KCE REPORTS 169S

Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Center

ELECTIVE CARE FOR FOREIGN PATIENTS: IMPACT ON THE BELGIAN HEALTHCARE SYSTEM

APPENDIX

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HEALTH SERVICES RESEARCH

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APPENDIX

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COLOPHON

Title:	Elective care for foreign patients: impact on the Belgian healthcare system - Appendix
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Acknowledgements:	Stephan Devriese (KCE), Stefaan Van De Sande (KCE), Tomislav Sokol, Yves Jorens
External Validators:	Stefaan Callens (KULeuven), Guy Durant (UCL), Pascal Garel (HOPE)
Conflict of Interest:	A grant, fees or funds for a member of staff or another form of compensation for the execution of research: Colardyn Francis. Payments to speak, training remuneration, subsidised travel or payment for participation at a conference: Van Haesevelde Siegfried.
Layout :	Ine Verhulst, Sophie Vaes

Publication date	November 25th 2011
Domain:	Health Services Research (HSR)
MeSH :	Surgical Procedures, Elective ; Insurance, Health, Reimbursement ; European Union ; Legislation as Topic ; Medical Tourism

NLM Classification : W 84.1

Language : English

Format : Adobe® PDF™ (A4)

Legal depot : D/2011/10.273/75

How to refer to this document ? De Mars B, Boulanger K, Schoukens P, Sermeus W, Van de Voorde C, Vrijens F, Vinck I. Elective care for foreign patients: impact on the Belgian healthcare system - Appendix. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE). 2011. KCE Reports 169S D/2011/10.273/75

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1. APPENDICES FROM CHAPTER 1 (INTRODUCTION)

Table 1: List of experts interviewed

Expert name	Affiliation
Koen Schoonjans	Responsible for control of financing of Belgian hospitals, Federal Public Service of Health, Food Chain Safety and Environment
Rita Baeten	Senior Policy analyst, European Social observatory
Christian Horemans	Expert international affairs, liberal health insurance fund
Jos Kesenne	Advisor, Christian health Insurance fund
Patrick Carnotensis	Coordinator European and EU-regional projects, Christian health insurance funds
Gerd Callewaert	Staff member, Christian health Insurance fund
Willy Palm	Dissemination development Officer of the European Observatory on Health Systems and Policies
Nico Martens	Healthcare purchasing agent, CZ
Henri Lewalle	Coordinator European and cross-border projects, Christian health insurance fund
Chris Segaert	Advisor NIHDI

2. APPENDICES FROM CHAPTER 2 (LEGAL FRAMEWORK)

Table 2: Description of ZOAST

Title	Involved Hospitals	Object	Entry into force
ZOAST 1 *"Transcards"*	1. Belgian Hospitals - Centre de santé des Fagnes de Chimay 2. French Hospitals - Centre hospitalier (CH) de Felleries – Liessies - CH du Pays d'Avesnes CH du Nouvion-en-Tiérarche CH de Fourmies - CH de Vervins - CH Brisset de Hirson - Polyclinique de la Thiérarche-Wignehies	- Access to hospitals at other side of the border *without need* of prior authorization; - Interoperability of French and Belgian health insurance cards - Coverage and settlement of costs based on European Coordination Regulations (S2 form by healthcare provider delivered automatically after showing health insurance card – administrative *a posteriori* authorization)	As from 1st of May 2000

Title	Involved hospitals	Object	Entry into force
ZOAST 2 *"Ardennes"*	1. Belgian Hospitals - CH de Dinant - Polycliniques de Dinant (Gedinnes, Ciney) - Cliniques Universitaire de Mont Godinne - Polycliniques des mutualités socialistes de Beauraing, Couvin and Philippeville 2. French Hospitals - CH de Charleville-Mézières - CH de Sedan	- Free movement of patients within this zone for all types of hospital care (with the exception of assisted reproductive technology); - The convention applies to all Belgian and French social insured who: * habitually and permanently reside within the geographical area of the ZOAST * are entitled to benefits from the statutory health insurance, independent from their regime of affiliation	As from 1st February 2008

	- Hopitâl Local (HL) de Fumay - Polyclinique du Parc de Charleville - Clinique du Dr. L'Hoste de Villers Semeuse - Clinique de Revin - HL de Nouzonville		As from 1st of January 2009
Extension	- CH du CSF Chimay (B)		

Title	Involved hospitals	Object	Entry into force
ZOAST 3 "MRTW"	- CH Mouscron (B) - CH Roubaix (F) - CH Tourcoing (F) - CH Wattrelos (F)	- Free movement of patients between different hospitals; interoperability of Belgian and French health insurance cards (cf. Transcards) - Coverage and settlement of costs based on European Coordination Regulations (automatic deliverance of S2 form when showing health insurance card – administrative *a posteriori* authorization)	As from 1st of April 2008
Extension "*URSA*"	- Jan Ypermanziekenhuis (B) - CH Armentières (F) - CH Bailleul (F) - CH Hazebrouck (F)		As from the 1st of November 2008
Extension *Menen*	- Heilig Hart-ziekenhuis Menen (B)		As from the 1st of April 2009
Extension *CHRU Lille Kortrijk*	- AZ Groeninge Kortrijk (B) - Centre Hospitalier Régional Universitaire (CHRU) de Lille (F)		As from the 1st of July 2009

Title	Involved hospitals	Object	Entry into force
ZOAST 4 Mons - Maubeuge	1. Belgian hospitals - CHR Mons - CHU Ambroise Paré 2. French hospitals - CH Sambre Avesnois - CH d'Hautmont - CH de Jaumont - CH d'Avesnes - Polycliniques Val de Sambre - Centre Departemental de Felleries-Liessie - Clinique du Parc - Centre radiodiagnostique Grimm - Centre de radiotherapie Gray	- Patients entitled to cross-border medical care in listed hospitals	As from 1st of January 2008

Title	Involved hospitals	Object	Entry into force
ZOAST 5 Arlon-Longwy (Lorraine)[a]	- Cliniques de Sud-Luxembourg (Arlon, Virton) (B) - Association Hospitalière du Bassin de Longwy - section Mont Saint Martin (F)	- Offer of medical care by the two listed hospitals	As from the 1st of July 2008

Title	Involved hospitals	Object	Entry into force
ZOAST 6 *Tournai – Valenciennes*	- CH de Wallonie Picarde (B) - CH Valenciennes (F)	- Offer of medical care by the two listed hospitals	As from the 1st of May 2010

a At the moment of this research, initiatives are taken to extend the actual ZOAST Arlon-Longwy to the Belgian-Luxembourgian and French-Luxembourgian border regions, in order to come to a 'Grande Région de soins de santé transfrontaliers franco-belgo-luxembourgeoise'. This initiative is coordinated by another European Economic Interest Group, 'Luxlorsan', created in 2002 (www.luxlorsan.eu).

3. APPENDICES FROM CHAPTER 4 (VOLUME AND CHARACTERISTICS OF FOREIGN PATIENTS STAYS: DATA, METHODOLOGICAL ISSUES AND RESULTS)

3.1. Appendices related to Macro data (hospital discharge)

3.1.1. Description of the linkage between MCD and HBD databases

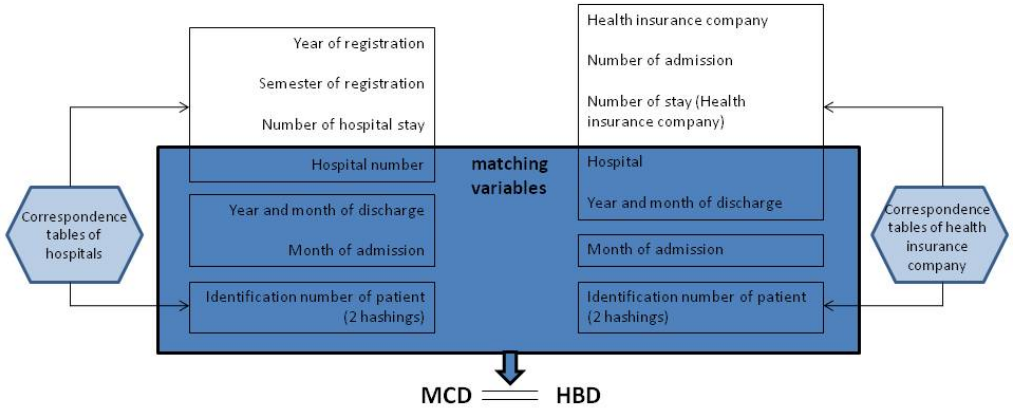
Since 1997, the MCD database is linked to the HBD database.This linkage is performed by the 'Technical Cell for the processing of hospital data' (also called the TCT, which is an institute governed by the National Institute of Health and Disability Insurance (NIHDI – 'RIZIV/INAMI' ('Rijksinstituut voor Ziekte- en Invaliditeitsverzekering/Institut National d'Assurance Maladie-Invalidité') as well as the Federal Public Service (FPS – FOD/SPF 'Federale Overheidsdienst/Service Public Fédéral') for 'Health, Food Chain Safety and Environment', by means of two separately executed hashings.

The health insurance funds have provide the following data to make the linkage with the MCD data possible: identification of the health insurance fund, identification of the hospital, encoded number of the anonymous hospital stay, the code of readmission of the anonymous hospital stay, year and month of discharge, the pseudonym of the person who is entitled. This pseudonym of the entitled person is obtained by performing an irreversible transformation of the identification number of the entitled person. This is what is called a 'hashing algorithm' In Belgian hospitals, a first hashing procedure is done when the billing data is transmitted from the hospital to the health insurance funds. These health insurance funds then complete a second hashing procedure to make sure the billing data are completely anonymous.

The actual linkage is executed based on the identification number of the hospital, year and month of admission and discharge and the encrypted identification number of the patient (Figure 1). By using the identification number of the entitled patient, it is possible to follow a patient over time and in different hospitals.

Linkage percentages exceed nowadays 95 % overall. The MCD database also contain records for day care (i.e. patients not staying overnight in the hospital) and outpatients' treatments requiring hospital facilities. These HBD database for day care is from 2006 onwards linked with the MCD database. Several rejection codes are available to describe the non linkage between the HBD and MCD databases. For a detailed overview of these rejection codes, see below. Rejection codes 1(a hospital stay for which the patient number is not included in the correspondence table draw up by the hospital), 5 (a hospital stay for which the HBD data is not included in the correspondence table that is draw up by the hospital) and 6 (a hospital stay for which MCD data is available, but no information is found for this hospital stay within the HBD data) are covering foreign patients.

Figure 1: Linkage between MCD and HBD.



Overview of the rejection codes

Rejection code	Interpretation of the rejection code
1	A hospital stay for which the patient number is not included in the correspondance table draw up by the hospital. This might apply to hospital stays of patients who are not included in the Belgian health insurance data.
2	Concerning one hospital stay (with the same MCD-index) that is twice included with different patient numbers in the correspondance table draw up by the hospital.
4	Newborns for which no linkage can be made, because all provisions are invoiced to the mother.
5	A hospital stay for which the MCD data is not included in the correspondence table that is draw up by the hospital.
6	A hospital stay for which the MCD data is available, but no information is found for this hospital stay within the HBD data
10	Not linked readmissions. This might apply to patient who is hospitalized and discharged several times during the same month and when there is no information available concerning the exact date of admission and discharge. When it is possible that two different MCD stays could be linked to one HBD stay, no pronouncement can be made concerning which MCD stay is the right one, and thus no linkage is performed between these MCD and HBD data.
11	Not linked readmissions. This might apply to patient who is hospitalized and discharged several times during the same month and when there is no information available concerning the exact date of admission and discharge. When it is possible that two different HBD stays could be linked to one MCD stay, no pronouncement can be made concerning which HBD stay is the right one, and thus no linkage is performed between these MCD and HBD data.
12	Not linked readmissions after specific crossed controls resulting from the processing of the readmissions. When the Technical Cell (TCT) no stays identifies that lead to a rejection code 10 or 11 (cfr. Supra), then she performs a specific crossed control to the linked readmissions. This control supervises that the length of the hospital stay and the gap between the days mentioned within the MCD and HBD are identical. When the TCT observes a difference, she assumes that the linkage is not reliable and the linkage is thus not executed.
13	Linkage is possible, but not validated through an internal control. For some hospital stays, the linkage between MCD and HBD data is accurate executed, but sometimes the cross controls are not decisive. These stays are considered as not linked.

3.1.2. Technical codes for initial selection of stays based on MCD-HBD

The following selection criteria were used:

1. all stays from patients without Belgian nationality (based on MCD), or
2. all stays from patients not residing in Belgium (based on MCD), or
3. all stays from patients who are registered as coming to Belgium under an international convention (based on HBD).

Obviously, this first selection was much larger than our scope, as it included for instance foreigners residing (and hence seeking care) in Belgium (criteria 1) or stays from all (perhaps Belgian) cross-border workers (included in selection 2), which fall under the international convention payment schemes.

In the analyses, different combinations of these criteria were combined to provide an overview of the stays falling in the scope of the study.

Table 3: Selection criteria for the first broad selection of stays

Selection rule (1) or (2) or (3)	File within MCD or HBD*	Selection criteria	Interpretation of selection criteria
(1)	STAYHOSP. CODENAT	Not equal 1	Not Belgian patients based on their nationality
(2)	STAYHOSP. COUNTRY	Not equal 150	Not Belgian patients based on Belgium not as country of residence
(3)	VERBLIJF.TITUL1*	In (180,181,480,481)	International convention

3.1.3. Coding of the type of admission in MCD

The type of admission describes the way the patient enters the hospital. This can be a admission which is planned in advance by the patient. The admission might also result from a day care admission, for which the stay of the patient has to be extended because of some medical complications. The types of admission that are not planned can occur via the emergency department, with or without the support of a (certified) mobile urgence team. The type of admission can also be 'born in the hospital' for newborns, it can be a forced admission or placement by a judge, police etc.

- Code A is used for a patient who comes to the hospital with its own means of transport, or assisted by the police or doctor, or public transportation, but without the intervention of a recognized vehicle or ambulance. The patient will be hospitalized via the emergency department.
- Code B is used for a patient who comes to the hospital with an ambulance, the emergency department of the hospital was not involved, and there was no intervention of a (certified) mobile urgence team.
- Code C is used for a patient who comes to the hospital with an ambulance, the emergency department of the hospital was involved, but there was no intervention of a (certified) mobile urgence team.
- Code G is used for a patient who is urgently admitted to the hospital but who did not pass via the intake desk of the emergency department. An example is a delivery of a woman who does not go via the intake desk, but who is going immediate to the maternity hospital.

3.1.4. Selection of diagnoses and interventions in HDP-2 project

Table 4: Categories of diagnoses used in the Health Data Project-2

Group	Category of diagnosis
0100	Certain infections and parasitic diseases
0200	Neoplasms
0300	Diseases of the blood and bloodforming organs and certain disorders involving the immune mechanism
0400	Endocrine, nutritional and metabolic diseases
0500	Mental and behavioural disorders
0600	Diseases of the nervous system
0700	Diseases of the eye and adnexa
0800	Diseases of the ear and mastoid process
0900	Diseases of the circulatory system
1000	Diseases of the respiratory system
1100	Diseases of the digestive system
1200	Diseases of the skin and subcutaneous tissue
1300	Diseases of the musculoskeletal system and connective tissue
1400	Diseases of the genitourinary system
1500	Pregnancy, childbirth and the puerperium
1600	Certain conditions originating in the perinatal period
1700	Congenital malformations, deformations and chromosomal abnormalities

1800	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
1900	Injury, poisoning and certain other consequences of external causes
2100	Factors influencing health status and contact with health services

Table 5: Different categories of interventions used in the Health Data Project-2

Group	Category of intervention
0100	Exstirpation, excision and destruction of intracranial lesion
0200	Evacuation of subdural haematoma and intracranial haemorrhage
0300	Discectomy
0400	Thyroidectomy
0500	Cataract surgery
0600	Cochlear implantation
0700	Tonsillectomy
0800	Pulmectomy
0900	Diagnostic bronchoscopy with or without biopsy
1000	PTCA
1100	CABG
1200	Carotid endarterectomy
1300	Infrarenal aortic aneurysma repair
1400	Femoropopliteal bypass
1500	Stem cell transplantation
1600	Colonoscopy with or without biopsy
1700	Colectomy
1800	Appendectomy
1900	Cholecystectomy
2000	Repair of inguinal hernia
2100	Transplantation of kidney
2200	Open prostatectomy
2300	Transurethral prostatectomy
2400	Hysterectomy
2500	Caesarean section
2600	Arthroscopic excision of meniscus of knee
2700	Hip replacement
2800	Total knee replacement
2900	Partial excision of mammary gland
3000	Total mastectomy

3.1.5. Check of the selection: information available in the Maxi Feedback from SPF/FOD

The first approach to estimate the global volume of foreign patient stays is based on the Maxi Feedback from the FPS 'Health, Food chain safety and Environment' and secondly, based on the MCD database.

Table 6 provides an overview of the relative importance of foreign patient stays (inpatient and day care) based on the Maxi Feedback.

The selection of foreign patient stays based on the Maxi Feedback from the FPS 'Health, Food chain safety and Environment' is based on 'nationality' (EU, non EU, unknown) and 'country of residence' (not Belgium).

The share of foreign patient stays increased from 0.82 % in 2004 for inpatient care to 1.21 % in 2007. The same evolution can be observed for the day care (an increase of the share of foreign patients from 0.69 % in 2004 to 0.99 % in 2007).

Table 6: Relative importance of foreign patient stays based on the Maxi Feedback

	inpatient			day care		
	N	**TOTAL**	**% of total**	**N**	**TOTAL**	**% of total**
2004	13.770	1.681.415	0,82	7.190	1.046.169	0,69
2005	17.311	1.691.122	1,02	9.968	1.086.171	0,92
2006	18.422	1.693.793	1,09	9.501	1.128.445	0,84
2007	20.385	1.679.380	1,21	12.115	1.219.634	0,99

Based on the Maxi Feedback, no distinction can be made to identify the three different categories of foreign patients (coordination, direct billing and contract patients).

Our results have been compared to those provided in the maxi feedback above. A difference in the volumes of foreign patient stays between the Maxi Feedback and the selection of foreign patient stays within the MCD database, based on nationality and country of residence, is observed. These differences are probably due to differences in selection codes and in data processing.

3.1.6. Volume of non residents in MCD (analyses based on country of residence)

Table 7 provides an overview of the volumes of foreign patient stays (inpatient) based on the MCD database, and based on the first selection criterion 'country of residence' (not Belgium).

Based on the selection criteria 'country of residence', we can observe increasing volumes of foreign patient stays in recent years. In 2008, 28,514 foreign patient stays for inpatient care were realized in Belgium. These volumes include emergency and unplanned care, as no selection to exclude these stays was made.

Table 7: Global volumes of patient stays based on MCD and foreign country of residence

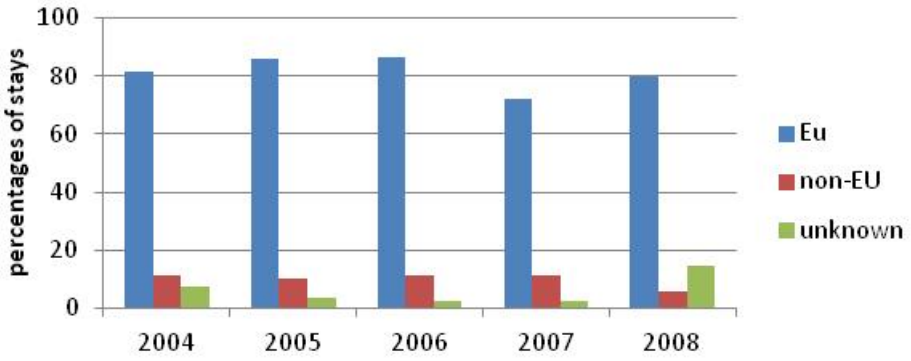
	inpatient
2004	25,357
2005	25,579
2006	26,207
2007	27,767
2008	28,514
TOTAL	133,424

3.1.7. Nationality of foreign patient stays based on MCD database

Figure 2 gives an overview of the relative importance of the nationality of the foreign inpatient stays in Belgium over years 2004-2008. The nationality is presented by means of three categories: European, non-European and unknown nationality.

Approximately 80 % of foreign patient stays were from patients with a European nationality. A small volume of foreign patient stays was from patients with a non-European nationality.

Figure 2: Nationality of foreign inpatient stays



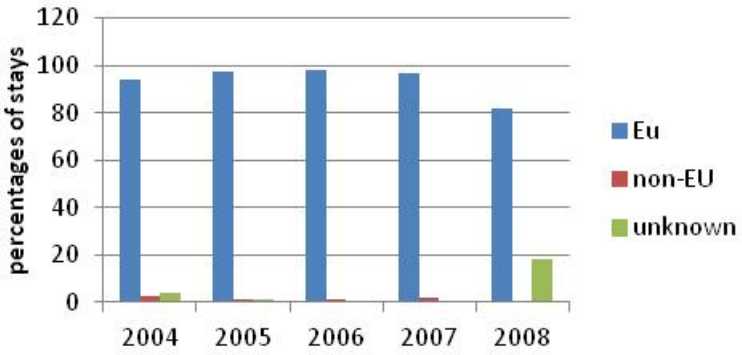
3.1.8. Nationality of coordination patients in Belgium

More than 80 % of foreign patients coming to Belgium for planned healthcare by means of a prior authorization document E112/S2, has a European nationality.

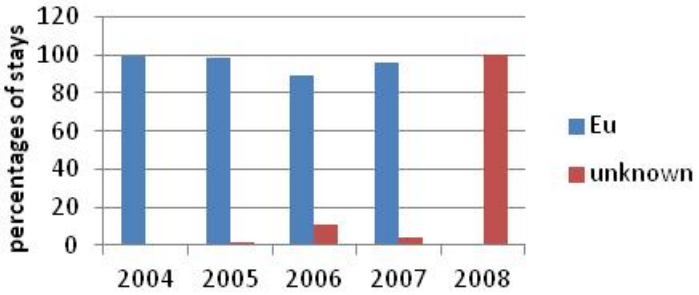
For patient stays from patients coming within the context of cross-border cooperation agreements, before 2007, approximately 90 % of patient stays were from patients with a European nationality. From 2008 on, a lot of patient stays were registered with an 'unknown' nationality.

Figure 3: Nationality of coordination patients in Belgium

A. E112/S2



C. Cross-border cooperation agreements



3.1.9. Treatments for stays in the context of a cross-border cooperation agreement

Table 8 and Table 9 describes the top 10 of APR-DRGs and top 10 MDCs for patient stays within the context of cross-border cooperation agreements for inpatient care. The numbers represent the volumes of foreign patient stays. The row N (total) represents the volumes of all foreign patient stays of all APR-DRGs in the corresponding years.

Table 8: Top 10 APR-DRGs for coordination inpatient stays within the context of cross-border cooperation agreements in Belgium

APR-DRG	2004	2005	2006	2007	2008
N (total)	322	151	18	24	40
363 - breast procedures except mastectomy	19.25	21.85	0.00	0.00	0.00
310 - back and neck procedures except dorsal and lumbar fusion	9.63	16.56	0.00	0.00	0.00
302 - major joint and limb reattach proc of lower extrem exc for trauma	6.52	5.30	0.00	0.00	0.00
403 - procedures for obesity	4.35	3.31	0.00	0.00	0.00
693 - chemotherapy	3.73	1.32	5.56	0.00	0.00
313 - knee and lower leg procedures except foot	3.11	0.66	5.56	0.00	0.00
318 - removal of internal fixation device	2.80	1.99	0.00	0.00	0.00
315 - shoulder, elbow and forearm procedures	2.48	0.66	0.00	0.00	0.00
071 - intraocular procedures except lens	1.86	1.32	0.00	4.17	0.00
347 - medical back problems	0.93	3.31	0.00	4.17	0.00

Table 9: Top 10 MDCs for patient stays of coordination patients within the context of a cross-border cooperation agreement in Belgium

MDC	2004	2005	2006	2007	2008
N (total)	**322**	**151**	**18**	**24**	**40**
08 - Musculoskeletal System and Connective Tissue	45.34	47.02	16.67	8.33	5.00
09 - Skin, Subcutaneous Tissue and Breast	22.05	23.18	0.00	0.00	2.50
05 - Circulatory System	4.35	0.66	16.67	54.17	15.00
04 - Respiratory System	2.17	5.30	27.78	0.00	17.50
06 - Digestive System	3.73	3.31	0.00	0.00	12.50
10 - Endocrine, Nutritional and Metabolic Diseases and Disorders	4.66	3.31	0.00	0.00	2.50
17 - Lymphatic, hematopoietic, other malignancies, chemotherapy and radiotherapy	3.73	1.32	5.56	0.00	0.00
01 - Nervous System	1.55	1.32	0.00	0.00	17.50
03 - Ear, nose, mouth, throat and craniofacial diseases and disorders	2.17	1.99	11.11	0.00	2.50
02 - Eye	2.80	1.99	0.00	0.00	0.00

3.1.10. Hospitalisations for patients with foreign nationality living in Belgium

It was already mentioned before that, based on the MCD database (and variables nationality and country of residence), a large group of foreign patients (based on a foreign nationality) are living in Belgium (based on country of residence). Table 10 describes the volumes of these patients over years 2004 – 2008.

Table 10: Overview of the volumes of foreign patients living in Belgium based on the MCD database

number of patient stays
inpatient
212,012
215,869
212,832
197,758
165,753

Table 11 gives an overview of the insurance status of foreign patients living in Belgium. As one can see, most of these patients are insured by a Belgian health insurance fund (88 %), and 10 % is not insured. But as mentioned before, some questions have risen about the reliability of this variable.

Table 11: Overview of the insurance status of foreign patients living in Belgium

	number of patient stays
insurance status	**inpatient**
patient insured by Belgian sickeness fund	342,173
not socially insured	34,907
international convention	5,773
specific agreements	2,698
Total	385,551

Table 12 provides an overview of the nationality of the foreign patients living in Belgium. 51.91 % of inpatient stays of patients with a foreign nationality living in Belgium has an unknown nationality. 15.89 % of inpatient stays are from patients with a European nationality besides Dutchman, Frenchman, German, Luxemburger and Englishman. 11.93 % of inpatient are from patients with an African nationality.

Table 12: Overview of the nationality of foreign patients living in Belgium

	number of patient stays	
nationality	**inpatient**	
	N	**%**
unknown	86,043	51.91
other country of Europe	26,340	15.89
African	19,769	11.93
Asian	7,527	4.54
Frenchman	7,564	4.56
Dutchman	6,825	4.12
Europe, non EU	5,352	3.23
American	2,792	1.68
German	1,750	1.06
Englishman	1,436	0.87
Luxemburger	278	0.17
Oceania	77	0.05
Total	**165,753**	

3.1.11. Differences in severity between coordination patients and national mean for Belgian patients

Table 13: Differences in severity between coordination patients and national mean for Belgian patients

		number of patient stays and p-value														
		2004			2005			2006			2007			2008		
APR-DRG	SOI-level	Belgian	F.P. E112	p-value	Belgian	F.P. E112	p-value	Belgian	F.P. E112	p-value	Belgian	F.P. E112	p-value	Belgian	F.P. E112	p-value
862 - other factors influencing health status																
	low	18652	29	**0.0000**	18419	23	**0.0000**	18638	54	**0.0000**	16734	70	**0.0000**	18414	91	**0.0000**
	moderate	7876	61		8553	62		8759	104		7963	165		8206	170	
	high	1865	240		1984	200		1959	89		1831	69		2029	23	
	very high	314	16		299	7		277	3		267	2		342	2	
310 - back and neck procedures except forsal and lumbar fusion																
	low	12237	48	0.7205	12897	143	**0.0306**	13489	215	0.2762	13847	326	**0.0000**	14715	266	**0.0000**
	moderate	4789	21		4955	43		5507	79		5766	67		5949	54	
	high	681	3		644	2		627	8		587	4		581	6	
	very high	82	0		102	0		83	0		94	1		120	0	
175 - percutaneous cardiovascular procedures w/o AMI																
	low	10175	143	**0.0000**	10228	126	**0.0000**	10030	159	**0.0000**	10075	217	**0.0000**	9986	104	**0.0000**
	moderate	8185	48		8614	37		8575	51		8242	58		8530	59	
	high	2253	13		2187	12		2143	14		1969	23		1763	3	
	very high	354	2		446	0		456	5		406	4		346	0	
302 - major joint and limb reattach proc of lower extrem exc for trauma																
	low	13636	59	**0.0001**	14365	99	**0.0000**	14901	109	**0.0000**	16472	131	**0.0000**	18077	123	**0.0001**
	moderate	12085	19		13162	35		14108	33		13962	47		14180	49	
	high	2985	5		3158	5		3101	9		2950	6		2669	13	
	very high	295	1		303	0		315	1		322	0		267	0	
304 - dorsal and lumbar fusion proc except for curvature of back																
	low	3717	15	0.7971	3710	53	0.2814	4340	142	**0.0064**	4603	152	0.3654	5252	163	**0.0012**
	moderate	1276	7		1410	20		1644	46		1574	59		1820	35	
	high	408	0		500	3		542	5		490	6		513	8	
	very high	46	0		57	0		87	0		73	1		53	0	
693 - chemotherapy																
	low	14479	25	**0.0236**	14702	47	0.7394	13448	188	**0.0000**	13729	375	**0.0000**	13319	545	**0.0000**
	moderate	8934	18		9530	27		9609	48		9277	193		9226	88	
	high	2285	11		2250	8		2320	18		2127	43		2027	10	
	very high	749	3		885	2		981	15		965	4		1076	5	
347 - medical back problems																
	low	11165	22	0.2980	11239	50	0.0056	10759	100	**0.0000**	10206	270	**0.0000**	10056	244	**0.0000**
	moderate	5574	9		5931	12		6281	23		6208	19		6269	25	
	high	1375	1		1368	3		1631	2		1609	2		1632	0	
	very high	176	0		238	0		259	0		266	0		258	0	

F.P. E112 = foreign patient (not Belgian nationality/country of residence) coming to Belgium by means of a prior authorization document E112/S2

p-value= 2-sided-p-value of Wilcoxon-Mann-Whitney test

3.2. Appendices related to hospital reports

3.2.1. Overview of the questions from the case studies

The following questions were presented to the hospitals

3.2.1.1. Volumes of foreign patients

Following volumes of foreign patients were asked for by the hospitals participating in the case studies, for the years 2004 until 2010.

Ambulatory care

- Total volume of patient stays from patients within the European Economic Area (EEA)
- Total volume of patient stays from patients without the European Economic Area
- Total volume of patient stays from patients within the EEA under a contract concluded between the hospital and a foreign insurer
- Total volume of patient stays from patients without the EEA under a contract concluded between the hospital and a foreign insurer
- Total volume of patient stays from patients within the EEA under a bilateral or multilateral agreement between countries
- Total volume of patient stays from patients without the EEA under a bilateral or multilateral agreement between countries
- Total volume of patient stays from patients within the EEA for which no convention or NIHDI forfeit could be charged
- Total volume of patient stays from patients without the EEA for which no convention or NIHDI forfeit could be charged

One day admissions

- Total volume of patient stays from patients within the European Economic Area (EEA)
- Total volume of patient stays from patients without the European Economic Area
- Total volume of patient stays from patients within the EEA under a contract concluded between the hospital and a foreign insurer
- Total volume of patient stays from patients without the EEA under a contract concluded between the hospital and a foreign insurer
- Total volume of patient stays from patients within the EEA under a bilateral or multilateral agreement between countries
- Total volume of patient stays from patients without the EEA under a bilateral or multilateral agreement between countries
- Total volume of patient stays from patients within the EEA for which a preceding authorization is given
- Total volume of patient stays from patients without the EEA for which a preceding authorization is given

Classic hospitalizations

- Total volume of patient stays from patients within the European Economic Area (EEA)
- Total volume of patient stays from patients without the European Economic Area
- Total volume of patient stays from patients within the EEA under a contract concluded between the hospital and a foreign insurer
- Total volume of patient stays from patients without the EEA under a contract concluded between the hospital and a foreign insurer
- Total volume of patient stays from patients within the EEA under a bilateral or multilateral agreement between countries
- Total volume of patient stays from patients without the EEA under a bilateral or multilateral agreement between countries
- Total volume of patient stays from patients within the EEA for which a preceding authorization is given
- Total volume of patient stays from patients without the EEA for which a preceding authorization is given

An open question

The open question where the hospital could list if any other patients, not included within the abovementioned list, are identified in the hospital.

3.2.1.2. *Country of residence*

For each of the following types of patient flows, the different countries of residence are listed, and the volumes of patients associated with this flows, per year

- Patients coming under a contract concluded between the hospital and a foreign healthcare insurer
- Foreign patients coming to Belgium by means of a E112 or S2 document, indicating the preceding authorization from the healthcare insurer in the country of residence
- Foreign patients coming to Belgium by means of a bilateral or multilateral agreement
- A remainder category which includes all patients coming to Belgium, not included in the abovementioned categories

3.2.1.3. *Treatments/casemix of foreign patients*

For each of the following type of patient flows, the top 20 of treatments with corresponding APR-DRG (when applicable) and corresponding nomenclature code and volumes associated with these flows, are demanded to the hospital.

- Foreign patients in ambulatory care
- Foreign patients in one day admission
- Foreign patients in a classic hospitalization, by means of a E112 or S2 document
- Foreign patients (Non-EEA) in a classic hospitalization
- Foreign patients in a classic hospitalization, by means of a bilateral or multilateral agreement
- Foreign patients in a classic hospitalization, within the remainder category (of patients not included within the abovementioned categories)

3.2.1.4. *Tariffs charged to foreign patients*

The following two fictive cases are presented to the hospitals:

- A male patient that undergoes a procedure for a hip prosthesis, resides 10 days in the hospital in a private room and has no complications. The corresponding nomenclature code is 289085.
- A male patient that undergoes a menisectomy (the (total or partial) removal of the meniscus from the knee) in a one day clinic, and resides in a private room in the hospital. He has no complications, and the associated nomenclature code is 300333.

Following tariffs are questioned by the hospital

For the hip prosthesis

At the expense of the patient

- Co-payment for the costs of the hospital stay
- Supplements to the costs of the hospital stay
- Supplement for the medical activities of the doctors (fee-for-service payment)

At the expense of the health insurance

- Tariff charged by the treating doctor
- Lump sum for laboratory testing
- Lump sum for medical imaging
- Fee for laboratory testing (fee-for-service payment)

For the menisectomy

At the expense of the patient

- Supplements for the stay in the private room

At the expense of the health insurance

- Lump sum for chirurgical day care
- Lump sum ‘mini’
- Lump sum ‘maxi’

The tariffs are asked to the hospital if the patient is included within the following patient flows:

- A Belgian patient who resides in a private room
- A foreign (EEA) patient, who comes to Belgium by means of the E112 or S2 prior authorization document

- A foreign patient (EEA), who comes by means of a bilateral or multilateral agreement
- A foreign patient coming to Belgium under a contract concluded between the hospital and a foreign healthcare insurer
- A foreign non-EEA patient who comes and pays the costs for the treatment himself.

Open questions

- Are supplemental costs, additional to the abovementioned costs, charged to foreign patients?
- If so, how are these costs calculated?
- Are the supplements associated with the use of medical devices (within the context of art. 28, 30 and 35 of the nomenclature) different between Belgian and foreign patients?

3.2.1.5. Contracting with foreign healthcare insurers

- The hospitals were asked if they had/have some contracts concluded with foreign healthcare insurers? If they do so, they are asked to give the following information:
- The name of the foreign healthcare insurer they have a contract with
- The treatments that are covered by means of these contracts and corresponding nomenclature codes
- The volume of patients the hospital receives annually (between 2004 and 2010) within the context of these contracts.
- Open questions
- A question concerning the procedure for the payment of the costs
- How certain conditions relating to quality and patient safety are addressed within these contracts?

3.2.1.6. The policy of the hospital regarding foreign patients

Following open questions were addressed to the hospital:

- Does the hospital applies a specific policy in attracting or refusing foreign patients?
- Does the hospital reserves some capacity for foreign patients?
- How does the hospital estimates the waiting lists within their organization? And what is the effect of foreign patient flows on these waiting lists for Belgian patients?
- Are there some treatments that are financially advantageous or disadvantageous to perform for foreign patients?

3.2.2. Comparison of tariffs (in euro) charged in different case study hospitals

A. Hip arthroplasty

inpatient care, 10 patient days in private room, no complications, nomenclature code 289085		hospital A		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	co-payments for cost of hospital stay	171.57	171.57	0
	supplements to the costs of hospital stay	300	300	300
	supplements for medical activities doctors	1293.36	1293.36	1293.36
at the expense of health insurance fund	tariff charged by treating doctor	1736.1	1736.1	1736.1
	lump sum laboratory testing	21.28	21.28	21.28
	lump sum medical imaging	66.37	66.37	66.37
	fee for laboratory testing	75.65	75.65	75.65

inpatient care, 10 patient days in private room, no complications, nomenclature code 289085		hospital B		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	co-payments for cost of hospital stay	171.57	3858.9	3858.9
	supplements to the costs of hospital stay	925.4	925.4	925.4
	supplements for medical activities doctors	1648.37	1648.37	1648.37
at the expense of health insurance fund	tariff charged by treating doctor	837.84	863.05	863.05
	lump sum laboratory testing	24.58	32.02	32.02
	lump sum medical imaging	51.54	51.54	51.54
	fee for laboratory testing	43.63	43.63	43.63

inpatient care, 10 patient days in private room, no complications, nomenclature code 289085		hospital C		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	co-payments for cost of hospital stay	162.1	162.1	4754.38
	supplements to the costs of hospital stay	496	496	496
	supplements for medical activities doctors	1588.32	1588.32	1588.32
at the expense of health insurance fund	tariff charged by treating doctor	794.18	794.18	794.18
	lump sum laboratory testing	208.48	208.48	208.48
	lump sum medical imaging	101.2	101.2	107.4
	fee for laboratory testing	69.28	69.28	76.72

inpatient care, 10 patient days in private room, no complications, nomenclature code 289085		hospital D		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	co-payments for cost of hospital stay	99.42	99.42	1820.9
	supplements to the costs of hospital stay	175	175	175
	supplements for medical activities doctors	785.32	785.32	785.32
at the expense of health insurance fund	tariff charged by treating doctor	785.32	785.32	0
	lump sum laboratory testing	68.21	68.21	0
	lump sum medical imaging	53.09	53.09	0
	fee for laboratory testing	0	0	0

B. Menisectomy

day care in private room, no complications, nomenclature code 300333		hospital A		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	supplements for stays in private room	30	30	30
	supplements for medical activities doctors (FFS)	425.74	425.74	425.74
at the expense of health insurance fund	lump sum chirurgical day care	421.39	421.39	421.39
	lump sum 'mini'	60.81	60.81	60.81
	lump sum 'maxi'	121.63	121.63	121.63

day care in private room, no complications, nomenclature code 300333		hospital B		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	supplements for stays in private room	92.54	368.88	368.88
	supplements for medical activities doctors (FFS)	243.11	243.11	243.11
at the expense of health insurance fund	lump sum chirurgical day care	185.76	185.76	185.76
	lump sum 'mini'	-	-	-
	lump sum 'maxi'	-	-	-

day care in private room, no complications, nomenclature code 300333		hospital C		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	supplements for stays in private room	62	62	62
	supplements for medical activities doctors (FFS)	488.72	488.72	488.72
at the expense of health insurance fund	lump sum chirurgical day care	218.99	218.99	593.67
	lump sum 'mini'	-	-	-
	lump sum 'maxi'	-	-	-

day care in private room, no complications, nomenclature code 300333		hospital D		
		Belgian patient	**EEA - E112/S2**	**non-EEA own initiative**
at the expense of patient	supplements for stays in private room	35	35	35
	supplements for medical activities doctors (FFS)	243.11	243.11	243.11
at the expense of health insurance fund	lump sum chirurgical day care	160.7	160.7	0
	lump sum 'mini'	0	0	0
	lump sum 'maxi'	0	0	0

3.2.3. Comparison of case mix between different foreign patient flows

We asked the participating hospitals also to provide us information on pathologies and treatments of the different categories of foreign patients, by using the APR-DRG codes or the nomenclature codes For two hospitals, a comparison is possible between the treatments/procedures for patients with a prior authorization document E112/S2 and patient coming to Belgium by means of a contract concluded between the hospital and a foreign healthcare insurer. For two hospitals, this comparison was not possible because the hospitals provided us no information on volumes of patient and treatments by means of contracted care. One other case study hospital did not provide us information for the two different categories we analyze here.

The following part will describe the top 10 of treatments/procedures for foreign patients in the two case study hospitals for which a comparison is made between the treatments/procedures of patient with a prior authorization document E112/S2 and patients coming under a contract concluded with a foreign healthcare insurer. The volumes represent patient stays. An inter-hospital comparison is not possible, because one hospital reported the treatment by using the APR-DRG system, the other hospital used nomenclature codes to describe the treatments/procedures.

Hospital A

The top 10 of treatments for foreign patients coming under a contract concluded with a foreign healthcare insurer or by means of a prior authorization document E112/S2 don't differ much. Patients coming with a prior authorization document E112/S2 don't come for other treatments or procedures in comparison with patients coming to hospital A within the context of a contract concluded with a foreign healthcare insurer. The most popular treatment or procedures for both flows of foreign patients are APR-DRG 175 (percutaneous cardiovascular procedures w/o heart attack, PTCA mapping), APR-DRG 192 (cardiac catheterization for ischemic heart disease, right or left health catheterization), APR-DRG 166 (coronary bypass w/o malfunctioning), APR-DRG 302 (major joint and limb reattach procedures of lower extremities without trauma) and APR-DRG 693 (chemotherapy). Three of these five abovementioned APR-DRGs are related to heart diseases (APR-DRG 175, 192 and 166), and one is related to the musculoskeletal system (APR-DRG 302).

We can also see that the total volumes of patients within each APR-DRG category of the top 10 don't deviate much between contracted care and prior authorization E112/S2.

Table 14: Planned inpatient care for foreign patient under contract with a foreign healthcare insurer (Hospital A)

		number of foreign patient stays				
Description of treatment/procedure	**corresponding APR-DRG**	**2006**	**2007**	**2008**	**2009**	**2010**
Percutaneous cardiovascular procedures w/o heart attack, PTCA mapping	175	179	194	295	375	185
Cardiac catheterization for ischemic heart disease, right or left heart cath	192	44	48	69	86	52
Coronary bypass w/o malfunctioning coronary bypass w/o cardiac cath-Heart	166	30	29	72	89	29
Major joint & limb reattach proc of lower extrem without trauma	302	26	32	36	53	40
Chemotherapy	693	25	31	56	125	30
Back & neck procedures w/o dorsal & lumbar fusion, lamincetomy, fracture repair, fusion	310	21	40	62	104	86
Other disorders of nervous system, hemiplegia, monoplegia, spina bifida	058	16	26	65	27	16
Cardiac valve procedures w/o cardiac catheterization, replace heart valve	163	13	16	37	45	29
Soft tissue procedures, fasciotomy	317	13	22	38	43	27
Other factors influencing healthcare status	862.1	11	17	42	49	18

Table 15: Planned inpatient care for foreign patient stays with a prior authorization document E112/S2 (Hospital A).

		number of foreign patient stays				
Description of treatment/procedure	**corresponding APR-DRG**	**2006**	**2007**	**2008**	**2009**	**2010**
Percutaneous cardiovascular procedures w/o heart attack, PTCA mapping	175	132	173	55	23	14
Cardiac catheterization for ischemic heart disease, right or left heart cath	192	68	52	39	32	15
Coronary bypass w/o malfunctioning coronary bypass w/o cardiac cath-Heart	166	53	59	14	0	1
Cardiac valve procedures w/o cardiac catheterization, replace heart valve	163	31	39	3	3	2
Other disorders of nervous system, hemiplegia, monoplegia, spina bifida	058	24	33	23	8	9
Cardiac catheterization w circ disord right or left heart cath	191	24	13	16	9	6
Chemotherapy	693	21	20	16	24	2
Major joint & limb reattach proc of lower extrem without trauma	302	19	6	11	0	1
Percutaneous cardiovascular procedures w heart attack, PTCA mapping	174	12	11	8	6	1
Back & neck procedures w/o dorsal & lumbar fusion, lamincetomy, fracture repair, fusion	310	9	7	7	0	1
Cardiac defibrillator implant, heart	161	8	12	5	3	0

Hospital B

Hospital B provided us information by using the nomenclature codes instead of using APR-DRGs.

For the top 10 of nomenclature codes of hospital B, we can see that the hospital receives much more contracted patients than patients with a E112/S2 document. The most popular procedures for contracted patients are related to the musculoskeletal system (nomenclature codes 271783 and 300333), and procedures related to the eye (nomenclature codes 246595 and 246912).

One nomenclature code is present in the top 10 of both contracted care and patients with a E112/S2 document: code 289085 for a hip arthroplasty with a total prosthesis (of the acetabulum and femurhead).

Table 16: Planned inpatient care for foreign patient under contract with a foreign healthcare insurer (Hospital B)

		volumes of patients						
Nomenclature	**Treatment/procedure**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
281783	surgical treatment of a slipped disc other than a cervical one	53	65	78	96	115	143	115
300333	partial or total menisectomy	44	48	69	80	100	107	129
246595	extraction of lens, and the implantation of an intra-ocular lens	89	97	101	42	1	0	0
260293	cytoscopy, with ureter catheterism	17	12	31	49	70	69	70
246912	extracapsular extraction of lens by means of ultrasone fragmenting, laser or other comparable method, and implantation of lens	0	0	0	78	111	136	159
260271	cytoscopy, w or w/o biopsy by men	26	47	56	44	27	42	36
289085	Hip arthropasty with total prosthesis (acetabulum en femurhead)	27	20	21	34	35	62	98
230252	intrafascicular neurolysis under microscopy during surgery	24	15	19	31	53	52	53
290286	femorotibial arthroplasty with jointed prosthesis	20	21	21	33	34	58	73
589024	percutane endocascular dilatation w or w/o placement of stent by means of medical imaging	23	28	18	16	43	51	55

Table 17: Planned inpatient care for foreign patient stays with a prior authorization document E112/S2 (Hospital B).

		volumes of patients						
Nomenclature	**Treatment/procedure**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
232982	Stereotaxis of one or more endocranial or medular zones	1	0	1	0	1	3	2
280626	Extension of tendon	0	0	0	0	0	0	1
289085	Hip arthroplasty with total prosthesis (acetabulum en femurhead)	4	3	3	3	3	0	1
244705	two-sided herniorrafy by abdominal way with placement of prosthesis material in preperitonial position	0	0	0	1	0	0	1
432762	surgical treatment of urine-incontinence by transvaginal introduction of sub-urethrale band in synthetic material	0	0	0	1	1	0	0
287361	partial aponeurectomy of palm of hand	0	1	0	0	0	0	0
281120	surgical removal of cervical slipped disc	3	3	1	3	2	0	0
227463	exploratory thoracotomy, and lung- and lymph knot biopsy	1	0	0	0	0	0	0
310763	surgical treatment due to fissure of velum palatinum	0	1	0	0	0	0	0
227500	pleurotomy (one or more drains)	0	1	2	1	0	0	0

Depending on the hospital, the casemix of foreign patient differs or does not differ between patients with a prior authorization document E112/S2 and patients under a contract concluded between the hospital and a foreign healthcare insurer.