data available	No data available

Quality assurance

	Belgium	Canada (Québec)	Denmark
Systematic measurement of quality of diabetes care for individual health worker/institution	Yes, only within the diabetes convention.	The National Diabetes Surveillance System monitors complication and mortality rates, but not on an individual basis.	No
(Dis)incentives linked to individual outcome	No	No	-
Other forms of individual feedback	Via ad hoc research projects	Via research projects: the Scientific Institute of Public Health already organised twice feedbacks for GPs (voluntary to participate)	No
Audits of diabetes care	No	No	Sporadically in general practice
Peer review groups discussing diabetes care	Local Quality Groups are linked to the accreditation system. No obligations to discuss diabetes management.	Yes	No
Continuing medical education	Voluntary certification system linked to financial incentives.	Accreditation of programmes of continuing medical education.	Specific budget per physician. Little control on content. Training organised by medical associations or pharmaceutical

	Belgium	Canada (Québec)	Denmark
			companies. Local trainings in diabetes care are common.

	Estonia	France	Germany
Systematic measurement of quality of diabetes care for individual health worker/institution	As from 2006 for GP's on voluntary basis	No	Yes, within the DMP
(Dis)incentives linked to individual outcome	As from 2006 for GP's on voluntary basis	No	No
Other forms of individual feedback	No	Evaluation of medical practices (should also include evaluation of diabetes care)	No
Audits of diabetes care	Yes (both general practice and hospitals)	No	No
Peer review groups discussing diabetes care	No data available	Quality circles sporadically	Quality circles discussing diabetes; don't seem to function well
Continuing medical education	Mandatory certification system	Mandatory certification system	Certification system for SHI-affiliated physicians.

Quality assurance (continued)

	Netherlands	Spain	UK
Systematic measurement of quality of diabetes care for individual health worker/institution	No, except in local arrangements Will be part of the diagnosis-treatment chain for diabetes.	In most Autonomous Communities: quality measurement for primary health centres (both GP's and nurses). Content varies from one year to another	Quality and Outcome Framework: 18 indicators; scored 92.3% of total points in 2005
(Dis)incentives linked to individual outcome	Will be part of the diagnosis-treatment chain for diabetes.	Yes	Quality-based payment linked to Quality and Outcome Framework
Other forms of individual feedback	Only in local arrangements	Clinical meetings with local endocrinologist in some primary health care centres.	Annual individual appraisal and 5-yearly revalidation (not specific for diabetes management)
Audits of diabetes care	No	No data available	National Diabetes Audit About 75% of the PCO's do diabetes audits
Peer review groups discussing diabetes care	No data available	No data available	35% of general practices discuss diabetes management
Continuing medical education	Certification system for specialist doctors (40 hours per year).	Voluntary certification	Workforce Development Confederations manage NHS funds for CME. PCO also organises CME.

	Netherlands	Spain	UK
			<p>Certification system was replaced by annual appraisal and 5-yearly revalidation in 2005.</p> <p>Many short courses on diabetes care available</p> <p>Specific training in diabetes care for 80 - 90% of practice nurses and GP's.</p>

Outcome of diabetes care⁸

	Belgium	Canada (Québec)	Denmark
Source	Diabetes convention	Personal communication interviews	No recent data available
Patient population	Patients with at least 2 injections of insulin per day	Not known	-
Year of evaluation	2003-2004	2002 - 2003	-
HbA1c level	average: 7.95% < 7.0%: 29%	Canada: < 7%: 51% Québec: <7%: 49%	-
Total cholesterol level	197 mg%	< 180mg%: 41%	-
Blood pressure	Systolic: 140 mmHg Diastolic: 78 mmHg < 140/90 mmHg: 44.4%	Systolic < or = 130mmHg: 55% Diastolic < or = 80mmHg: 49%	-

⁸ We didn't include the outcome data from the CODE-2 study as the present situation is probably too different from the one in 1999, the time of data collection.

	Estonia	France	Germany
Source	No data available	No data available	Quality monitoring in DMP
Patient population	-	-	Patients at least 6 months in DMP programme in Nordrhein
Year of evaluation	-	-	2004
HbA1c level	-	-	< 6.5%: 44.0% > 7.5%:22.5%
Total cholesterol level	-	-	-
Blood pressure	-	-	< 130/85 mmHg: 22.7% > 160/100 mmHg: 89.0%

Outcome of diabetes care (continued)

	Netherlands	Spain	UK
Source	Van Avendonk: publication in preparation	No recent data available	National Diabetes Audit
Patient population	Patients in general practice	-	All types of diabetes patients
Year of evaluation	2005	-	2003-2004
HbA1c level	7.1%	-	< 6.5%: 23% > or = 7.5%: 56%
Total cholesterol level	191 mg%	-	< 190mg%: 61%
Blood pressure	Systolic: 146 mmHg Diastolic: 83 mmHg	-	< 135/75: 21% < 160/100: 84%

Strengths, weaknesses and expected changes in the future⁹

	Strengths	Weaknesses	Expected changes in the future
Canada	<p>Very active patients' organisations</p> <p>Good coverage of health costs for diabetes patient</p>	<p>Lack of co-ordination</p> <p>Lack of resources for health education</p> <p>Incomplete implementation of National Diabetes Strategy</p>	<p>Better co-ordination in follow-up of diabetes patient</p> <p>More emphasis on prevention</p> <p>Full implementation of National Diabetes Strategy (e.g. the National Diabetes Surveillance System)</p> <p>Health insurance fully to cover dietetic services.</p>
Denmark	<p>One system, largely for free (interview 2, 3)</p> <p>GP as gatekeeper (2, 3)</p> <p>Registration with GP (2)</p> <p>Diabetes steering committees (1, 4)</p> <p>Tradition of diabetes research (3)</p>	<p>Lack of co-ordination/shared care (1, 2, 4)</p> <p>Hesitance of GP's to refer patients (2, 3, 4) because of competition / payment systems</p> <p>Existing shared care protocols often unsatisfactory (1, 2)</p> <p>Data protection rules make electronic transfer of patient-sensitive data difficult (4).</p> <p>Lack of emphasis on lifestyle change (2, 3)</p>	<p>More structured care on basis of patients stratification (1)</p> <p>Screening programmes for diabetes and diabetes complications (3, 4)</p> <p>Loss of interest in lifestyle change / more focus on technology (3)</p> <p>Further development of IT to facilitate communication (2)</p> <p>More involvement of nurses (4)</p>

⁹ From the expert interviews: 1: public health expert; 2 and 3: primary care experts; 4: secondary care expert; 5 (where available): primary care or public health expert.

	Strengths	Weaknesses	Expected changes in the future
France	<p>Good access to and coverage of diabetes care, even more in the diabetes care networks (1, 2, 5)</p> <p>The diabetes care networks (3)</p>	<p>No coverage of dietetic and podiatric services (1, 5)</p> <p>Lack of co-ordination of diabetes care (1, 2)</p> <p>Insufficient access to ophtalmologists (1, 3)</p> <p>The fee-for-service payment system (2)</p> <p>The individualism of the physicians (2, 5)</p> <p>No systematic evaluation of clinical practice (2, 5)</p> <p>Insufficient continuing medical education (5)</p> <p>Diabetes not a priority for patients and physicians (5)</p>	<p>Mandatory yearly quality assurance procedure for diabetes care (1)</p> <p>Dietetic and podiatric services and health education to be covered for diabetes patients (1, 5)</p> <p>Delegation of tasks in health education to paramedicals (1)</p> <p>Better co-ordination of care, development of co-ordinating bodies at regional level, spread of the diabetes care networks (1, 2, 3, 5)</p> <p>Strengthening of the role of the GP (5)</p> <p>Increased use of electronic medical records, also for internal quality control (5)</p>

Strengths, weaknesses and expected changes in the future (continued)

	Strengths	Weaknesses	Expected changes in the future
Germany	<p>Good quality of diabetes care in diabetes clinics and hospitals (3, 4); functional referral system (3); well trained GP's (2)</p> <p>DMP has a positive impact (2, 3, 4) though it also has some weaknesses (3, 4)</p>	<p>DMP represents a heavy administrative burden and a small financial incentive (3, 4).</p> <p>Poor system for outcome measurement in DMP (3, 4)</p> <p>Lack of integrated care for diabetes patient with co-morbidities (3, 4)</p>	<p>Diabetes care will become more integrated in the overall health care (4).</p> <p>Nurses will take more responsibilities in diabetes care (4).</p> <p>Doctors will get more training in diabetes care (4).</p> <p>Introduction of electronic health card in 2006: impact? (3).</p>
Netherlands	<p>Diabetes care mainly in primary care (3)</p> <p>Well structured diabetes care (1, 3, 4)</p> <p>Involvement of practice nurse / diabetes specialist nurse (1, 5)</p> <p>Well co-ordinated care (2); positive impact of shared care protocols (1, 4)</p> <p>Strong impact of Dutch Diabetes Federation (5)</p> <p>Diabetes is on the political agenda (2)</p>	<p>Shared care protocols not well implemented and/or evaluated (1, 2, 3, 4, 5); they are not binding (2) and often don't include quality monitoring (3).</p> <p>Lack of financing for shared care protocols (1)</p> <p>Lack of IT development for shared care (1, 4)</p> <p>Unclear share of responsibilities between caretakers (1, 3, 5)</p> <p>Poor communication between GP and dieticians/podiatrists (5)</p> <p>Insufficient financing for secondary /</p>	<p>Positive impact of diabetes care groups and diagnosis-treatment chain for diabetes (1, 2, 3, and 5). Shared care protocols will be more generalised (1), better financed (1), binding (2), will stimulate IT development (2), no more discussion on responsibilities (5), better communication with dieticians and podiatrists (5).</p> <p>Will health insurers have the capacity to monitor quality of care ? (2)</p> <p>Danger for fragmentation of care (2)</p> <p>Cost might become more important than quality (2)</p>

	Strengths	Weaknesses	Expected changes in the future
		tertiary care (4)	Role of nurses will become more important (1) The challenge of the rising prevalence: more attention to health promotion, prevention ; even greater role for primary care (4)

Strengths, weaknesses and expected changes in the future (continued)

	Strengths	Weaknesses	Expected changes in the future
Spain	<p>Sufficiently available and accessible (2, 3, 4).</p> <p>Integrated in the general health care activities of the primary health care centre,(2, and 3).</p> <p>Rooted in primary care (interview 2);sufficient access to diagnostic tests in primary care (3)</p> <p>Primary care team consists of both physicians and nurses (2).</p> <p>Primary health care is well developed in Spain, with a considerable level of research activity (3).</p> <p>Physicians are well trained (4), specifically in diabetes care (3).</p>	<p>Insufficient availability of dietetic and podiatric services in the hospital (2, 3, 4).</p> <p>Overuse of test strips (3).</p> <p>Long waiting times, mostly in secondary care (2).</p> <p>High work load for the GP; partially compensated by the nurse consultation (2).</p> <p>Lack of co-ordination of diabetes care, especially between primary and secondary care (3). At the other hand the endocrinologist thought that there was a loose relationship between health workers in primary and secondary care, e.g. through clinical meetings. (4).</p>	<p>Introduction of facilities for retinopathy screening in primary health care centres (2, 3, 4)</p> <p>Development of a system to monitor diabetes incidence/prevalence (2, 4).</p> <p>Immigration could have an important impact on diabetes incidence/prevalence (2).</p> <p>Introduction of diabetes screening programmes (interview 4)</p> <p>More involvement of patients' organisations (3)</p> <p>Fear that care might become more specialist-centred (3)</p>
UK	<p>One system, largely for free (2, 3, 4)</p> <p>Political leadership (1, 2, 3, 4) linked to proper financing (2, 3)</p> <p>Diabetes specialist nurses (1, 4)</p>	<p>Wide variation in quality in primary care (1, 3, 4)</p> <p>Too rapid changes in organisation (2, 3)</p> <p>Still too much hospital based (1, 3)</p> <p>Does the Quality and Outcomes</p>	<p>More multidisciplinary and flexibility. More fractioned care? (1, 2)</p> <p>Further expansion of IT: the virtual diabetes team (3, 4)</p> <p>Practice-based commissioning: impact? (3,</p>

	Strengths	Weaknesses	Expected changes in the future
	<p>High research activity (3, 4)</p> <p>Well structured general practice (4)</p> <p>Diabetes care firmly rooted in primary care (2)</p> <p>Strong patients' organisation (1)</p>	<p>Framework measure the right indicators (1)?</p> <p>The Quality and Outcomes Framework might be at the expense of patient-centeredness (2)</p> <p>Lack of dietetic (2, 4) and podiatric services and health education (4)</p> <p>Insufficient training for caregivers (3)</p> <p>Limited use of electronic medical records in secondary care (4)</p>	<p>4)</p> <p>The indicators in the Quality and Outcomes Framework will be adapted (2).</p> <p>More health education (3).</p> <p>How to cope with rising prevalence? (1)</p>

Glossary

AFSSAPS	French Agency of Health Products Security (France)
ANAES	National Agency for Accreditation and Health Evaluation (France)
ANCRED	National Association for Co-ordination of the Diabetes Care Networks (France)
AWBZ	General Law on Specific Health Costs (Algemene Wet Bijzondere Ziektekosten, the Netherlands)
CBO	Quality Institute for Health Care (the Netherlands)
CDMP	Chronic Disease Management Programme (UK, England)
CDS	Canadian Diabetes Strategy
CME	Continuing medical education
DACEHTA	Danish Centre for Health Technology Assessment
DDG	German Diabetes Medical Association (Deutsche Diabetes Gesellschaft),
DMP	Disease Management Programme (Germany)
DVN	Dutch Diabetes Association (patients)
EHIF	Estonian Health Insurance Fund
EMR	Electronic medical record
GDP	Gross Domestic Product (OECD definition): aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production.
GEDAPS	Grupo de Estudio de la Diabetes en Atención Primaria (Study Group for Diabetes in Primary Health Care), working group within the Spanish GP association
GMS contract	General Medical Services contract (UK, England); contract between GP and NHS
GP	General Practitioner
GPAH	General Practitioner as Adviser in Hospital (Denmark)

IT	Information technology
NDA	National Diabetes Audit (UK, England)
NDF	Dutch Diabetes Federation (Nederlandse Diabetesfederatie)
NDSS	National Diabetes Surveillance System (Canada)
NeLH	National Electronic Library for Health (UK)
NHG	Dutch GP Association (Nederlands Huisartsengenootschap)
NHS	National Health Service (UK, Spain)
NHSS	National Health Security System (Denmark)
NICE	National Institute for Clinical Excellence (UK)
NSF	National Service Framework (UK, England)
OECD	Organisation of Economic Co-operation and Development
Out-of-pocket payments	OECD definition: comprise cost-sharing, self-medication and other expenditure paid by private households, irrespective on whether the contact with the health care system was established on referral or on patient's own initiative.
PCO	Primary Care Organisation (UK)
PCT	Primary Care Trust (UK, England)
PMS	Personal Medical Services contract (UK, England); contract between GP and NHS
PPP	See Purchasing power parity.
Purchasing Power Parity	OECD definition: rates of currency conversion that eliminates the differences in price levels between countries
QMAS	Quality Management and Analysis System (UK, England)
SHI	Statutory Health Insurance (Germany)
Total health expenditure	OECD definition (shortened version): all expenditure on health care activities excluding food and hygiene control), health research and development and general safety measures (e.g. monitoring of technical standards, road safety).

WHO

World Health Organisation

KCE reports

34 Trastuzumab in Early Stage Breast Cancer. D/2006/10.273/25.

36 Pharmacological and surgical treatment of obesity. Residential care for severely obese children in Belgium. D/2006/10.273/30.

Note: All KCE reports are available with a Dutch or French executive summary. Scientific summaries are often written in English.

