

# A COMPARATIVE ANALYSIS OF HOSPITAL CARE PAYMENTS IN FIVE COUNTRIES





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CARINE VAN DE VOORDE, SOPHIE GERKENS, KOEN VAN DEN HEEDE, NATHALIE SWARTENBROEKX



Title:	A comparative analysis of hospital care payments in five countries
Authors:	Carine Van de Voorde, Sophie Gerkens, Koen Van den Heede, Nathalie Swartenbroekx
Reviewers:	Stephan Devriese (KCE), Raf Mertens (KCE), Stefaan Van De Sande (KCE)
External experts:	Valérie Paris (OECD), Wilm Quentin (Technische Universität Berlin), Andrew Street (Centre for Health Economics, University of York), Johan van Manen (Nederlandse Zorgautoriteit), Chapin White (Center for Studying Health System Change, Washington)
External validators:	Niek Klazinga (Academisch Medisch Centrum, Universiteit van Amsterdam; OESO), Hans Kluge (WHO Regional Office for Europe), Ewout van Ginneken (Technische Universität Berlin; European Observatory on Health Systems and Policies)
Acknowledgements:	Anke Bramesfeld (AQUA-Institut für angewandte Qualitätsförderung und Forschung im Gesundheitswesen GmbH), Tamas Evetovits (Barcelona Office for Health Systems Strengthening, WHO Europe), Alexander Geissler (WHO Collaborating Center, Department of Health Care Management, Berlin University of Technology), Mareike Laschat (IGES Institut GmbH, Berlin)
Other reported interests:	<p>Fees or other compensation for writing a publication or participating in its development: Johan van Manen (payments to Nederlandse Zorgautoriteit)</p> <p>Payments to speak, training remuneration, subsidised travel or payment for participation at a conference: Johan van Manen (payments to Nederlandse Zorgautoriteit)</p>
Layout:	Ine Verhulst
Disclaimer:	<ul style="list-style-type: none"><li>• The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings. They did not co-author the scientific report and did not necessarily agree with its content.</li><li>• Subsequently, a (final) version was submitted to the validators. The validation of the report results from a consensus or a voting process between the validators. The validators did not co-author the scientific report and did not necessarily all three agree with its content.</li><li>• Finally, this report has been approved by common assent by the Executive Board.</li><li>• Only the KCE is responsible for errors or omissions that could persist. The policy recommendations are also under the full responsibility of the KCE.</li></ul>
Publication date:	11 October 2013



Domain: Health Services Research (HSR)

MeSH: Hospitals; Prospective Payment System; Reimbursement, Incentive; Diagnosis-Related Groups; Comparative Study

NLM Classification: WX 157

Language: English

Format: Adobe® PDF™ (A4)

Legal depot: D/2013/10.273/61

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How to refer to this document? Van de Voorde C, Gerkens S, Van den Heede K, Swartenbroekx N. A comparative analysis of hospital care payments in five countries. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2013. KCE Reports 207. D/2013/10.273/61.

This document is available on the website of the Belgian Health Care Knowledge Centre.





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## LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
ACO	Accountable Care Organization (U.S.)
AHRQ	Agency for Healthcare Research and Quality (U.S.)
ALOS	Average Length of Stay
AMI	Acute Myocardial Infarction
AMT	Abbreviated Mental Test
AOK	Allgemeine Ortskrankenkassen / General regional fund (Germany)
APC	Ambulatory Payment Classification (U.S.)
AP-DRG	All Patient Diagnosis Related Group
AR-DRG	Australian Refined Diagnosis Related Group
ARS	Agence Régionale de Santé / Regional Health Agency (France)
ATIH	Agence Technique d'Information sur l'Hospitalisation / Technical Agency for Hospital Information (France)
AWBZ	Algemene Wet Bijzondere Ziektekosten / Exceptional Medical Expenses Act (the Netherlands)
BADS	British Association of Day Surgery (England)
BKZ	Budgetair Kader Zorg / Budget Framework Health Care (the Netherlands)
BPCI	Bundled Payments for Care Improvement (U.S.)
BPT	Best Practice Tariff (England)
CABG	Isolated Coronary Artery Bypass
CAH	Critical Access Hospital (U.S.)
CAP	Community Acquired Pneumonia
CCAM	Classification Commune des Actes Médicaux / Common Classification of Medical Procedures (France)
CCG	Clinical Commissioning Group (England)
CED	Coverage with Evidence Development (the Netherlands)
CHF	Chronic Heart Failure
CMS	Centers for Medicare & Medicaid Services (U.S.)
COPD	Chronic Obstructive Pulmonary Disease
COTG	Centraal Orgaan Tarieven Gezondheidszorg / Central Agency for Health Care Tariffs (Netherlands)
CQUIN	Commissioning for Quality and Innovation (England)
CT	Computed Tomography



CTG	College Tarieven Gezondheidszorg / National Health Tariff Authority (the Netherlands)
CTZ	College Toezicht Zorgverzekeringen / Supervisory Board for Health Care Insurance (the Netherlands)
CVACP	Case-volume- and age-based payment ceiling (Germany)
CVZ	College Voor Zorgverzekeringen / Health Care Insurance Board (the Netherlands)
DBC	Diagnose Behandel Combinatie / Diagnosis Treatment Combination (the Netherlands)
DGME	Direct Graduate Medical Education (U.S.)
DIMDI	Deutsches Institut für Medizinische Dokumentation und Information / German Institute of Medical Information and Documentation (Germany)
DIS	DBC Information System (the Netherlands)
DOT	DBCs On the way to Transparency (the Netherlands)
DRG	Diagnosis Related Group
EBM	Einheitlicher Bemessungsmaßstab / Uniform Value Scale (Germany)
ECG	Electrocardiogram
EU	European Union
FB	Functional Budgeting
FFS	Fee For Service
FHT	Family Health Team
FTE	Full Time Equivalent
G-BA	Gemeinsamer Bundesausschuss / Federal Joint Committee (Germany)
GDP	Gross Domestic Product
G-DRG	German Diagnosis Related Group (Germany)
GHM	Groupe homogène de malades / Homogeneous group of patients (France)
GME	Graduate Medical Education (U.S.)
GP	General Practitioner
GPCI	Geographic Practice Cost Indices (U.S.)
HAI	Healthcare Associated Infections
HAS	Haute Autorité de Santé / National Authority for Health (France)
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems (U.S.)
HCFA	Health Care Financing Administration
HCFA-DRG	Health Care Financing Administration Diagnosis Related Group



HES	Hospital Episode Statistics
HF	Heart Failure
HFA-DB	European Health for All Database
HIV	Human Immunodeficiency Virus
HPSA	Health Professional Shortage Areas
HQID	Hospital Quality Incentive Demonstration (U.S.)
HRG	Health Resource Group
ICD	International Classification of Diseases
ICD-10-CM	International Classification of Diseases, 10 <sup>th</sup> Revision, Clinical Modification
ICD-10-PCS	International Classification of Diseases, 10 <sup>th</sup> Revision, Procedure Coding System
ICD-9-CM	International Classification of Diseases, 9 <sup>th</sup> Revision, Clinical Modification
IGAS	Inspection Générale des Affaires Sociales (France)
IGES	Institute für Gesundheits- und Sozialforschung (Germany)
IHS	Indian Health Service (U.S.)
InEK	Institut für das Entgeltsystem im Krankenhaus / Institute for the Hospital Remuneration System (Germany)
IPPS	Inpatient Prospective Payment System (U.S.)
IRDES	Institut de Recherche et Documentation en Economie de la Santé (France)
IVF	In Vitro Fertilization
LOS	Length of Stay
MAC	Medicare Administrative Contractor (U.S.)
MDC	Major Diagnostic Category
MDT	Multidisciplinary team
MEI	Medicare Economic Index (U.S.)
MeSH	Medical Subject Headings
MFF	Market Force Factor
MIGAC	Missions d'Intérêt Général et d'Aide à la Contractualisation / Missions of general interest and assistance for contracting (France)
MRI	Magnetic Resonance Imaging
MS-DRG	Medicare Severity Diagnosis Related Grouper
Mw	Mededingingswet / Competition Act (the Netherlands)
NGAP	Nomenclature Générale des Actes Professionnels / General nomenclature of medical procedures (France)



NHFD	National Hip Fracture Database (England)
NHS	National Health Service (England)
NICE	National Institute for Health and Clinical Excellence (England)
NMa	Nederlandse Mededingingsautoriteit / Dutch Competition Authority (the Netherlands)
NUB	Neue Untersuchungs- und Behandlungs-methoden / Innovative diagnostic and treatment procedures (Germany)
NZa	Nederlandse Zorgautoriteit / Dutch Health Care Authority (the Netherlands)
OECD	Organisation for Economic Co-operation and Development
ONDAM	Objectif National de Dépenses d'Assurance / National Health Insurance spending objective (France)
OPCS	Office of Population Censuses and Surveys (England)
OPD	Outpatient Department
OPPS	Outpatient Prospective Payment System (U.S.)
OPS	Operationen- und Prozedurenschlüssel / German Operations and Procedures Codification Index (Germany)
P4P	Pay-for-Performance
PbR	Payment by Results (England)
PCI	Percutaneous Coronary Intervention
PCS	Patient Classification System
PCT	Primary Care Trusts (England)
PET	Positron Emission Tomography
PHI	Private Health Insurance
PHQID	Premier Hospital Quality Incentive Demonstration (U.S.)
PMSI	Programme de médicalisation des systèmes d'information / Hospital activity database (France)
PN	Pneumonia
POA	Present on Admission
QIO	Quality Improvement Organization (U.S.)
QOF	Quality and Outcomes Framework (England)
RBRVS	Resource-Based Relative Value Scale
RCI	Reference Cost Index
RCT	Randomized Controlled Trial





RVU	Relative Value Unit
SCHIP	State Children's Health Insurance Program (U.S.)
SCIP	Surgical Care Improvement Project
SGR	Sustainable Growth Rate (U.S.)
SHI	Statutory Health Insurance
SID	Supplier-Induced Demand
T2A	Tarification à l'activité / French DRG-based payment system (France)
TPS	Total Performance Score
U.K.	United Kingdom
U.S.	United States
URC	Utilization Review Committee (U.S.)
VHA	Veterans Health Administration (U.S.)
VHI	Voluntary Health Insurance
VTE	Venous Thromboembolism
WHO	World Health Organisation
Wmg	Wet marktordening gezondheidszorg / Health Care Market Regulation Act (the Netherlands)
WTG	Wet Tarieven Gezondheidszorg / Act on Health Care Tariffs (the Netherlands)
Wtzi	Wet toelating zorginstellingen / Health Care Institutions Entry Act (the Netherlands)
ZBC	Zelfstandige Behandel Centra / Independent Treatment Centres (the Netherlands)
ZE	Zusatzentgelte / Supplementary fees (Germany)
ZN	Zorgverzekeraars Nederland
Zvw	Zorgverzekeringswet / Health Insurance Act (the Netherlands)



## ■ SCIENTIFIC REPORT

### 1 INTRODUCTION

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#### How to use this document?

This Scientific Report is not intended to be read as a stand-alone document, but as a complement to the Synthesis of this study. It gives a detailed account of the methods and results of each of the scientific building blocks underpinning the messages rendered in the Synthesis.

The context, problem description, as well as the discussion of the results and the conclusions are to be found in the Synthesis.

The Synthesis is published as a separate document on our website. It can be accessed from the same referral page as the current document.

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Recently, the hospital payment system, including the remuneration of medical specialists, has been the topic of considerable policy debate in Belgium. The Minister of Social Affairs and Public Health announced 'a roadmap for a prospective hospital payment system, based on pathologies, to be presented to the Council of Ministers at the beginning of October 2013'. As part of that roadmap, the Strategic Cell of the Minister asked KCE (May 2013) to make a comparative analysis of the prospective case-based hospital payment systems, including the remuneration of medical specialists, in a selection of countries. The focus of this comparative analysis is on the 'lessons learned' from the introduction and reforms of such systems. Special attention will be given to financial incentives to improve quality and to encourage the implementation of integrated care systems.

The report addresses three **research questions**:

1. How are hospitals and medical specialists paid in a selection of countries with a prospective case-based payment system?
2. What are the intended/unintended consequences of a case-based prospective hospital payment system?
3. How are incentives for improving quality and for stimulating integrated care systems introduced in hospital payment systems?

The **ultimate goal** of the report is to identify the lessons that can be learned from the hospital payment system and remuneration of medical specialists in the selected countries.



In 2011 the European Observatory on Health Systems and Policies launched an extensive report on hospital payment, providing comparative information from 12 European countries that have introduced a Diagnosis Related Group (DRG)-type hospital payment system.<sup>1</sup> This recent Euro-DRG<sup>a</sup> report takes a first but important step in comparing the objectives, design features and impact of the hospital payment system in the selected 12 countries. For the current study, the **scope** is limited by the following selection criteria:

- The analysis is restricted to countries where hospital payments are based on a national case-based prospective system;
- DRG-based payments are responsible for a considerable part of hospital revenue (i.e. DRGs were introduced to pay hospitals, not just as a benchmarking tool or to increase transparency);
- Information should be available in one of the following languages: French, Dutch, English or German.

If we start from the countries in the Euro-DRG report and apply the selection criteria in this study, the following countries are excluded: Austria, Estonia, Finland, Poland, Portugal, Spain and Sweden. The U.S. Medicare program was also analysed since it was the first system to introduce prospective hospital payments based on DRGs and the (scientific) evaluations of the different reforms of the program are well documented. Hence, the comparative analysis comprehends five countries<sup>b</sup>: England, France, Germany, the Netherlands and the U.S. Medicare program.

Two recent trends, also observable in countries with DRG-based hospital payment systems, are the integration of incentives for improving quality into the hospital payment system and the development of bundled payments where a single payment is made for a patient over the entire course of a disease or clinical episode of care, instead of paying for each service individually. Both trends are treated in a separate chapter.

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<sup>a</sup> The Euro-DRG report is one of the products of the EuroDRG project, funded under the 7th Research Framework Programme (FP7) of the European Commission.

<sup>b</sup> Although Ireland was included in the Euro-DRG report and fulfils the selection criteria in this study, it is not part of the comparative analysis because of time constraints.

## Research methods

### Country reports

The description of the DRG-based hospital payment system in the four European countries starts from the respective country chapters in the Euro-DRG report. Since this report was published in 2011, updates were needed. These are based on a grey literature search by the screening of the website of government institutes; on peer-reviewed articles (mainly) published by the authors of the Euro-DRG report; on the Health System Review of each country, published by the European Observatory on Health Systems and Policies; on previous KCE Reports on hospital payment systems. The description of the U.S. Medicare program is based on a grey literature search by the screening of the website of government institutes and a selection of peer-reviewed articles.

The country reports follow a similar structure. Each country report was validated by a national expert.

### DRG-based hospital payments and quality of care

For the chapter on DRG-based hospital payments and quality of care, a 'scoping review' was conducted by means of a grey literature search by the screening of the websites of specific international organizations. The scoping review was complemented with information provided by the country reports; a targeted MEDLINE search with appropriate MeSH terms for systematic reviews on quality of care; a snowball method to identify additional articles.

This chapter can be read as a stand-alone chapter. Hence, some initiatives to improve quality of care by means of the hospital payment system taken in the selected countries that were already described in the country reports, are also included in this chapter.



## 2 A BRIEF INTRODUCTION TO HOSPITAL PAYMENT SYSTEMS

### 2.1 Hospital payment systems

Reforms in the way hospitals or medical specialists are paid can have important implications for the health policy goals such as high-quality, accessible and efficient health care. Each payment system has different inherent incentives that can considerably influence hospital or medical specialist behaviour. The main purpose of this brief overview of hospital payment systems is to introduce a basic terminology.

The rationale for hospital payment systems is to change behaviour by creating incentives for, e.g., higher quality or lower costs. However, these 'theoretical' incentives have to be confronted with real-world behaviour to evaluate the merits and shortcomings of each payment system. In Table 1 we list the major forms of hospital payment and medical specialist remuneration. They may be categorized according to three parameters:<sup>2</sup>

1. Is the price or budget determined prospectively (before services are provided) or retrospectively (after services are provided)?
2. Is the payment made prospectively or retrospectively?
3. Is the payment related to inputs used (costs) or outputs (services / outcomes) produced?

The combination of the three parameters shapes the likely incentives of the different payment methods. In **DRG-based hospital payment systems**, the price per case is set before services are provided but payments are made after service delivery. Payments are related to outputs since they are based on the number of cases treated. An output-based payment method has stronger incentives to increase the number of services. However, since hospital payment methods are used in combination in most countries, incentives of one particular payment method may be enhanced or mitigated. Moreover, contextual factors, such as the level of choice and competition in the system, will also influence the incentives created by a (combination of) hospital payment system(s).

An overview of incentives inherent to different payment methods is out of scope of this study. We discuss theoretical incentives, hospital strategies and their impact for DRG-based hospital payments in the five selected countries in the following chapters.



Table 1 – Hospital and medical specialist payment systems

Payment system	Price/budget is determined	Payment is made	Payment is related to
<b>Payment per service or procedure</b> <b>Fee-for-service</b>	Prospectively	Retrospectively	Outputs
<b>Cost reimbursement</b>	Retrospectively	Retrospectively	Inputs
<b>Payment per patient-day (per diem)</b>	Prospectively	Retrospectively	Outputs
<b>Payment per patient (capitation)</b>	Prospectively	Prospectively	Outputs
<b>Payment per case, e.g. DRGs</b>	Prospectively	Retrospectively	Outputs
<b>Line-item<sup>1</sup> budget</b>	Prospectively	Prospectively	Inputs
<b>Global budget</b>	Prospectively	Prospectively	Inputs or outputs
<b>Salary</b>	Prospectively	Retrospectively	Outputs

<sup>1</sup> Examples of line-items are personnel, drugs, supplies.

## 2.2 Building blocks of DRG-based hospital payment systems

Figure 1 summarizes the building blocks of DRG-based hospital payment systems. All DRG-based hospital payment systems build on two mechanisms: defining the hospital product and its price.

### Defining the hospital product

The **hospital product** is defined by DRGs which are a patient classification system (PCS) relating different types of patients treated in a hospital (the case-mix) to the resources used by the hospital to treat these patients. Cases are divided into categories which are clinically meaningful and relatively homogeneous in terms of hospital resource use. Although a large variability between countries is observed in the way groups are formed, most classification systems based on DRGs include diagnoses, procedures and the severity of a patient's condition.

To feed the classification system, clinical and cost data are needed. In all DRG-based PCSs the **coding of diagnoses and procedures** is essential. In many systems a version of the WHO's International Classification of

Diseases (ICD) is used, be it with country-specific modifications. For procedures there is no international standard.

A second essential data requirement for a DRG-based PCS concerns **cost data**. Hospital cost information is needed for resource use measurement. Different methods exist for cost calculation: top-down, bottom-up or mixed methods.<sup>3</sup> The selection of the most appropriate cost accounting method depends upon the type of service and on the economic feasibility of cost calculation. In general, there seems to be a trade-off between ensuring high-quality data, the number of hospitals collecting the cost data and the uniformity of cost-accounting rules across hospitals. If the number of cost-collecting hospitals is not representative for some essential characteristics or is too low to provide a clear picture on rare treatments, the resulting payment per DRG may result in unfair treatment of hospitals. On the other hand, standardized and certainly mandatory cost-accounting systems can more easily be introduced in a sample of hospitals with comparable cost-accounting systems and detailed, high-quality data.



### The price of the hospital product

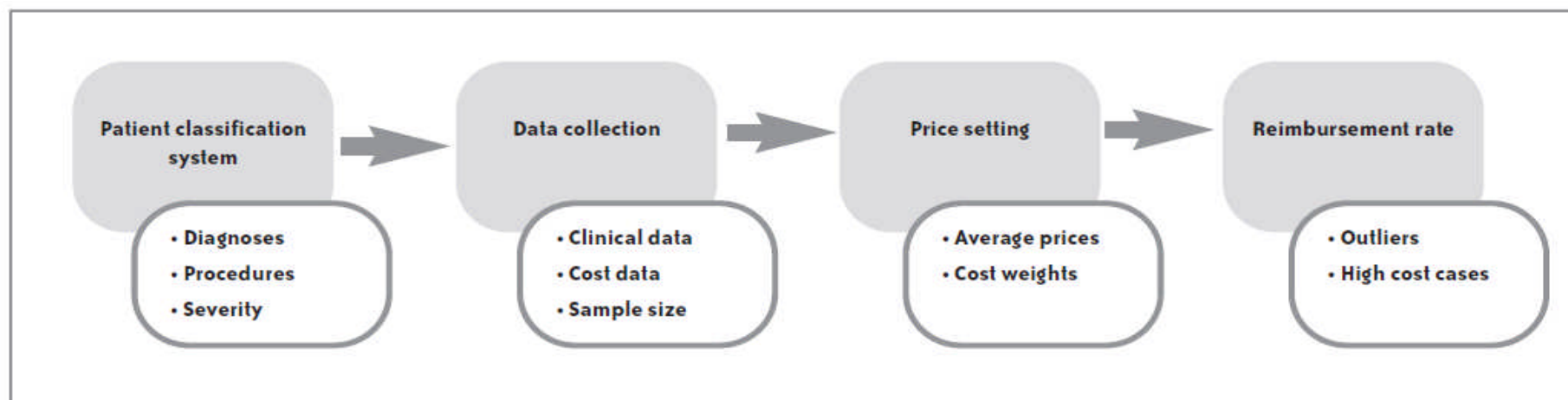
In addition to counting the number of services patients receive, a monetary value has to be attached to the resource units. Different methods exist which, broadly speaking, can be classified into **valuation methods** based on costs and methods based on prices (also called fees, tariffs or charges).<sup>3</sup> Although charges and costs are used interchangeably as synonyms in the literature, they have different meanings: 'Charges are the amount expressed in monetary terms that providers ask for products sold or services provided, and these charges may or may not reflect actual resource consumption or costs. Costs can be defined as the amount of expenditure incurred on or attributable to a particular good or activity.' Ideally, the DRG payment should reflect the actual (average) hospital costs for a specific case and its treatment since prices also reflect the historical bargaining power of providers or political negotiation and may overestimate or underestimate true costs.<sup>3</sup> However, most countries had a

poorly developed cost-accounting system at the moment of introduction of the DRG-based hospital payment system. This is one of the reasons why countries phased in the implementation of the system during a transition period of several years.

Defining the **price of the hospital product**, the DRG payment, can be done in several ways.<sup>4</sup> Prices can be determined directly on the basis of the average costs of hospitals (e.g. in France and England); or DRG cost weights can be calculated. Cost weights define a relationship between treatment episodes according to the intensity of resource use. In this case, only the price for the DRG cost weight of 1.0 has to be determined and the price for all of the other DRGs is then calculated by multiplying the DRG cost weight with the price set for the DRG cost weight of 1.0 (e.g. in Germany).

In a last step, the final DRG payment is determined by taking into account high-cost cases and outliers.

Figure 1 – Building blocks of DRG-systems



Source: Scheller-Kreinsen et al., 2009<sup>5</sup>



## 3 ENGLAND

### 3.1 Brief overview of the hospital sector

England has a National Health Service (NHS) which is mainly financed through general taxation (80.3%) and national health insurance contributions (18.4%). The remainder is financed through patients' out-of-pocket payments.<sup>6</sup>

The NHS budget is yearly approved by the Parliament. The budget is distributed to the local health authorities, called Primary Care Trusts (PCTs) up to 2013, Clinical Commissioning Groups (CCGs) thereafter, according to a weighted capitation formula. Local health authorities act as commissioners, responsible for purchasing health care services on behalf of their local population, from public or private hospitals. Since April 2008, NHS patients can choose specialist care from NHS or private sector providers, if these providers comply with the standard conditions of the NHS. In this case, they are paid at the NHS tariff.<sup>7</sup>

Most NHS services are delivered by public providers. Public hospitals are grouped into legal bodies known as NHS Trusts. In 2010-2011, there were 168 acute trusts (121 general acute trusts, 28 teaching trusts and 19 single specialty trusts) and 73 mental health trusts.<sup>6</sup>

### 3.2 Remuneration of medical specialists

NHS medical specialists are salaried.

### 3.3 Introduction of the DRG system

#### 3.3.1 Previous system

Before 2003, hospitals were mainly paid by annual block contracts. A sum of money for a given amount of activity was agreed upon between commissioners and providers, based largely on historic funding patterns and locally negotiated annual increases. Under this system, prices were usually negotiated locally and providers were paid a fixed amount irrespective of the work they actually carried out. If providers failed to deliver planned activity, there was no agreed basis for commissioners to withdraw funding. Some commissioners agreed locally-negotiated cost and volume contracts, which allowed for payments to be withheld (or made) if

volumes fell below (or surpassed) expectations, but this type of contract was rather the exception than the rule.<sup>6-8</sup>

#### 3.3.2 Problems with the previous system and objectives of the DRG system

With the system of block contracts, there was no relation between funding and activity of providers. Commissioners were not able to withdraw funding from providers that failed to deliver the planned activity, and to reallocate it to other providers so that patients could be treated elsewhere. There was therefore a significant problem of waiting lists. Furthermore, as there was no risk sharing between payers (commissioners) and providers, providers were not incentivized to produce effectively, and commissioners had no leverage to resist pressures to compensate NHS trusts for inefficiency or unwarranted cost inflation. Commissioners had little information on the level and the case-mix of the activity of the NHS trusts. There was limited fairness and transparency of hospital payments.<sup>9-11</sup>

The objectives of the implementation of the prospective case-based hospital payment system were:

- Increase efficiency in the provision of existing levels of activity;
- Where needed, encourage expansion of activity (and reduce waiting times for patients);
- Introduce fairness and transparency in funding providers;
- Enhance service innovation;
- Improve quality (by giving patients the opportunity to choose among providers on the basis of quality and by shifting, for PCTs, the negotiating time away from price to focus on the quality of care).<sup>9-11</sup>





### 3.3.3 Implementation issues

#### 3.3.3.1 Implementation period

An English version of DRGs – Healthcare Resource Groups (HRGs) – was first developed in 1991 in order to explain variation in the length of stays. A national schedule of reference costs, itemizing the cost of HRGs, was developed in 1997 to benchmark costs. However, the provision of benchmarking information alone did not provide sufficient incentives for hospitals to address cost differentials and inefficiencies. In 2003-2004, therefore, the Government introduced a prospective payment system for hospitals, named 'Payment by Results – PbR'.<sup>6</sup>

In 2003-2004, cost and volume agreements were introduced for only six surgical specialties. This process was determined locally rather than nationally. A national tariff was introduced for 15 HRGs (e.g., cataracts and hip replacements) to reduce waiting lists, but only for extra activity above 2002-03 planned activity.

A transition period was designed to ensure that the financial impact did not destabilise NHS trusts. Income at local price was compared to income at national tariff. Gains and losses from this comparison were limited to 25% in 2005-2006, 50% in 2006-2007 and 75% in 2007-2008. The transition process is summarised in Table 2

**Table 2 – Transition process of the introduction of HRGs**

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
<b>Number of HRGs</b>	15	48	550	548	548	546	1 072
<b>Application of national tariff</b>	All acute trusts for extra activity	All acute trusts for extra activity	All acute trusts: elective activity only	All acute trusts: elective, non-elective, outpatient activity			
<b>Percentage difference received between national and local prices</b>	/	/	25%	50%	75%	100%	100%

\* HRG = Healthcare Resource Group





### 3.3.3.2 Medical data

A national medical database (Hospital Episode Statistics (HES) database) comprises individual patient records for all NHS trusts. Each patient record includes demographic data (such as age, gender), clinical data (such as diagnosis and procedures performed), type of admission (such as elective, non-elective, day case) and length of stay.

While original (U.S. Medicare) DRGs were based on major diagnostic categories (MDCs) that correspond to a single organ system, HRGs are more directly related to specialties. They use local procedure codes (Office of Population Censuses and Surveys (OPCS) codes) in addition to the International Classification of Diseases (ICD) codes for diagnoses. The number of groupings has evolved from 550 in 2005 to 1 389 in 2011, with a major revision in 2009 (see section 3.4.5).<sup>12</sup> Outliers are defined on basis of length of stay, with a calculation of an upper trim-point. Excess bed days beyond the upper trim-point are excluded, and a cost per excess bed day is calculated.<sup>6</sup>

Since 2006, all acute trusts have received an external clinical coding audit by the Audit Commission, an independent public body. The audit process involves a comparison of a random sample of patients' case notes with the trust's actual coding.<sup>6</sup>

### 3.3.3.3 Cost data

All NHS hospitals are required to report their costs annually to the Department of Health, according to a mandatory practice of costing set out by the 'NHS Costing Manual'. Introduced in 1999, this mandatory methodology should bring a degree of consistency to the production and collection of cost information.<sup>6</sup> Nevertheless, the Audit Commission considers that a better data quality could be attained if a sampling approach was adopted.<sup>9</sup>

## 3.4 Current system

### 3.4.1 Range of costs included

Labour costs (including medical costs), equipment costs and capital costs are included in the calculation of the tariff. The costs of several expensive drugs and devices are excluded from the calculation of the tariff, because their use is concentrated in a relatively small number of hospitals and because they represent a disproportionate cost relative to the cost covered under the HRG.

Costs of chemotherapy drugs and indirect and overhead pharmacy costs associated to the procurement of each drug cycle of chemotherapy are also excluded.<sup>13</sup>

### 3.4.2 Range of services included

Services included in the scope of PbR have a national, mandatory and HRG-based tariff. Services excluded from the scope of PbR are subject to local agreements (for example, cost and volume contracts).

A mandatory tariff is payable for ordinary elective and non-elective admitted patient care (tariffs for non-elective admitted patient care are higher than for elective care), day case, outpatient care (ambulatory care provided to outpatients by hospitals) and emergency care provided to outpatients.

Patient-level outpatient activity data have been collected since 2003/2004. For outpatient services, a tariff is set per attendance by treatment function, with a separate tariff for first attendance and follow-up attendance. To provide incentives to minimise follow-ups where they are not necessary, the tariff has been structured so that follow-ups have a relatively low reimbursement rate compared with a first attendance. There is a specified HRG tariff for several outpatient procedures.

Patient-level data on outpatient emergency care activity were first collected in 2007/2008. For 2013/2014 there are 11 outpatient emergency care tariffs.<sup>13</sup>

Mental health care and palliative care are excluded from the HRG-based payment.



Some procedures are excluded, such as soft tissue sarcoma surgery; pelvic reconstructions; head and neck reconstructive surgery; intracranial telemetry and balloon assisted enteroscopy.

Intensive care is excluded, but coding and grouping in specific HRGs is mandatory, and non-mandatory tariffs are published to give information for local agreements.

Rehabilitation as part of the routine post-operative care, without transfer to a rehabilitation unit, is considered as part of inpatient care and is therefore included in the HRG-based payment. Rehabilitation by specialist rehabilitation consultants, in rehabilitation units, is excluded from this system, but coding and grouping in specific HRGs is mandatory. There is a mandatory tariff for some types of post-discharge rehabilitation (cardiac rehabilitation, pulmonary rehabilitation, rehabilitation after hip replacement or after knee replacement), only for trusts that provide integrated acute and community services (see section 3.6.3.1).<sup>13, 3</sup>

### 3.4.3 Additional payments

Research, training and medical education costs are not included in the PbR system allocation because a fixed tariff could discourage expenditure. These fields are centrally funded by the Department of Health and payments are made directly to hospitals.

Additional payments, in form of a percentage of the relevant HRG tariff, are made to some specialised services where there is an additional cost of specialised activity compared to non-specialised activity within the same HRG. Specialised services are those with low patient numbers but which need critical mass of patients to make treatment cost effective. Particular challenges for these services include training staff, supporting high-quality research programmes and making the best use of scarce resources like expertise, high-tech equipment and donated organs. Some procedure and diagnosis codes are determined as indicators of specialised activity. Where the impact on costs is found to be statistically significant, a specialised additional payment is calculated. A limited list of organisations is eligible for these additional payments, in the fields of children care, neurosciences, orthopaedic and spinal surgery.<sup>3, 13</sup>

Under the latest version of HRGs, some (high-cost) elements of treatment are separated from the base-HRG, generating unbundled HRGs that can be reimbursed as additions to base-HRGs (see section 3.4.5 'classification'). Therefore, one patient can have several HRGs. There are unbundled HRGs for high cost devices and drugs, intensive care, etc.

### 3.4.4 Proportion of hospital expenditures covered by the DRG-based payment

About 60% of total hospital revenues are related to the HRG-based payment.<sup>6</sup>

### 3.4.5 System updates

#### Classification

HRGs are reviewed annually with a major revision every 3 to 4 years. Amendments are made to reflect changes in clinical practice or costs, improved resource data, or requests for new HRGs to be created. A new HRG must encompass at least 600 cases annually and at least 1 200 occupied bed days or incur over £1.5 million in expenditure. A 'Casemix Design Framework', under a public independent 'Casemix Design Authority' designs all the rules and criteria for potential revision.<sup>14</sup>

An objective for the redevelopment of HRGs is the improvement in reduction in variance of length of stay, this being the primary definition of 'resource' for grouping purposes. This reflects the fact that patient-level cost data are not available in England (the costing methodology is a top-down methodology). HRGs should ideally have less than 25% length of stay and cost variability. Greater variability may make the HRG unsuitable for use for reimbursement.<sup>3, 6</sup>

A major revision of HRGs, named HRG4, was introduced in 2009/2010 for payment of hospitals. The number of groupings has increased from 650 in the previous HRG version (HRG3.5), to 1 389 in HRG4. HRG3.5 covered only inpatient and day-case activity, but HRG4 covers outpatient care and emergency care. Under HRG3.5, each episode of care generated a single HRG and all elements of treatment were subsumed under this base-HRG. HRG4 introduced the concept of unbundled HRGs for high-cost elements (see section 3.4.3).



Unbundled HRGs also provide a mechanism to separately report, cost and remunerate parts of a care pathway – diagnostic imaging and rehabilitation, for example – away from the traditional hospital setting.<sup>8</sup>

### Cost data

Cost data are collected annually but there is a three-year delay between hospitals submitting cost data and these data being converted into prices.<sup>6</sup>

#### 3.4.6 Calculation of reference costs and prices

The tariff for each HRG and admission type is the average cost for each HRG by admission type across all hospitals, with several adjustments.<sup>6</sup>

HRG costs are divided by the provider 'Market Force Factor' (MFF) to remove any location-specific cost differences. The MFF reflects geographical variation in input prices (staff, land and building) and is set to one for the lowest one (Devon and Cornwall area). This is to avoid incentives for PCTs to send patients for treatment outside their local area to take advantage of lower prices arising from lower input costs. The MFF is then reimbursed directly to the hospital trust by the Department of Health and the equivalent subtracted from the national allocations to all purchasing PCTs taken together.<sup>3</sup>

To take account of the delay between collection of cost data and price calculation, an inflationary adjustment is made to each HRG:

- Adjustment for 3 years' inflation;
- Adjustment for cost changes caused by the National Institute for Health and Clinical Excellence (NICE) guidance and technology appraisal. Technology appraisals are recommendations on the use of new and existing treatments within the NHS. Since 2002, the England NHS has been legally obliged to provide funding for treatments recommended by NICE.

This inflationary adjustment is offset by a deflating efficiency requirement. For 2013-2014, the average inflationary adjustment is 2.7%, and the deflating efficiency requirement is -4%, which gives a net price adjustment of -1.3%.<sup>13</sup>

There is a further specialty-specific tariff adjustment to take account of the cost pressure arising from NHS contribution to the 'Clinical negligence scheme for trusts'. This scheme handles all clinical negligence claims against member NHS bodies where the incident in question took place on or after 1 April 1995.<sup>13</sup>

If the tariff has traditionally been calculated on average reference costs, there is an increasing emphasis on best practice tariffs that are structured and priced to encourage high-quality care (see section 3.6.2.1)

### 3.5 Evaluation of the hospital payment system

We examined three reports to synthesise the effects of the PbR:

- The official Audit Commission's evaluation of PbR.<sup>9</sup> For its evaluation, the Audit Commission analysed activity, reference cost and accounts data from 2003/04 to 2006/07 (i.e. two years of the transition period, the year of the full implementation of PbR for elective activity, and one year after (see Table 2)). It reviewed differences between the early implementers of PbR and other acute trusts in order to better identify trends attributable to PbR;
- A report of Shelley Farrar et al.<sup>15</sup>, that analyses the consequences of Payment by Results for key outcomes measures and variations across HRGs, providers and patients. This report is an extension of an analysis provided in 2007<sup>16</sup>, analysis cited in the official Audit Commission's evaluation. The analysis exploits longer data series, from 2002/03 to 2007/08, and is based on an econometric model analogous to difference-in-differences analysis;
- 'The impact of the reform of hospital funding in England', a paper presented by Andrew Street and Marisa Miraldo in the 2007 'Evaluating Health Policy: New Evidence from Administrative data' conference<sup>17</sup> and cited in the official evaluation of the Audit Commission. This paper exploits data series from 1999/2000 (before PbR implementation) to 2005/2006 to better consider the impact of underlying trends. It reviewed differences between three HRG groups, according to when they were exposed to PbR: the first 15 (exposed in 2003/04), the next 33 (exposed in 2004/05) and the other HRGs (exposed from 2005/06) (see Table 2).



### 3.5.1 *Fulfilment of reform objectives*

#### 3.5.1.1 *Increase of activity*

The Audit Commission found that PbR has probably had a positive impact on day-case activity (PbR encourages procedures to be undertaken as day cases because the tariff is the same, regardless of whether the procedure is undertaken as an inpatient or a day case) and, as a result, has led to an increase in elective activity. But PbR has not had a noticeable impact on non-elective activity.

Street observed that there was an underlying trend of increase of activity, for the first group of 15 HRGs, before the implementation of the PbR activity, and that this trend flattened since 2004/05. Similarly, the growth in elective activity for the second group of HRGs increased at a faster rate than the trend between 2004/05 and 2005/06 (period of application of PbR for these HRGs), but there was a similar increase for HRGs that were not subject to PbR. This is suggesting that PbR was not responsible for the increase in activity rates.

The model of Farrar showed that PbR is associated with increases in the number of elective and non-elective admissions, with the increase being greater for non-elective admissions. Nevertheless, results are presented with caution, because incentives not included in the model, as additional resources for hospital funding in England<sup>c</sup>, can be the cause of observed changes.

It should be noted that general increases in activity were not stated as an objective of PbR. Rather, the objective was to 'increase efficiency in the provision of existing levels of activity' and only 'where needed, to encourage expansion of activity', i.e. to reduce waiting lists.

#### 3.5.1.2 *Reduction of waiting times*

Street showed that waiting times fell dramatically over the period 1999/2000 to 2005/2006. The change in waiting times coincides with the introduction of PbR, for each of the HRG groups studied, and one could deduce that PbR has had an impact on waiting times. It should, however, be noted that the first 15 HRGs were chosen for early exposure to PbR precisely because waiting times for these treatments were excessive, and there was therefore substantial room for improvement. However, PbR was not the sole – and probably not the primary – cause of these reductions. From 2000 onwards, the Department of Health began to set maximum waiting times. Initially it was 18 months, but the maximum waiting time reduced over time. It is not possible to disentangle the impact of PbR from the waiting time target, because of their contemporaneous phasing. The other major strategy to reduce waiting times has been to divert activity from existing NHS hospitals to treatment centres, which have been established specifically for this purpose since 2003. Treatment centres provide routine diagnostic and surgery procedures to day-case and short-stay patients and allow hospitals to concentrate on emergency and more complex elective cases, with an objective to reduce waiting lists. They were established close to hospitals that were believed to be operating a close to full capacity.

#### 3.5.1.3 *Efficiency*

In the three reports, the evaluation of efficiency was focused on establishing whether PbR led to a treatment being delivered with fewer real resources, evidenced by lower length of stay and a greater proportion of day cases. The Audit Commission and Street studied the evolution of reference costs.

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<sup>c</sup> The Blair Government increased funding from 2002 onwards.



### Day-case rate

The Audit Commission showed that the day-case rate improved with the introduction of PbR, with a larger effect for hospitals that previously had relatively low day-case rates and hospitals with a high reference cost index. The reference cost index (RCI) shows the actual cost of a hospital's case-mix compared with the same case-mix delivered at national average cost. A trust with costs equal to the national average will score 100, with higher cost trusts scoring above 100 and lower cost trusts scoring below 100. The RCI is therefore a measure of relative efficiency, and the impact of PbR on day-case rates was higher for hospitals with the most room for improvement.

Farrar drew the same conclusion. The probability of being treated on a day case increased by 0.2 percent between 2002/03 and 2007/08. High-cost trusts have increased the proportion of day cases, but medium cost trusts have reduced this proportion. The impact for low-cost trusts was not estimated.

Street showed that, at least for the second group of 33 HRGs, there was a steep increase in day-case activity from 2003/4 to 2004/5 when these HRGs were first subject to PbR, and that the trend was flat prior to the PbR. This change can be attributed to PbR, as HRGs not exposed to PbR had a declining trend of day-case rate.

Starting in 2010/2011, more incentives were created for the provision of care in less acute settings (see section 3.6.2.1).

### Length of stay

The Audit Commission and Farrar estimated that the PbR did probably have an effect of reducing length of stay. But other factors may also have been at play, such as the waiting time targets and the introduction of the 'Patient Choice Policy', which was seen as an important way of promoting competition between hospitals and thus sharpening the incentives to be efficient. Patient Choice Policy was introduced in 2003, with an offered choice of quicker treatment at alternative hospitals for patients likely to wait more than 6 months for inpatient treatment. This was further developed in 2006 with an extended choice of hospitals. It is intended that patients can choose the hospital by comparing clinical quality, waiting times, average

time spent in hospital, etc. Patients can base their choice on a public hospital comparison tool.

### Costs

The Audit Commission showed that trusts that were relatively low cost and those that were relatively high cost in 2003/04 remained so in 2005/06. Therefore, PbR did not encourage high-cost trusts to reduce their costs towards the average. The Commission estimated that the PbR was still in a transition period in these years and that 'initial instability in the tariff and a limited understanding of costs and cost drivers has discouraged some trusts from making key business decisions about changing activity patterns, and prevented them from identifying and acting on inefficiencies'.

Street observed that reference costs and cost variation have increased over time, implying that high-cost hospitals have allowed their costs to increase at a faster rate than for the sector as a whole, while the opposite is true for low-cost providers. This increase of costs is not related to PbR, but rather to an increase of labour costs and of capital costs.

#### 3.5.1.4 Quality

According to the Audit Commission<sup>9</sup>, 'PbR does not appear to have negatively impacted on quality of care, as measured by mortality and readmission within 28 days'. There was nevertheless an increase of readmission rates between 2003/04 and 2006/07 (see section 3.5.2.2).

Farrar<sup>15</sup> tested the following outcomes variables: hospital mortality; 30-day mortality following coronary artery bypass surgery; and 28-day readmission following treatment for hip fracture. These indicators showed an improvement associated with the introduction of PbR and Farrar concluded that 'it is not possible to confidently assert whether there have been quality changes as a result of PbR, but we do not find any evidence of deterioration in the measures of quality investigated that can be attributed to PbR'.

#### 3.5.1.5 Fairness and transparency

The Audit Commission's evaluation of PbR considers that the PbR improved largely the fairness and transparency of funding flows, by creating a clear link between activity, income and expenditure and removing much of the need for local price negotiation.





### 3.5.2 *Unintended consequences*

#### 3.5.2.1 *Up-coding*

In 2011/12, the Audit Commission audited 33 373 episodes of care, equating to approximately £51 million of NHS expenditure. Nationally, coding errors resulted in both under- and overpayments balance, suggesting there was no systemic up-coding error.<sup>18</sup>

#### 3.5.2.2 *Inappropriate early discharge*

There was an increase of readmission rates between 1998/99 and 2007/08 that could indicate an early discharge of patients in order to reduce costs or to maintain throughput to deliver on waiting times.<sup>19</sup> But as the readmission rates for the PbR early implementers have stabilised, the Audit Commission considered that PCTs with more experience of PbR may have been able to address this issue more effectively, and that the increase of readmission rate cannot be attributed to the PbR. Nevertheless, measures have been taken against avoidable emergency readmissions (see section 3.6.2.3).<sup>9</sup> On the contrary, Farrar<sup>15</sup> showed a positive impact of PbR on 28-days readmission following treatment for hip fracture (improvement of readmission rate).

#### 3.5.2.3 *Patient selection*

In order to determine whether there is evidence of an uneven or inequitable impact on specific groups of patients, Farrar<sup>15</sup> has examined the impact of PbR on outcomes indicators across patient characteristics. One of the objectives was to examine if there was a strong distributional shift in overall reductions in length of stay, some patients being disfavoured through a withdrawal of resources. The analysis of the impact of PbR by age group (0-19 years, 20-64 years, >65 years) provides evidence that reductions in length of stay and increases in day-case treatment are experienced by all age groups, but in a different manner. The older group had a larger reduction in length of stay and the younger group had a larger increase in the probability of being treated as day case. Differences in reduction in length of stay were not statistically significant across the different groups of patients categorised according to their socioeconomic status.

Street<sup>20</sup> analysed the difference in patient complexity between NHS and treatment centres for 29 HRGs. Treatment centres were established to divert activity from existing NHS hospitals (see section 3.5.1.2 on reduction of waiting times), are dedicated to simple, elective care, and are designed to specialise in one or two high-volume procedures. Patients treated in hospitals were more likely to come from more deprived areas, to have more diagnoses and to undergo significantly more procedures than patients seen by treatment centres. This suggests that hospitals are treating more complex cases than treatment centres. Treatment centres may have contractually-agreed patient exclusion criteria. These criteria specify the circumstances under which a treatment centre may refuse a referral, to avoid treating too costly or risky patients. Several dimensions of selection exist: age, clinical characteristics (risk of complication, obesity) or social criteria (lack of necessary social support). It is difficult to determine if the use of selection criteria is an evidence of cream-skimming or whether it is justified on safety grounds or by the capacity of the treatment centre. In any case, Street recommended adapting the payment model to ensure a fairer reimbursement, with a reduction of HRG price according to whether or not the care provider applies exclusion criteria. This recommendation was followed by the Department of Health. Since 2012/13, PCTs should locally 'adjust the tariff price if, under the terms of a contract, a provider limits the type of patients it treats resulting in lower costs than the average of the tariff category'.<sup>13</sup>



### 3.6 Capita selecta

#### 3.6.1 Access to new technologies / Innovation management

Where patients can benefit from the introduction of new devices, drugs, treatments and technologies or a new application of existing technologies which are not reflected in the mandatory tariff price, PCTs can agree to make additional payments, known as innovation payments. These should only be used for care that provides a step change from the standard care covered by the national tariff.

The following criteria and conditions apply:

- the payment should be fixed for a maximum period of three years;
- where appropriate, PCTs should have regard to the existing cost effectiveness evidence;
- the price should be agreed in advance and should only relate to the additional costs associated directly with the device or technology and its use relative to the cost of the alternative treatment.<sup>13</sup>

#### 3.6.2 Quality of care

In this section, we explore only quality incentives related to PbR.

##### 3.6.2.1 Best practice tariffs

Best practice tariffs have been introduced in the 'Payment by Results' system in 2010/2011.

A best practice tariff (BPT) is defined as 'a (mandatory) national tariff that has been structured and priced to both incentivise and adequately reimburse care that is high quality and cost effective'.<sup>13</sup> BPTs have been implemented incrementally: from 4 BPTs in 2010/2011 to 18 BPTs in 2013/2014.

##### Scope and types of BPTs<sup>13</sup>

The service areas covered by the BPTs have been selected using the following criteria:

- high impact (i.e. high-practice volumes, significant unexplained variation in practice, or significant impact of best practice on outcomes);

- a strong evidence base on what constitutes best practice; and
- clinical consensus on the characteristics of best practice.

BPTs have different aims, designed to either:

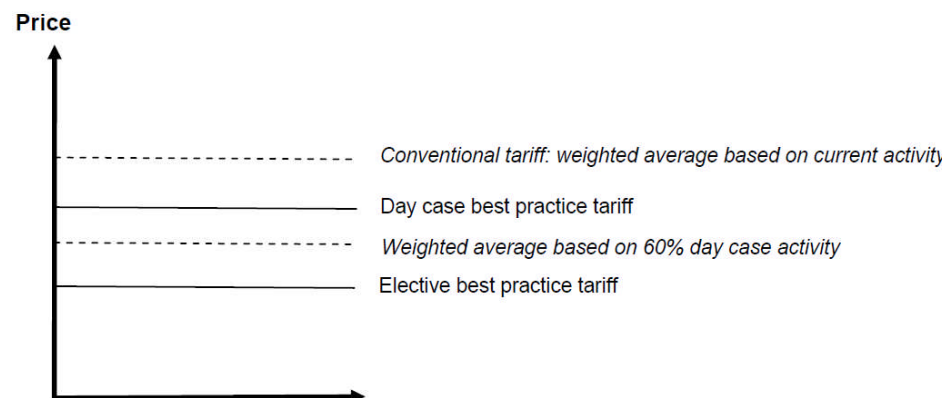
- change the setting of care, for example from inpatient to day case, or from day case to outpatient procedure;
- streamline the pathway of care, or
- increase the provision of high-quality care based on the best evidence available.

##### Appropriate settings best practice tariffs

To promote the move to day care where appropriate, the majority of HRG tariffs have been set on the average of day-care and inpatient elective costs, weighted according to the proportion of activity in each setting. Further incentives have been introduced with the implementation of 'day case BPTs' for a selection of procedures.

The selection of procedures was based on recommendations of the British Association of Day Surgery (BADs). BADs publishes every year a directory of procedures that are amenable to day care along with rates that they believe are achievable in most cases. These day-care rates are obtained following consultation with hospitals recognised as leaders in day surgery.

The BPT for each procedure is made up of a pair of prices: one applied to day-case admissions, the other to inpatient elective admissions. Price for day cases is higher than price for ordinary elective case. With this approach, day-care procedures are over-reimbursed and ordinary elective procedures are under-reimbursed, but NHS considers that as long as hospitals perform broadly in line with the target day-case rates, they will overall be adequately funded. The price setting reflects an increase in the day-case rate rather than the rate currently observed. With day cases costing less than ordinary elective spells this means the best practice tariff prices are lower than if they have been calculated on the basis of a weighted average of observed activity (see Figure 2).

**Figure 2 – Price setting of day case best practice tariffs**

Source: PbR Guidance 2010/11<sup>21</sup>

The same structure and tariff calculation methodology was used for 'outpatient procedures BPTs' and 'same day emergency care BPTs', introduced in 2012/2013. This methodology can be resumed in:

- a price for the appropriate setting relatively higher than that for traditional setting; and
- a decrease of the absolute level of tariffs for both settings to reflect the lower cost of providing a greater proportion of care in the appropriate setting.

The aim was to create a clear incentive for providers to change practice, and to penalise those that do not. Expenditure for PCTs under the BPT structure should not be greater than that under a conventional tariff structure. Although every procedure that shifts into the appropriate setting attracts a higher payment, this payment is lower than or equal to a tariff set in the conventional way, i.e. based on the national average of reported costs across both settings. As a result, even if a provider performs all procedures in the appropriate setting, the PCT will not pay more.<sup>21</sup>

Outpatient procedures BPTs are implemented for diagnostic hysteroscopy, diagnostic cytoscopy and hysteroscopic sterilisation. The aim is to shift from a day-case setting to an outpatient setting. A day-case procedure is defined as a procedure performed in a theatre-based setting with the administration of a general anaesthetic, and an outpatient procedure is defined as a procedure performed in a non theatre-based setting with local or no anaesthetic. Achievable outpatient rates are based on expert clinical advice and one published study on outpatient hysteroscopy.

Same day emergency care BPTs are defined for a range of 20 clinical scenarios, as admission for abdominal pain, or for acute headache. The aim is to shift from emergency inpatient admission to ambulatory emergency care.<sup>13</sup>

### **Evidence-based best practice tariffs**

Evidence-based BPTs are granted to hospitals if they comply with evidence-based guidelines in the treatment of patients. There are evidence-based BPTs for: acute stroke; fragility hip fracture; adult renal dialysis; paediatric diabetes; transient ischaemic attack; primary total hip and knee replacements; interventional radiology; major trauma care; diabetic ketoacidosis and hypoglycaemia; early inflammatory arthritis; endoscopy procedures; paediatric epilepsy; and Parkinson disease.

For fragility hip fracture for example, the aim is to incentivise hospitals to prepare patients quickly to surgery, to stabilise them quickly, to respond to their frail conditions and complex needs and to provide adequate post-surgery care.

The BPT for fragility hip fracture is made up of a base tariff and a conditional payment, payable if all of the following characteristics are achieved:

- time to surgery within 36 hours from arrival in an emergency department, or time of diagnosis if an admitted patient, to the start of anaesthesia;
- admitted under the joint care of a consultant geriatrician and a consultant orthopaedic surgeon;
- admitted using an assessment protocol agreed by geriatric medicine, orthopaedic surgery and anaesthesia;



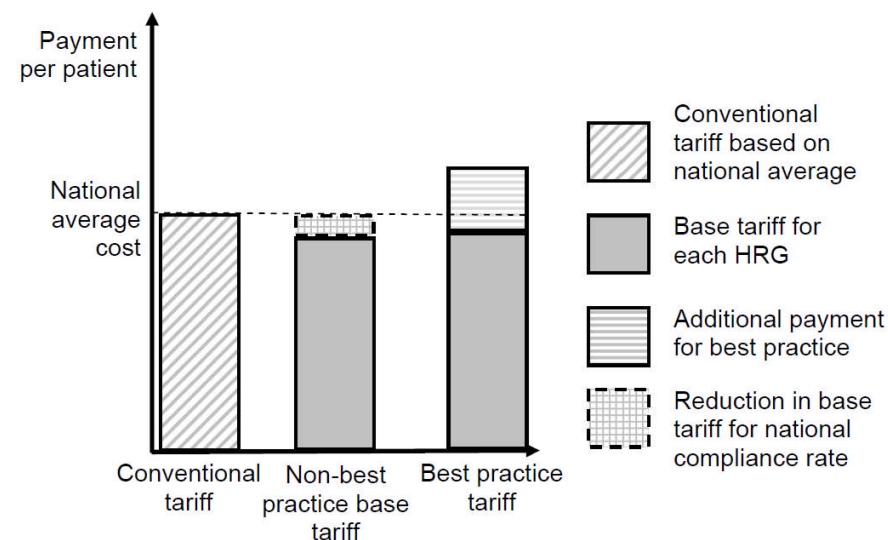
- assessed by a geriatrician in the perioperative period (within 72 hours of admission);
- postoperative geriatrician-directed multi-professional rehabilitation team;
- fracture prevention assessments (falls and bone health);
- two Abbreviated Mental Tests (AMT) performed and all the scores recorded in the National Hip Fracture Database (NHFD) with the first test carried out prior to surgery and the second post-surgery but within the same stay.

In this particular case, compliance is determined using data from the NHFD, and hospitals should submit their data to this database in order to compete for the BPT, but this is not compulsory. In some cases, medical data from the PbR database may be used to determine partly compliance, but in most cases, PCTs and hospitals need to implement further adequate local reporting and monitoring processes.

BPTs with conditional payment have two components: the base tariff, payable to all activity irrespective of whether the characteristics of best practice are met, and the conditional component, payable if the treatment meets several characteristics of evidence-based best practice. The price of the conditional component is calculated on the basis of the additional costs to deliver best practice. The base tariff is set below the national average cost, and hospitals that are below average performers have therefore an added financial incentive to change practice.

In the early stages of implementation of evidence-based BPTs with conditional payment, the sum of the base tariff and of the conditional payment was higher than the national average costs (see Figure 3).

**Figure 3 – Early stages of price setting for evidence-based BPTs**



Source: PbR guidance 2010/11<sup>21</sup>; BPT = best practice tariff; HRG = Healthcare Resource Group

Over time, increases of conditional payment have come at the expense of corresponding and sometimes larger decreases in the base tariff, making the base tariff increasingly punitive as a way of pushing hospitals to improve. This mechanism also ensures that PbR expenditures do not grow too much with the introduction of BPTs, as the sum of the base tariff and the conditional payment is at the level of national average costs.<sup>22</sup>

This system of base and conditional tariffs is not followed for all best practice tariffs. In fact, for other evidence-based best practice tariffs, the price setting is based on an 'additional payment model', i.e. the BPT is higher than the national average costs of current practice. In this case, there is a financial incentive to shift to 'better practice', but there is no negative financial consequence of not achieving best practice.<sup>22</sup>



### **Streamlined pathways BPTs**

This type of BPT is only implemented, so far, for cataract. The objective was to rationalise the pathway and to reduce the number of outpatient appointments following surgery. There is a single tariff intended to cover the entire cataract pathway, i.e. one outpatient attendance for preoperative assessment, one day surgery and one follow-up attendance. The tariff is the sum of the costs of the different elements of this pathway. Other elements are not funded (for example: two follow-up attendances).

#### **3.6.2.2 Evaluation of best practice tariffs**

The Audit Commission assessed in 2012 the impact of BPTs.<sup>22</sup> The report combined quantitative and qualitative analyses to assess hospitals' clinical and financial performance. It looked in detail at the BPTs for day-case surgery, fragility hip fracture and acute stroke.

The total value of BPT payments for these procedures in 2011/2012 amounted to £71 million nationally, and total payments to hospitals for these procedures were £532 million. This is to compare with the total of tariff costs for acute care amounting to some \$30 billion. For the individual hospital or specialty, the actual amount of BPTs was often immaterial. Furthermore, BPT payment models are complex and hospitals do not perceive the effect of BPTs in relation to their previous income. Therefore, hospitals consider that BPTs do not provide much financial incentive but that they can focus attention to a specific area of clinical practice and can help to bring improvement of practice. In this sense, BPTs are viewed as 'recognition for doing the right thing'.

The detailed evaluation of the three BPTs shows a real impact, but the Audit Commission recommends to simplify the payment models of the tariffs and to accompany BPTs by public reporting of quality.

### **Evaluation of day case BPTs**

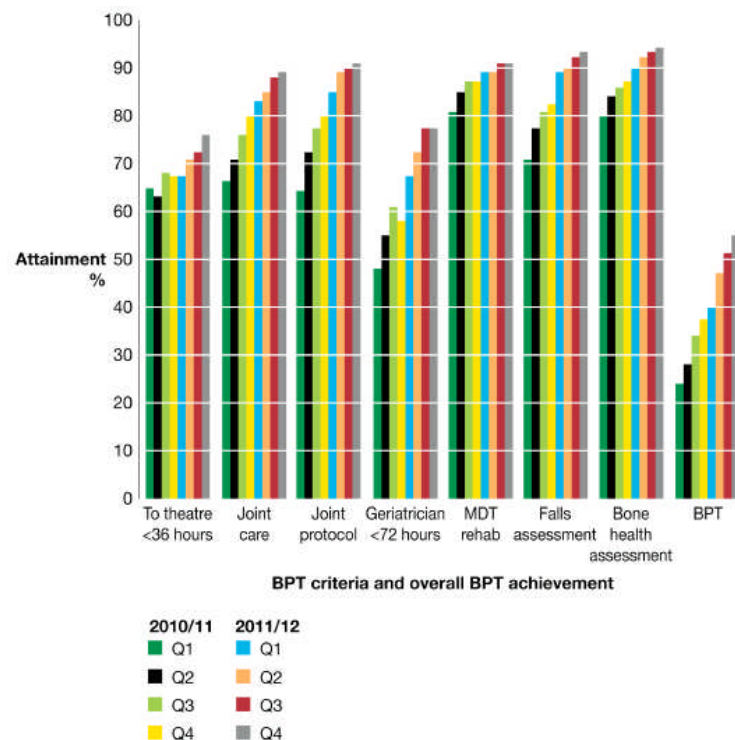
Between the beginning and the end of the year 2011/12, day-case rates improved from 1 to 10 percentage point for 12 day case BPTs procedures, and did not improve for one BPT procedure. Over the same period, the overall day-case rate (which covers many other procedures) improved by just over one percentage point, reflecting a continuing rising trend. For most hospitals studied, the value of the day case BPT was not significant enough to provide an incentive to increase day-case rates. Other explanatory factors were improved quality of care and savings from more efficient bed use.

### **Evaluation of fragility hip fracture BPT**

There was a clear and steady increase in care meeting the fragility hip fracture BPT criteria between the beginning of 2010/11 and the end of 2011/2012. Achievement against the individual criteria was high at the end of 2011/2012, with 90% compliance for four criteria and 70% for the other two (time to surgery < 36 hours and assessment by a geriatrician within 72 hours). Compliance with all the criteria together was achieved for 55% of the fragility hip fracture at the end of 2011/2012 against 25% at the beginning of 2010/2011 (see Figure 4). It is reasonable to assume that this improvement is due to the focus placed on fragility hip fracture as a result of the national audit (the NHFD) and the implementation of the BPT.

Nevertheless, the quality of data collected from the non-mandated NHFD is not always good: in the sample reviewed by the Audit Commission, PCTs made 61% of payments without valid documentation and thus no proper evidence of compliance.

**Figure 4 – Fragility hip fracture BPT measure compliance, 2010/11 to 2011/12**



Source: National Hip Fracture Database<sup>22</sup>; BPT = best practice tariff; MDT = multidisciplinary team; Q1 = Quarter 1 → Q4 = Quarter 4

### 3.6.2.3 Emergency readmission

As the level of emergency readmission increased by 50% between 1998/99 and 2007/08, measures have been taken in 2011/12. Hospitals did not receive payment for emergency readmission within 30 days of discharge following an elective admission. For emergency readmissions within 30 days of discharge following a non-elective admission, PCTs and providers must have agreed a local threshold rate (i.e. the number of non-elective admissions which are followed by an emergency readmission, as a percentage of the total number of non-elective admissions), with an objective of at least a 25% reduction in the readmission rate over the previous year.<sup>19</sup> The underlying principle was that 'emergency readmissions should not attract full reimbursement if the provider did not provide sufficient quality of service or prepare patients adequately for discharge'. PCTs were required to work with providers, general practitioners and local authorities to reinvest the savings created by these 'non payments' in re-ablement and post discharge support. Since 2012/13, the same principles hold, but the way in which the readmissions are assessed has been fine-tuned, based on a clinical review. The aim of the clinical review, conducted by the PCT and the provider with a standard reporting format and methodology, is to gather information about the issues affecting post discharge and re-ablement care and to set a threshold for all avoidable readmissions, including those preventable by actions outside the acute provider, above which providers will not be reimbursed. The final aim of the review is not to identify poor quality care in hospitals, but to look at actions which could have prevented the readmission by any appropriate care provider.<sup>13</sup>



#### 3.6.2.4 *Never event*

Never events are serious patient safety events that are largely preventable. The NHS standard contract requires that no payment is made for treatment that results in one of the national never events, and/or for treatment to deal with the consequences of a never event. Flexibility is nevertheless accorded to PCTs in their contracts agreed with providers. Never events defined by NHS are for example: wrong site surgery; wrong implant/prosthesis; retained foreign object post-operation; wrongly prepared high-risk injectable medication; maladministration of a potassium-containing solution; wrong route administration of chemotherapy; wrong route administration of oral/enteral treatment; death or severe harm as a result of intravenous administration of epidural medication.<sup>23</sup>

#### 3.6.3 *Integrated care*

In this section, we explore only integrated care payments related to PbR.

##### 3.6.3.1 *Post discharge tariffs*

In 2012/13 post discharge tariffs were introduced to take forward the vision of a shift of responsibility for patient care following discharge to the acute provider who treated the patient. They are defined for four specific rehabilitation pathways: cardiac rehabilitation; pulmonary rehabilitation; hip replacement; and knee replacement. The tariffs are designed to fund an entire pathway and not just the first 30 days after discharge. For knee replacement for example, the defined clinical pathway is: 10 nurse/physiotherapist appointments; one occupational therapy appointment; and 2 physician appointments. These tariffs are mandatory for trusts that provide integrated acute and community services. These tariffs are funded from different sources including savings from non-payment from avoidable emergency readmission and additional funds accorded to PCTs to develop local re-ablement services.<sup>13</sup>

##### 3.6.3.2 *Maternity pathway*

A new pathway funding system for maternity services was introduced in PbR in 2013/14.

The former payment system provided HRG-based payment for each inpatient stay, scan or hospital visit. Community antenatal and postnatal care were part of local contracts and payments. Hospitals providing more clinical interventions were more paid, and hospitals providing more proactive, community-based maternity care were disadvantaged.

Under the new system, PCTs pay hospitals for all the pregnancy-related care and there is no further payment for individual elements of activity. The pathway and the payment are split into three stages: antenatal care; delivery; and postnatal care.

For antenatal care and postnatal care, three levels of payments are specified, according to the expected, average resource usage. Characteristics for the categorization into intermediate or intensive level payment are for example: complex social factors, obesity, hypertension, HIV.

For delivery, there are only two payment categories: with complications or co-morbidities and without complications or co-morbidities. There is no difference in payment for different methods of delivery (normal, assisted or caesarean section).<sup>24</sup>



## 4 FRANCE

### 4.1 Brief overview of the hospital sector

The French health care system is based on social insurance with a universal coverage.

On a yearly basis, the Parliament approves a national ceiling for health insurance expenditures ('Objectif National de Dépenses d'Assurance Maladie', ONDAM). There are separate targets for the hospital sector, the ambulatory sector and the long-term care sector. The hospital sector budget is then divided into an acute and a non-acute care budget. The DRG-based payment system, called 'Tarification à l'activité' (T2A), applies to acute care in hospitals (including hospital care at home). It is subject to price/volume control mechanisms, i.e. if the overall hospital activity increases in year  $n$ , the national tariffs will be reduced in year  $n+1$  to ensure that the overall hospital targeted budget will not be exceeded.<sup>3, 25</sup>

Hospital care is delivered by (2010 data):

- public hospitals (66% of acute care beds);
- for-profit private hospitals (25% of acute care beds; 46% of surgical beds and 70% of day-care beds specialised, in general, in surgery);
- and non-profit private hospitals (9% of acute care beds, specialised in medium to long-term care).<sup>26</sup>

Sixty percent of for-profit private hospitals have fewer than 100 beds. A diversity of profiles can be observed for public hospitals.

At the regional level, Regional Health Agencies ('Agence Régionale de Santé', ARS) are responsible for organizing and assuring the quality of hospital care.

### 4.2 Remuneration of medical specialists

In public and non-profit private hospitals, medical specialists are employees and are salaried according to a fixed salary scale, independent of their specialty. These specialists can also have a private practice and be part-time self-employed.

Medical specialists working in private hospitals are self-employed. They contract with health insurance funds and are paid according to a negotiated fee-for-service schedule. In 2008, 48% of specialists were exclusively self-employed, 42% were exclusively salaried and 10% were both self-employed and salaried.<sup>27</sup>

#### Fee schedule

For self-employed medical specialists, the official tariffs per service provided are included in two lists:

- the general nomenclature of medical procedures ('nomenclature générale des actes professionnels', NGAP), for clinical procedures;
- the common classification of medical procedures ('classification commune des actes médicaux', CCAM) for technical procedures.

The CCAM was established in 2005. The objectives of this new classification were to improve the description of technical procedures and to remunerate each technical procedure according to the effort required to the practitioner to achieve the procedure and according to the costs associated with this achievement. The objective was thereby to promote fairness of remuneration between medical specialists and between specialties.<sup>28</sup>

The methodology (based on a model developed by the Public Health Department of Harvard University for Medicare) to construct this scale resource-based relative value for services and procedures, is based on the following principle. The value of each procedure or service (VP) equals the sum of two types of work input:

- the medical work value of a procedure or service (which depends on its difficulty), WV;
- the cost of the practice of a procedure or service, CP.

$$VP = WV + CP$$



The medical work for a procedure is divided into 5 categories:

- 4 subjective variables: the medical work as a global variable, the stress, the technical skill required and the mental effort. Twenty experts (randomly selected from a list of 60 to 100 experts proposed by scientific societies of each specialty) rate relative work value (and other subjective variables) by using as reference standard (fixed at the level of 100) a procedure or service commonly performed within the specialty;
- 1 objective variable: time devoted (in minutes).

The cost of the practice for each procedure or service is calculated on the basis of the professional costs (personnel costs, rents, medical consumable, use of medical equipment,...) declared to the fiscal administration by each specialty. This amount is then divided by the sum of medical work value for each specialty.<sup>29</sup>

This methodology highlighted significant differences between target fees, and historical fees. A process of gradual convergence of historical fees to target rate should have been conducted, but it immediately foundered on the refusal of medical unions to endorse 'losses' on procedures historically over-priced. Furthermore, estimation of medical work, technical skills required and time devoted to a procedure were never revised. The objective of fairness of remuneration between specialties and medical specialists is thus not reached.<sup>28</sup>

The classification for clinical procedures (NGAP) is very simple: consultation by a medical specialist, consultation by a cardiologist with a simple technical procedure and consultation by a psychiatrist. Consultations in a hospital or in a private office are not differentiated<sup>d</sup>.

Clinical procedures seem generally paid less than the technical procedures. An hour of clinical work is paid about €52 per hour, while on average, surgical work should be paid – if the target fees were applied – €100 per hour. This significant difference could be justified by the fact that the intensity (stress, mental effort, mobilized skills) of clinical and technical work is different. At the same time a reduction of the difference could also be considered as legitimate.<sup>28</sup> Furthermore, it induces that specialties with more clinical procedures (paediatricians, for example) are less remunerated than 'technical' specialties.<sup>27</sup> Different forms of revision of the classification were discussed, but there is still no consensus on this issue.

## 4.3 Introduction of the DRG system

### 4.3.1 Previous system

Hospitals were financed differently according to the type of ownership. Public hospitals and non-profit hospitals were reimbursed on a global budget basis. This budget was calculated mainly on basis of historical costs, independently of the activity of each hospital.

For-profit hospitals had an itemized billing system with different components: per diem rate for operating costs, per diem for drugs consumption, and separate payments for each diagnostic and therapeutic procedure carried out. A target budget was negotiated each year between the state and the for-profit private hospitals. If expenses exceeded the target, tariffs were lowered; if expenses were below the target, tariffs were increased (price/volume control).

Medical specialist remunerations were (and still are) financed on a fee-for-service basis.<sup>30</sup>

<sup>d</sup> The price paid for outpatient services is the same for the public health insurance, irrespective of the 'point of care', but the cost for patients or complementary insurance can be higher in private settings.





#### 4.3.2 *Problems with the previous system and objectives of the DRG system*

Prior to the T2A, the system of global budgets for public and non-profit private hospitals did not take sufficient account of changes in the level and structure of activity. The overall allocation favoured the establishments whose activity was in relative decline and penalized institutions whose activity was growing. There were no incentives for improvement of activity and efficiency and there was a problem of inequity in hospital payments.

The payment system of for-profit private hospitals was based on the hospital activity, but inequity could be observed, as the per diem rates were locally negotiated and were not based on actual costs. Some hospitals and activities could be under- or overpaid.

The main objectives of the implementation of T2A were therefore:

- Improvement of activity for public hospitals;<sup>31</sup>
- Improvement of equity between hospitals;<sup>32</sup>
- Improvement of efficiency.

#### 4.3.3 *Implementation issues*

##### 4.3.3.1 *Implementation period*

The patient classification system – Groupes homogènes des malades (GHM), inspired directly from the third DRG version of the U.S. Health Care Financing Administration (HCFA-DRG) – was first introduced in 1986 for a sample of voluntarily participating public hospitals in order to describe activity. Collecting and reporting data on hospital activity on basis of the GHM classification became mandatory in 1991 for public and private non-profit hospitals and in 1998 for private for-profit hospitals. These data were increasingly used for the adaptations of the public hospital global budgets according to their activity. GHM data were first used for a prospective payment system in December 2004.

GHM-based payment was gradually introduced for public and non-profit hospitals: 10% of acute care activities (for services/activities included in

the GHM- payment system) were financed on this basis in 2004, 25% in 2005, 35% in 2006, 50% in 2007 and 100% since 2008.

Private for-profit hospitals have been financed entirely by a GHM-based payment since February 2005 (except for the remuneration of medical specialists).

However, national GHM prices are still adjusted to reflect hospitals' historical cost patterns in order to shelter them from excessive budget cuts.

##### 4.3.3.2 *Medical data*

The patient classification system is based on a hospital activity database ('Programme de médicalisation des systèmes d'information', PMSI) which contains information on patient characteristics, diagnoses, procedures, complications and co-morbidities and length of stay. This national database covers all public and private hospitals. The number of GHMs was 701 in 2005, but the classification system has been refined in 2009, with the introduction of four levels of case-severity applied to most GHMs. There were 2 375 GHMs in 2011.<sup>12, 25</sup> Outliers are defined on the basis of length of stay, with lower and upper trim points.<sup>3</sup>

##### 4.3.3.3 *Cost data*

A national cost study for the public sector was introduced in 1995 with 35 public hospitals participating on a voluntary basis. Until 2006 the French hospital cost database covered only public hospitals (40 hospitals representing 3% of total public hospitals). Since 2006, cost information is also collected from a sample of voluntarily participating private hospitals. Before 2006, tariffs for private hospitals were set on basis of hospital charges. In 2010, the national cost study represented 69 hospitals representing 20% of public hospital stays and 5% of private hospital stays (see Table 3). The sample represents at least 10% of the total stays for almost all (97%) of the GHMs, but one percent of the GHMs is not represented in the sample.<sup>33</sup>

**Table 3 – Number of hospitals and stays included in the national cost study**

Hospital type	Number of hospitals in data sample – 2006	Surveyed episodes/all stays (%) - 2006	Number of hospitals in data sample - 2010	Surveyed episodes/all stays (%) - 2010
University hospitals	10	11%	15	37%
General hospitals	16	7%	19	9%
Cancer centres	5	25%	3	18%
Non-profit private hospitals	11	15%	10	20%
Total public hospitals	42	10%	47	20%
Private for-profit hospitals	32	7%	22	5%

Source: ATIH<sup>33</sup>; \* Hospitals for which the data provided fitted the quality standard to calculate costs.

Common cost-accounting rules were defined for hospitals participating in the cost study. The Regional Health Agencies pay the yearly salary for a financial controller, by means of the 'payment for general interest missions' ('Missions d'intérêt général et d'aide à la contractualisation', MIGAC) to each of the hospitals providing cost-accounting data. The Technical Agency for Hospital Information ('Agence technique d'information sur l'hospitalisation', ATIH), an independent public administrative institution, controls and supervises the cost accounts of all voluntarily participating hospitals.

The small size of the sample is often criticized, as not enough representative of the total of stays, especially for rare treatments. Nevertheless, rather than increasing greatly the size of the sample, ATIH focuses on some hospitals to improve the quality of data and get a better sampling rate for rare activities.<sup>34</sup>

## 4.4 Current system

### 4.4.1 Range of costs included

For public and non-profit private hospitals medical costs (including medical specialist remuneration), nursing costs, overhead costs and capital costs are included. An unmeasured part of capital costs is financed through specific funding streams in order to help public hospitals to finance weighty investment plans imposed by recent hospital reforms (see further in this section, 'contractual activities'). The part of the capital costs covered by GHM-based payment is therefore not transparent.<sup>25</sup>

For private for-profit hospitals, the tariff does not cover medical specialist fees and the cost of some medical equipment, paid for by a specific amount to concerned hospitals ('forfait de haute technicité').

Costs not covered by the GHM-based payment are:

- Costs of research, training and medical education;
- Costs of 'public utility missions' (missions that cannot be financed on basis of activity because the mission must exist even if the level of activity is very low or null; for example mobile emergency units);





- Costs of contractual activities, i.e. hospital activities promoted by contract with Regional Health Agencies (including financing of weighty investment plans);

These costs are financed through the MIGAC budget, a national budget which is yearly defined.

- Costs of expensive drugs and devices (see section 4.4.3).

#### 4.4.2 Range of services included

The GHM payment system is applicable to all acute inpatient care, day hospitalizations, ambulatory surgery, day treatments (dialysis, chemotherapy and radiotherapy) and home hospitalizations, but excludes mental health care and rehabilitation. Ambulatory care, including emergency care, provided by the hospital to outpatients is not covered by the GHM payment system and is remunerated on a fee-for-service basis (see section 4.2).

#### 4.4.3 Additional payments

A list of expensive drugs and medical devices is reimbursed on top of tariffs, on the basis of a maximum standard price. To be included in this list, drugs and devices must have a high cost per unit and a non-generalized use, resulting in cost heterogeneity. Since the creation of this list, in 2005, few drugs have been removed from this list. Total expenditures on these drugs and devices increased a lot: by 37% between 2005 and 2007, and by 20% between 2007 and 2010 (to be compared with a rise of GHM-based payment of 8% between 2007 and 2010).<sup>25, 35</sup>

Neonatology and intensive care benefit from additional daily supplements on top of the tariffs.

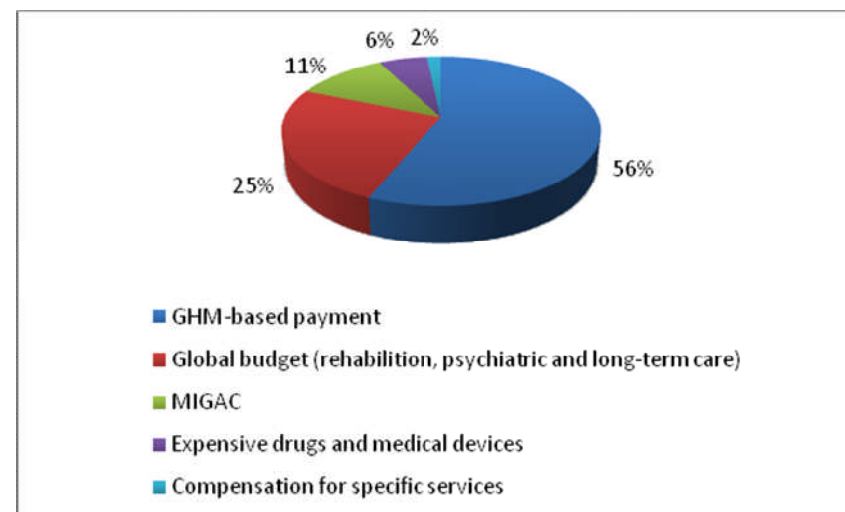
Transplant services are included in the GHM system, but an additional lump sum is paid to cover the hospital coordination costs involved in making organ retrievals. Another annual lump sum covers the cost of organ transplantation coordination. An additional fee per organ retrieval is paid to hospitals.

An annual lump sum is attributed to hospitals with an accident and emergency department.<sup>3</sup>

#### 4.4.4 Proportion of hospital expenditures covered by the DRG-based payment

56% of total hospital expenditures are covered by the GHM-based payment (see Figure 5).

Figure 5 – Repartition of total health expenditures, 2010



Source: Adapted from Le Menn, 2012<sup>36</sup>; GHM = Groupes homogènes des malades; MIGAC = Missions d'intérêt général et d'aide à la contractualisation

#### 4.4.5 System updates

##### Classification

The classification algorithm and the patient classification system are revised annually in order to take account of changes in medical practice or in technology. Updating or alterations to the system are made on basis of suggestions of an expert group of statisticians and medical specialists set up by the ATIH.<sup>25</sup>

##### Cost data

Cost weights are updated annually but with a time lag of two years.



#### 4.4.6 Calculation of reference costs and prices

Average costs per GHM are calculated separately for public and non-profit private hospitals on the one hand and private for-profit hospitals on the other hand. Given that the national cost study covers only a small sample of hospitals, adjustments for potential sample bias are made. Average costs per GHM are calculated per type of hospital. An average cost per GHM is then calculated on basis of weighted means by hospitals. For the public sector, five types of hospitals are defined: teaching hospitals, cancer centres, general hospitals with less or more than 16 000 episodes and private non-profit hospitals. Weighting variables are average length of stay (ALOS), ALOS in wards reanimation/intensive care, and average number of procedures.

These average costs are used to compute 'raw' tariffs per GHM. Actual prices per GHM are determined by the Ministry of Health, according to the budget envelope (total hospital expenditure target). If the MIGAC budget or the budget for expensive drugs is increased for example, the budget for GHM-based payments will decrease. Furthermore, if the growth of activity exceeds the target, GHM tariffs are reduced (price/volume control mechanism). In 2009 the ATIH noted that GHM prices were modified to adjust for an increase of the MIGAC and expensive drugs budget and the rise of activity volume. However, it is not clear how these different elements contributed to the prices modification.<sup>25</sup> This leads to several problems, as a lack of transparency (see section 4.5). Currently, there is much debate on 'reserves' set aside early in the year so that the target budget is not exceeded. Hospitals do not receive the total tariff for each stay until it is sure that the volume of activity will not cause a budget overrun (personal communication with V. Paris, OECD, 17 July 2013).

Currently, GHM prices are still weighted with a hospital specific 'transition coefficient' calculated for each hospital from its own historical costs/prices. The objective of these transition coefficients is to avoid excessive budget changes from one year to another.<sup>25</sup>

## 4.5 Evaluation of the hospital payment system

### 4.5.1 Fulfilment of reform objectives

#### 4.5.1.1 Equity between hospitals

As the former payment system for public hospitals favoured hospitals whose activity was in decline and vice-versa, it can be considered that the reform improved the equity between hospitals. For private for-profit hospitals, a significant improvement of the reform is that the tariff construction is now more closely linked to costs than were the per diem rates and previous tariffs, determined by negotiation. But for both types of hospitals, in order to ensure a neutral allocation of resources between activities and hospitals, the hierarchy of tariffs must respect the hierarchy of costs.<sup>32</sup> T2A current prices deviate from this neutrality over a billion euro. These differences are due to:

- The fact that GHM tariffs are still adjusted to reflect hospitals' historical cost patterns, in order to shelter them from excessive budget cuts;
- The fact that some tariffs are modulated in order to provide incentives for public health objectives (over-pricing of day-care surgery and under-pricing of inpatient surgery and caesarean deliveries).

But as GHM tariffs are set in a closed budget, any advantage accorded to an activity (over-pricing) has as counterpart a penalization of another activity (under-pricing). In order to ensure equity between hospitals, the 'Inspection générale des affaires sociales' (IGAS) recommends that the hierarchy of tariffs should be reviewed according to the hierarchy of costs. In case of excessive budget cuts for some hospitals, a temporary and contractual financial assistance could be given. Public health programs (like promotion of day surgery) should be financed through other approaches than a tariff modulation. Furthermore, any tariff distortion should be explicated and the effects of any distortion should be publicly documented.<sup>28</sup>



#### 4.5.1.2 *Increase of activity*

Activity (number of stays and day treatments) of public hospitals rose by 7% between 2005 and 2009, with an average of 2% per year. But the activity rose already by 11% between 2002 and 2005, before the introduction of the reform.<sup>37</sup> Activity of for-profit private hospitals increased only by 0.6% between 2005 and 2009.<sup>37</sup>

Since GHM prices are reduced if activity exceeds the target for the inpatient sector (volume/price control mechanism), hospitals do not know whether increasing activity in a given year will increase their income in the next year. Therefore, there is no clear incentive to increase activity.

#### 4.5.1.3 *Efficiency*

According to Studer<sup>38</sup>, productivity of public hospitals raised from 2003 to 2007. Or<sup>37</sup> showed that productivity of public hospitals raised after the introduction of the reform. There is no clear productivity growth for for-profit private hospitals (see Table 4).

The reform accelerated the development of management tools, particularly in the public sector. But care processes and work procedures are still very little analyzed and reviewed. The impact of the reform on medium-term management and care-supply strategy is very limited. The volume/price control mechanism creates an opaque environment for hospitals, as they cannot predict their income on basis of their activity. Furthermore, tariffs are set progressively independently of costs (see section 4.5.1.1). The profitability of some activities may thus simply come from tariffs set above costs and not from more efficient services or facilities. The hospital community perceives T2A as a rule of the game 'neither clear nor understood' and the lack of transparency undermines the definition of a medium-term strategy and efforts for a better management.<sup>39</sup>



Table 4 – Summary of studies examining evolution of hospital productivity in France

Study	Study period and scope	Variables		Results
		Output	Input	
<b>Studer, 2012<sup>38</sup></b>	2003 to 2007 Public hospitals	Case-mix adjusted discharges	Physician FTEs Other labour FTEs Utilization index of high technical equipment Hospital beds	Productivity growth
<b>Or, 2013<sup>37</sup></b>	2002 to 2009 Private and public hospitals	Case-mix adjusted discharges	Total hospital expenses Physician FTEs Other labour FTEs Hospital beds	Total expenses raised faster than production for both types of hospitals Increase of partial input productivity for public hospitals after 2005

\* FTE = full time equivalent

In terms of day-case rate, the impact of the reform was weak. This can be explained by the fact that until 2009, GHM tariffs for day care were lower than GHM tariffs for inpatient care. There was therefore no clear incentive for the development of day care. Single tariffs for day and inpatient care were implemented for 18 GHMs in 2009 and for 39 GHMs in 2012. Furthermore, since 2009, some surgical interventions must have a prior approval of the French health insurance to be performed in inpatient hospital care.<sup>40</sup>

#### 4.5.1.4 Transparency

As tariffs are set progressively independently of costs (see section 4.5.1.1) and vary from one year to another, due to the volume/price control mechanism, the hospital community perceives T2A as not transparent. Furthermore, the Audit Court ('Cour des Comptes') criticizes in a 2009 report<sup>41</sup> the lack of transparency of the process of price fixing, as it is not always clear what is included in the price and what is not (particularly investment costs).

### 4.5.2 Unintended consequences

#### 4.5.2.1 Up-coding

A national programme of data control is elaborated each year. A systematic control of some data of all hospitals is realized in order to find atypical cases or hospitals. A control 'on site' is then realized in some spotted hospitals or in randomly selected hospitals. Case reviewing serves as a preventive measure against up-coding. If unintended up-coding is revealed, the hospital must reimburse the respective additional revenues. If it is demonstrated that hospitals have intentionally used up-coding to increase profits, additional penalties can be applied.<sup>3</sup>

In 2006, this external control revealed that the use of 'innovative medications' (paid separately) was not justified in about 30% of cases.<sup>25</sup> Expenses in innovative medications and devices rose a lot from 2005 (7.4% of total expenses) to 2009 (10.1% of total expenses).<sup>31</sup> This 2006 control showed also that there was an up-coding of ambulatory consultations as day cases. Therefore, the Ministry of Health issued a



decree in 2007 describing procedures that should not be coded as day cases.

Between 2005 and 2008, the share of inpatient stays without any complication or co-morbidity encoded decreased significantly in all hospitals, which could indicate up-coding.<sup>25</sup>

#### 4.5.2.2 *Inappropriate early discharge*

The average length of stay decreased since the reform in 2004-2005, especially in recent years (see Table 5). Hospital managers give a particular attention to the length of stay in order to reduce costs. According to stakeholders' interviews, this is accompanied by an increased research of downstream beds and of collaboration for the after-care.<sup>39</sup> Or observes for 2007-2009 a clear increase of readmission rates within 30 days of discharge for acute myocardial infarction, stroke and surgery for colon cancer.<sup>37</sup>

In an attempt to control early discharge, lower lengths of stay thresholds have been implemented. If the patient is discharged earlier than the threshold, the GHM-payment is reduced. In case of readmission within 3 days, in the same hospital and DRG, the tariff of the second stay is lowered by half.

**Table 5 – Evolution of average length of stay (day hospitalization and treatments excluded)**

	2005	2006	2007	2008	2009	2010
Public and non-profit private hospitals	7.8	7.7	7.7	7.6	5.7	6.1
Private for-profit hospitals	5.6	5.5	5.4	5.4	4	4.1
Total	7.1	7	7	7	5.2	5.5

Source: Bruant-Bisson, 2012<sup>39</sup>

#### 4.5.2.3 *Patient selection*

According to official evaluations, based on interviews with stakeholders, very few public hospitals (less than 16% in a survey of 120 hospitals) have deliberately changed their activity profile and range of cases treated (case-mix) to improve their income.<sup>42</sup> In addition, the determination of private for-profit hospitals portfolio results primarily from the history of each institution, the composition of the medical teams, the search for coherence and complementarity in a territory, and results marginally on economic calculations based on T2A rates, which are not clear.<sup>43</sup>

A study of IRDES<sup>37</sup> shows that the T2A does not seem to have modified the specialization of public hospitals. A trend towards specialization is observed for private for-profit hospitals, but this trend could already be observed before the reform.

A priori, patient selection is not an issue, at least for public hospitals, as they cannot, by law, select their patients and have to provide a comprehensive package of care.<sup>25</sup> But hospitals, instead of refusing older and sicker patients, could discharge them earlier to reduce the associated costs. This hypothesis was not verified by the study conducted by IRDES, in which the evolution of length of stays for different patient profiles was compared. As the socioeconomic status of the patient is not taken into account in the payment formula of T2A, further studies on potential patient selection are recommended by the authorities.<sup>43</sup>

#### 4.5.2.4 *Increased number of patients: admission for unnecessary services*

According to the IGAS, the increase of stays can be explained without assumption of a significant supplier-induced demand, by the growth and aging of the population, by residual progress in the completeness of coding, and by the dissemination of certain interventions, such as cataracts.<sup>32</sup> A study of IRDES<sup>37</sup> shows nevertheless a substantial rise of standardised rate of use of cataracts, a procedure whose tariff is higher than the average observed costs.



But admission for unnecessary services is a major concern for authorities, and the Regional Health Agencies have regional objectives in terms of volume of activity. According to IGAS, these attempts to control the activity may be ineffective by causing rationing of relevant care, if only indicators of volume are used. Regional rate of use of particular procedures should be monitored and contractual measures should be taken in case of regional abnormalities.<sup>32</sup> Guidelines for procedures with a highly variable regional rate of use (programmed caesarean delivery, appendectomy, tonsillectomy, cataract) are being developed by the National Authority for Health ('Haute Autorité de santé', HAS).<sup>36, 44</sup>

### 4.5.3 *Capita selecta*

#### 4.5.3.1 *Access to new technologies / Innovation management*

The classification system is revised regularly in order to take account of changes in medical practice or technology. Additional payments are made for a certain number of expensive innovative drugs and medical devices, for which a list is defined at the national level (see section 4.4.3).

The development of innovative technologies is funded by a specific budgetary allocation within the MIGAC global budget envelope. These payments cover the cost of innovation related activities, as well as specific innovative technologies on an experimental basis, as artificial hearts. Within this budget, there are specific separate payments to ensure quick access to innovative drugs which have not yet been authorized to be marketed. Decisions are made at the level of the individual patient.<sup>25</sup>

#### 4.5.3.2 *Quality of care*

Quality-related programmes, such as infection control programmes, are negotiated and financed through specific allocations from the regional agencies as part of the MIGAC budget envelope.

The Ministry of Health and the HAS have developed several indicators measuring care process and structure/organization quality, for example the proportion of patients receiving advice for smoking addiction, of the amount of hydro-alcoholic solution orders, used to assess the compliance with hygiene procedures. As for outcome indicators, only the rate of staphylococcus aureus infection is monitored. Surprisingly, outcome indicators such as standardized mortality rates, readmission and/or complication rates are not part of that battery of indicators and they are currently not monitored routinely.<sup>25, 32</sup>

These indicators are monitored for all hospitals and are published on a public website (<http://www.platines.sante.gouv.fr/>). Nevertheless, all of the abovementioned quality initiatives are not integrated in the hospital payment system.

Some GHM tariffs are modulated in order to provide incentives for public health objectives. For example, caesarean deliveries are under-priced in order to limit the caesarean rate. These tariff distortions cause several problems (see section 4.5.1). Furthermore, even the appropriate caesarean deliveries are under-priced.<sup>32</sup>

We found only one study<sup>37</sup> on the impact of the reform on quality of care. This study shows that mortality rates within 30 days after discharge for acute myocardial infarction, stroke and surgery for colon cancer have lowered from 2004 to 2009, but that this tendency existed already before the implementation of the reform. The impact of the reform cannot be disentangled from other measures taken as setting of minimal hospital volumes for cardiac surgery and cancer care.





## 5 GERMANY

### 5.1 Brief overview of the hospital sector

#### 5.1.1 Health care system

Germany is a federal republic composed of 16 states ('Länder'). Since 2009, every German is required by law to hold a health insurance. There are two types of health insurance systems, i.e. the Statutory Health Insurance system ('Gesetzliche Krankenversicherung', SHI) covering around 86% of the population and the private health insurance (PHI) system covering around 10% of the population. The remainder 4% fall under special provision (e.g. military, police, social welfare, assistance for immigrants seeking asylum). With the exception of permanent civil servants and the self-employed, Germans who earn below a certain amount of gross salary per month (€50 850 per year or €4 238 per month in 2012) are covered by the SHI system and must join one of the non-profit statutory health insurance funds (SHI funds, 'Krankenkasse'). Those above the mandatory insurance threshold may opt out of the SHI system and buy private insurance even if many of them decide to remain in the SHI system. Civil servants and self-employed in turn do not have access to the SHI system and must buy a private insurance.<sup>45-47</sup>

Under the SHI system, Germans are free to choose their SHI fund and SHI funds must accept any applicant. The main SHI fund in Germany is the general regional fund ('Allgemeine Ortskrankenkassen', AOK). SHI funds are mainly financed by contributions set as a uniform percentage of income, supplemented by tax funds. The premiums are deducted from pay packets with employers and employees paying about half each.<sup>46, 48</sup> Premiums for the private sector are risk-related.<sup>45</sup>

Planning, resource allocation, and financing for outpatient and inpatient services are completely separated.<sup>45</sup> Hospital funding in Germany is regulated by the Hospital Financing Act. Capital costs (investments in infrastructure and procurement of assets with an economic life of more than 3 years) are financed by the states budgets and operating costs (medical goods, personnel, maintenance, etc.) are financed by the SHI and PHI funds via the German Diagnosis Related Group (G-DRG) system (see also section 5.4.1). Decision on hospital investments are done through

negotiations between the state and the hospital, and are dependent of the budgetary situation of the state as well as of political considerations.<sup>45, 46</sup>

#### 5.1.2 Centralization / decentralization

The SHI system in Germany is characterized by a sharing of decision-making powers among the federal government, the individual states, and self-governing bodies (representative of payer and provider associations). The SHI framework and co-payment levels are set by federal law but most decisions on the contents of the uniform benefits package and the delivery of curative health services are made through joint negotiations both at the regional and national levels between the self-governing bodies, composed of representatives of providers associations (associations of physicians and/or dentists and/or the Hospital Federation) and payers associations (associations of SHI funds). Other organizations also contribute to the decision-making process, i.e. the association of PHI funds participates in the decision-making process for case-based payment in hospitals and patient organizations may participate in the decision process but have no voting rights. The Federal Joint Committee ('Gemeinsamer Bundesausschuss', G-BA) is the main decision-making body of the German self-governing SHI system. They determine which services are reimbursed via the SHI system but also specify measures for quality assurance both in the inpatient and outpatient sectors.<sup>46, 49</sup>

#### 5.1.3 Ownership and range of services

Public beds in Germany account for around 49% of all beds. Private non-profit and private for-profit beds account for around 35% and 16% of the remaining beds respectively.<sup>45</sup> Private for-profit hospitals play an important role in the health system.<sup>50</sup> The term 'private' refers to the fact that these hospitals are not owned by a public institution but all patients (SHI and private patients) have access to private hospitals.

While previously hospitals only provided inpatient care, they increasingly also provide outpatient care, regulated by the Committee for Ambulatory Care in the Hospital. Polyclinics (outpatient clinics or health care centres) and Medical Supply Centres ('Medizinisches Versorgungszentrum') also make their apparition.<sup>46</sup>



### 5.1.4 Hospital size

The number of acute care hospital beds per 100 000 inhabitants in Germany was estimated at 566 in 2010.<sup>51</sup> In 2011 around 34% of all hospitals had less than 100 beds and the percentage of hospitals having 500 beds or more was 12%.

## 5.2 Remuneration of medical specialists

### 5.2.1 In ambulatory care

Medical specialists must be accredited by SHI in order to be allowed to provide services reimbursed by SHI. All SHI medical specialists have to be members of the association of SHI medical specialists. The number of medical specialists who may practice in a given area is fixed by the staffing plan, which is drawn up by the association of SHI medical specialists. Other medical specialists may open a practice wherever they want but they are not paid for providing care to SHI patients. SHI patients have only access to SHI medical specialists (representing around 96% of medical specialists in ambulatory care) while PHI patients have access to both SHI and non-SHI medical specialists.

Previously, SHI medical specialists in ambulatory care were mainly paid through a per capita system while in the private system they were mainly paid via a fee-for-service (FFS) system. Since 2009, the payment of SHI medical specialists (also GPs) in ambulatory care is based on a capped FFS system. The payment follows a two-step process:

- Regional medical specialist associations receive a global payment from SHI funds for their insured patients in this region. This payment is based on the average utilization of services by these patients.
- Regional medical specialist associations pay their members using a capped FFS system based on a Uniform Value Scale ('Einheitlicher Bemessungsmaßstab', EBM). This scale lists all reimbursed services and their relative weights (in points). The number of points for each service was determined based on assumptions about the time needed to perform each service, and includes a component for medical specialist time and time of equipment and infrastructure. The ceiling on the number of billable services per medical specialist is set quarterly depending of the specialization, the number of cases treated

during the same quarter of the previous year and the age of the patients. Services provided within this ceiling are reimbursed by converting the points using a uniform nation-wide conversion rate per point (determined by annual negotiation between the federal association of SHI Funds and the federal association of SHI medical specialists). The value negotiated for 2013 is 3.5363 cents per point. For services provided beyond this ceiling, reimbursement is done at much lower rates.

This system is called the case-volume- and age-based payment ceiling (CVAPC). The medical specialist remuneration is not only based on this CVAPC system. This system accounts for between 30% and 70% of total remuneration, depending of the specialization and the kind of patients (SHI or private). Some exemptions from the ceiling are possible:

- Special ceilings are determined for groups of services requiring special training and/or equipment (e.g. psychosomatic medicine) and services that could be underprovided via the capped FFS system but overprovided by the uncapped FFS (e.g. home visits).
- Uncapped FFS are paid for services that should be provided more often (e.g. screening/early detection and immunizations). These uncapped fees are not funded via the global payment/budget but via extra payments from health insurance funds.

Payments for patients in the private system are higher (determined by the catalogue for private tariffs) and without quantitative restrictions. The catalogue for private tariffs determines for each service a tariff number and a number of points as well as a single charge rate and the maximum charge rate (usually 2-3 fold the single rate).

Moreover, for SHI patients, medical specialists can also provide non-reimbursed care according to the prices of the catalogue for private tariffs with the agreement of the patient and patients pay these services out-of-pocket.





It has been shown that SHI medical specialists on average receive a higher remuneration with this new system compared to the old system. The major aims of this reform are to guarantee fixed prices for services (before it was a system of floating point values where the monetary value of each point decreased if the number of services delivered increased), to harmonize the level of remuneration for SHI medical specialists across the regions, to introduce incentives for reducing the number of unnecessary services and for increasing the number of under-demanded necessary services (via exemptions), and more globally, to reduce regional differences in the provision of care.<sup>52</sup>

### 5.2.2 In hospitals

Medical specialists working in hospitals are paid salaries. Public and non-profit hospitals usually pay public wages, while for-profit hospitals may pay lower or higher wages or additional payments.<sup>49, 53</sup>

In hospitals, patients opting for a private medical treatment are charged for these services according to the catalogue for private tariffs (used for both outpatient and inpatient 'private' care). To provide these private medical treatments, the medical specialist must have the agreement of the hospital and must sign a contract with the patient. Then, medical specialists usually have to give up approximately 40% of their private fees to compensate the hospital for the use of facilities.<sup>3</sup>

## 5.3 Introduction of the DRG system

### 5.3.1 Previous system

Before the introduction of the G-DRG system in 2003-2004, operating costs of hospitals were financed via a system of prospective budgets with per diem charges determined by the agreed number of patient days.<sup>45</sup> Budgets were negotiated between health insurance funds (SHI and PHI) and the hospital. Moreover, for a limited list of inpatient treatments, prospective lump-sum payments per case and procedure fees negotiated yearly at the state level were introduced in 1996. Hence, the total hospital budget for operating costs before the introduction of the G-DRG system consisted of case fees, procedure fees and per diem charges.<sup>30</sup>

The actual activity of hospitals could differ from the target activity fixed by the budget negotiation. If the actual activity of the hospital was higher than the target activity, the hospital had to pay back a part of the received reimbursement, i.e. 75% for case and procedure fees and 85-90% for per diem charges. If the actual activity was lower than the target activities, hospitals received 40% of the difference.<sup>30</sup>

### 5.3.2 Problems with the previous system and objectives of the DRG system

The previous system gave clear incentives to increase bed occupancy by prolonging the length of stays. Nevertheless, the initial objective of the G-DRG system was not to incentivize or disincentivize hospital activity but rather to achieve a more appropriate and fair allocation of resources. The related objectives were to improve transparency by an accurate and transparent measurement of the case-mix and the delivered services; and to improve efficiency in the utilization of resources and quality of services due to the increased managerial capacity and the improved documentation of internal process.<sup>1, 45</sup> Competition among hospitals was also expected to be increased and excess capacity was expected to be reduced.<sup>3, 54</sup>



### 5.3.3 Stakeholder views on the introduction of the DRG system

The process of G-DRG introduction was in general positively assessed by the different stakeholders, even if some hospitals (especially small hospitals) considered that their participation in the introduction process and in the advancement of the system would be too complex. Due to the system complexity, some of the stakeholders also criticized the lack of manageability and suitability for daily use and the differences in the system interpretation between the health insurance funds and the hospitals. Moreover, at the beginning of the system (2004-2006), medical specialists and the nursing staff perceived the G-DRG system as having a negative impact on their motivation, job satisfaction and general working conditions. They also contested the increased economic focus in the clinical decision making. The negative perceptions have nevertheless decreased over the years and most stakeholders are now perceiving the system positively.<sup>55-57</sup>

### 5.3.4 Implementation issues

#### 5.3.4.1 Implementation period

The principles and features of the G-DRG system were defined in the Statutory Health Insurance Reform Act of 2000. Self-governing bodies at the federal level (the federal association of SHI funds, the association of private health insurance, and the German Hospital Federation) were then asked to implement the system. The implementation of the system can be divided in four stages (see also Table 6):

1. 2000-2002, the preparation phase. The Australian Refined Diagnosis Related Groups (AR-DRG) system was adapted to the German context and a cost-accounting system to calculate cost weights was developed. During this phase, the German Institute of Medical Documentation and Information ('Deutsches Institut für Medizinische Dokumentation und Information', DIMDI) converted the WHO's International Classification of Procedures in Medicine (ICPM) into the German Operations and Procedures Codification Index ('Operationen- und Prozedurenschlüssel', OPS) and the ICD-10-WHO diagnosis codes into the ICD-10-German Modification (ICD-10-GM). The

Institute for the Hospital Remuneration System ('Institut für das Entgeltsystem im Krankenhaus', InEK) developed a cost-accounting system and the grouping algorithm (firstly based on the Australian grouper), and calculated cost weights from a sample of voluntarily participating hospitals (around 100 in 2002). The first version of the G-DRG system had 664 DRGs.

2. 2003-2004, the budget neutral phase. In 2003 on a voluntary basis and in 2004 on a mandatory basis, the inpatient payment system was based on DRGs with a neutral budget. Hospitals received the budgets as negotiated previously but the reimbursement unit was based on the hospital case-mix instead of on the agreed number of patient-days (hospital-specific base rate = historical negotiated budget / case-mix index; see also section 5.3.4.4 for the case-mix index).
3. 2005-2009, the phase of convergence. The hospital-specific base rate was progressively converted into a state-wide base rate. The state-wide base rates are based on the average reimbursement amount of all DRGs in the state. In 2005, the individual base rates were calculated as a ratio between state-wide base rates (15%) and individual hospital base rates (85%). The ratio shifted to 35:65 in 2006, to 55:45 in 2007, and to 75:25 in 2008. Since 2009, the state-wide base rate is used (100:0). During this convergence phase, budget reductions were limited to minimize the risk of unjustifiable reductions that could be due to an underdeveloped DRG Case Fees Catalogue. The absolute value by which the individual budgets of affected hospitals could be reduced in 2005 was limited to 1% of the modified initial value from 2004. The limit was then increased to 1.5% in 2006, 2% in 2007, 2.5% in 2008 and 3% in 2009. There was no provision for an upper limit on budget increase.
4. From 2010 onwards, the state-wide base rates are progressively converging to a nation-wide base rate calculated by the InEK (target corridor of 2.5% above and 1.25% below this nation-wide base rate). It is foreseen to fully apply this nation-wide base rate target corridor in 2015. It is also foreseen to allow states to include investment costs in this DRG system.<sup>3, 45, 58</sup>

**Table 6 – Progress of DRG introduction between 2003 and 2009**

Year	Number of DRGs	Equalized to state-wide base rate, based on initial values for 2004	Equalized to state-wide base rate, based on previous year	Weight of negotiated budget	Limit on budget reduction, based on previous year
<b>2003</b>	664	-	-	-	-
<b>2004</b>	824	0%	0%	100%	-
<b>2005</b>	878	15%	15%	85%	1%
<b>2006</b>	954	+20% = 35%	23.5%	65%	1.5%
<b>2007</b>	1 082	+20% = 55%	30.8%	45%	2%
<b>2008</b>	1 137	+20% = 75%	44.1%	25%	2.5%
<b>2009</b>	1 192	+25% = 100%	100%	0%	3%

Source: Adapted from Table 3 in Schreyögg<sup>46, 59-64</sup>

#### 5.3.4.2 Medical data

The system was firstly based on the Australian Refined Diagnosis-Related Groups system (AR-DRG, version 4.1) and then evolved to the G-DRG system. Diagnoses are coded using the ICD-10-GM and procedures are coded using the OPS (see also section 5.3.4.1). While originally OPS were only used for surgical interventions, since 2004 OPS are used to code both surgical and medical procedures. Since 2005, OPS are also used for surgical interventions performed in the ambulatory sector.

The grouping algorithm to assign a case to a DRG is done according to 'major diagnosis and other diagnoses, medical procedures, patients characteristics (age, gender and weight of newborns), length of stay, duration of ventilation, reason for hospital discharge and type of admission (for example, emergency, referral from GP or transfer from other hospital)'.<sup>1, 45</sup> All cases are assigned to a single DRG. Compared to other countries, this system gives a great importance to the procedure used.<sup>49</sup> Stages for the DRG assignment are the following:<sup>45</sup>

- Major Diagnostic Categories (MDC) classification

- Some procedure codes related to high resource consumptions (such as transplantations and long-term ventilation) may directly determine the DRG, i.e. the so-called pre-MDCs. DRGs related to pre-MDCs start with the letter A.
- All other cases are classified in one of the 25 MDCs according to the major diagnosis. MDCs refer to a body system or disease aetiology, and are associated with a specialist field of medicine. There are 23 categories but two of them (18 and 21) are divided in two subcategories. DRGs classified in one of these 25 MDC start with a letter between B and Z (e.g. B = Nervous system).
- Cases that cannot be classified are assigned to the Error DRGs, starting with the digit 9.
- The base-DRG is then assigned by taking into account the procedures performed: surgical procedures (digit 01-39), other procedures (i.e. no surgical procedure but another significant procedure relevant for the respective MDC, digit 40-59), and medical DRGs (no (relevant) procedure for the respective MDC, digit 60-99).



- A subdivision is then done on the basis of the following data: co-morbidities, procedures and patient characteristics. Co-diagnoses as well as patients' characteristics are taken into account. If a base-DRG is not split, the fourth letter in the DRG abbreviation is a Z, cases with the highest level of resource intensity are represented with the letter A and cases with the lowest level of resource intensity are represented by the letter I.

#### 5.3.4.3 Cost data

##### Data collection

The following data are mandatory collected in German hospitals:

- Hospital-related structural data: type of hospital, ownership, number of beds, number of trainees, labour and total costs;
- Case-related claims data: diagnoses, procedures, reason for admission, date of admission, surgery and discharge, and patient characteristics (age, gender).

The following data are collected on a voluntary basis from a sample of German hospitals (around 15% of hospitals in 2013):

- Patient-level cost data according to a standardized cost-accounting system developed by the InEK with predefined quality standards (Calculation Handbook, 'Kalkulationshandbuch').

All data are collected on an annual basis (data for a specific year must be sent by 31 March of the following year).<sup>45</sup>

##### Costing method

Costs per case are calculated according to a full cost method using actual costs, i.e. all DRG-related costs have to be taken into consideration. The actual costs are derived from the hospitals' audited annual accounts. The reference period is a completed calendar year. If possible, a step-down calculation should be used but a mixed method of calculation (step-down, gross-costing) or even only a gross-costing calculation is allowed when necessary.

There are two steps of calculation, i.e. (1) cost measurement, determining which services and costs are DRG-related; and (2) cost allocation, permitting to calculate the case-related treatment costs. Cost allocation

can be further subdivided into three steps: cost element, cost centre, and cost unit accounting.

The process of calculating costs per case is based on a modular approach. Each set of case-related data in the calculation results are arranged according to cost-element groups and cost-centre groups, permitting to pinpoint the costs per patient or per patient group (DRGs) in a concise manner. There are eight cost element groups (labour costs/clinical staff; labour costs/nursing staff; labour costs/administrative & technical staff; drug costs; costs of implants and grafts; material costs (without drugs, implants, grafts); medical infrastructure costs; non-medical infrastructure costs). The aggregation of cost elements across cost element groups aimed among others to reduce the computational costs related to a cost unit accounting for hospitals and to facilitate the calculation of relative weights by the InEK. Direct cost centres in each set of case-related data are aggregated across 12 cost centre groups to ensure the comparability of the data sets from different hospitals (standard care unit; intensive care unit; dialysis unit; operating room; anaesthesia; maternity room; cardiac diagnostics & therapy; endoscopic diagnostics & therapy; radiology; laboratories; other diagnostics & therapeutic areas; central cost centre).<sup>3, 54</sup> More details on the costing method can be found in the supplement of KCE Report 121.<sup>3</sup>

##### Financing of data collection

Hospitals that participate on a voluntary basis to the patient-level cost data collection receive a lump sum and a variable amount according to the number of cases delivered and the quality of the data (for a total amount of €11.5 million in 2013). This financing as well as the financing of the InEK is realized through an additional charge per DRG case, the so-called 'DRG-Systemzuschlag'. In 2013, this charge amounted to €1.10 per case, with €0.13 for the financing of the InEK and €0.97 for the financing of hospitals participating to the patient level cost data collection.<sup>45, 60</sup>



### Validation of cost datasets

After a first validation of the cost datasets by the data centre (check for formal and technical errors), the InEK validates the data content (check of the economic and medical plausibility). The economic check is performed by analyzing the minimum and maximum costs per module (e.g. costs of the clinical staff per day) and the ratios between modules (e.g. costs of 'anaesthesia' < cost of 'operating room'). The medical check assesses the adherence to the G-DRG classification codes (ICD-10-GM and OPS). Finally, the coherence between the economic and medical information is checked.<sup>45</sup>

#### 5.3.4.4 Calculation of reference costs and prices

Hospital financing can be determined according to the following stages:

1. Cost weight determination: Each DRG has a fixed cost weight. The relative cost weight for each DRG is determined on a national level based on the cost data collected in a sample of voluntary German hospitals (see also section 5.3.4.3 on cost data). It is calculated by dividing the arithmetic mean of costs of inliers cases (i.e. between the low and high trim points, see below) belonging to the DRG by the so-called reference value, which is more or less the average costs of all hospital inpatient cases in Germany.
2. Determination of the hospital-specific case-mix index: The hospital-specific case-mix index is determined by the sum of all relative cost weights divided by the hospital's total number of cases for a specified time period.
3. Determination of the hospital reimbursement: The hospital reimbursement is established by multiplying its case-mix index by the state-wide base rate ('Landesbasisfallwerte') and by the number of cases. The state-wide base rate is negotiated in every state by the self-governing bodies. In 2012, the negotiated state-wide base ranged from €2 910 to €3 175.75, with an average of €2 990. The 2009 Hospital Financing Reform Act further modifies hospital financing in Germany and state-wide base rates are programmed to converge to a nation-wide base rate by the year 2015.<sup>49, 59, 65</sup>
4. Insurance for DRG outlier payments: Outliers are defined in terms of length of stay (LOS). The lower trim point is equal to one-third of the

mean value of the length of stay, or a minimum of two days. The upper trim is equal to the minimum between (i) the sum of the mean length of stay and two standard deviations from the mean; or (ii) the sum of the mean length of stay and a pre-selected maximum value determined in such a way that the surcharges for long-stay outliers equal approximately 5–6% of the total amount to be reimbursed via DRGs. Per diem deduction are then calculated for short-stay outliers and per diem surcharges for long-stay outliers.<sup>54</sup>

5. Some DRGs are excluded from the DRG national cost weights if their sample size is insufficient for calculation or if their cost variance is too large. The fees for these DRGs will be individually negotiated with each hospital (see section 5.4.3 on additional payments).<sup>3, 54</sup>

## 5.4 Current system

### 5.4.1 Range of costs included

Capital costs of hospitals (hospital buildings, beds and medical equipment with an economic life of more than 3 years) are financed by the states budgets and operating costs of hospitals (medical treatment, nursing care, the provision of pharmaceuticals, cures, and therapeutic appliances, as well as board and accommodation) are financed through the G-DRG system by the SHI and PHI funds. It should be noted that medical specialist remuneration is included in the G-DRG system.<sup>45</sup> Costs not covered by the G-DRG system of payment are:

- Core business expenses not related to general inpatient services (e.g. costs of scientific research/teaching, costs of psychiatric services, and costs of outpatient services such as emergency care);
- Extraordinary expenses and expensive drugs (see also the section 5.4.3 on additional payments);
- Capital costs (the inclusion of capital costs in the G-DRG system is nevertheless currently under discussion) and interest;
- Allowance for debts, taxes, charges, insurance for operational sections of the hospital that do not provide general inpatient services, as well as tax on profits.<sup>45, 66</sup>





### 5.4.2 Range of services included

The G-DRG system is applicable to all acute inpatient and day-care services for all patients (SHI, PHI, self-funding patients) and all hospitals (public, non-profit and private for-profit), with the exception of psychiatry, psychosomatic medicine, or psychotherapy services (financed by a prospective payment system based on per diem payments, see section 5.4.6.1).<sup>46, 49</sup> In-hospital pre-care within 5 days ('vorstationär') and after-care within 14 days ('nachstationär') services associated with an inpatient stay are included in the calculation.<sup>58</sup>

Early rehabilitation in acute care hospitals is included in the G-DRG system but not rehabilitation in specific rehabilitation hospitals. Ambulatory care, including emergency care, is usually provided by the regional physician associations but hospitals increasingly provide ambulatory care for outpatients requiring highly specialized care on a regular basis. These outpatients services provided by hospitals are not covered by the G-DRG system.<sup>45, 46</sup>

### 5.4.3 Additional payment

Figure 6 gives a detailed overview of the different remuneration components of inpatient care in Germany. Operating costs in hospitals are mainly funded through the G-DRG system of payment. Additional remuneration can be obtained, i.e. supplementary fees and surcharges as well as specific budgets/grants:

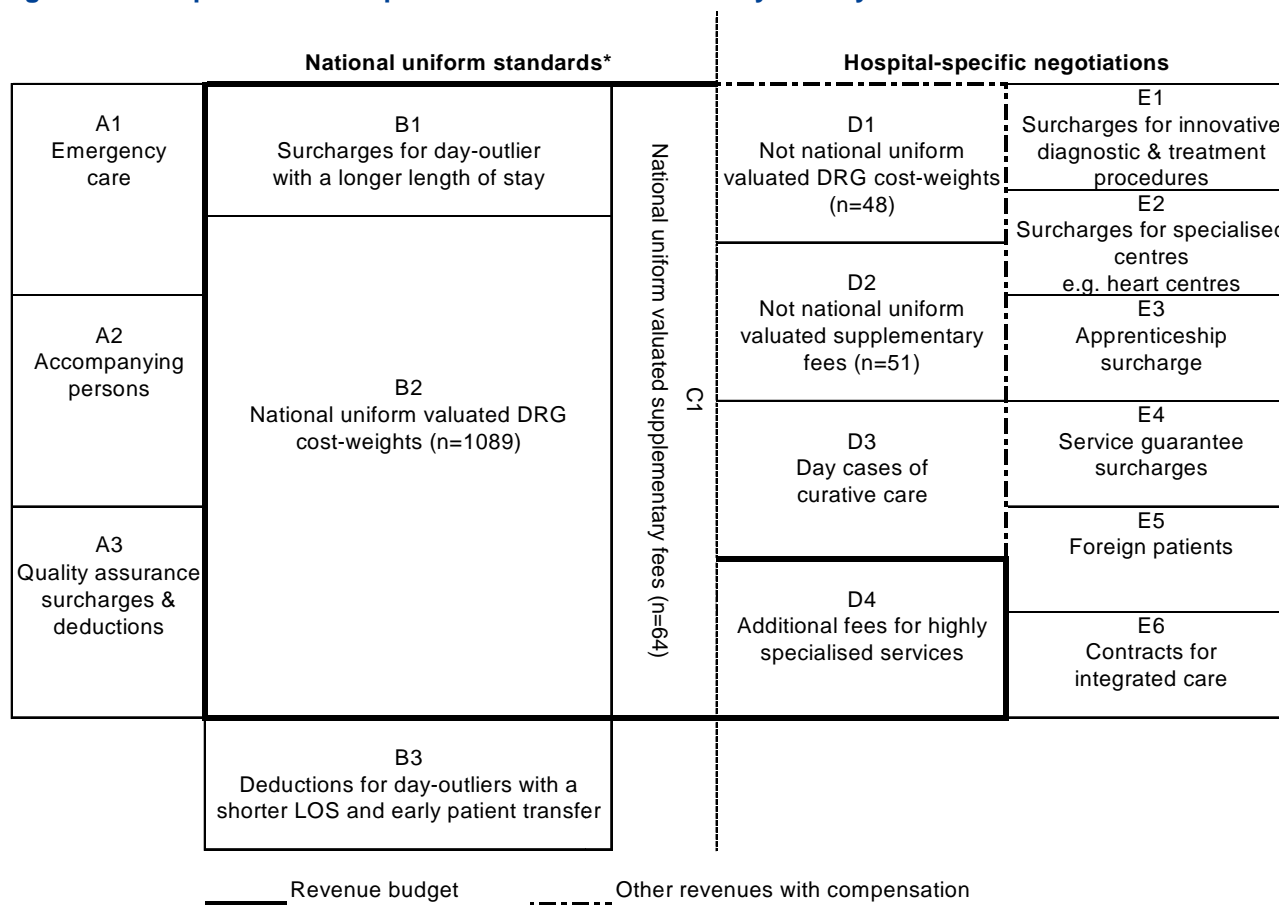
- Surcharges for innovative diagnostic and treatment procedures ('Neue Untersuchungs- und Behandlungs-methoden', NUB) (E1): The InEK has created this 'on-top' funding process for innovative diagnostic and treatment procedures. Every hospital can apply at InEK separately for this on-top payment for technologies that have just been introduced in Germany. The amount of the on-top payment is directly negotiated

between the successful hospital applicants and the SHI funds. The amount may differ between hospitals.<sup>59</sup>

- Supplementary fees for expensive drugs, medical devices and procedures (C1 and D2): For expensive drugs, medical devices and procedures, supplementary fees ('Zusatzentgelte', ZE) on top of the G-DRG flat rate are provided. The supplemental reimbursements are generally listed in the Case Fees Catalogue ('Fallpauschalen-Katalog') of the running year and are generally available to every hospital.<sup>59</sup>
- Additional payment for certain day cases of curative care, i.e. for geriatric care and renal insufficiency (D3).
- Additional supplementary fees for highly specialized services (D4): They are negotiated between health insurers and hospitals on an individual basis if it can be proved that the service in question is not appropriately reimbursed through DRGs or resolved using the supplementary fees sections of the Case Fees Catalogue.<sup>54</sup>
- Surcharges for specialised centres ('Zentren und Schwerpunkte') (E2): They are negotiated between health insurers and hospitals on an individual basis if it can be proved that their cost structure deviates from normal structures, e.g. heart centres, cancer centres, geriatric centres.<sup>3, 54</sup>
- Grants/budgets: For sectors and services for which it is difficult to assign costs and/or that involve costs not sufficiently captured through DRGs, grants/budgets not attached to specific G-DRG are used. These activities concern teaching activities (E3), emergency services (A1), accommodation costs of accompanying persons (A2), securing the necessary provision of services or excessively limited demands for care (E4), care for foreign patients (E5), activities related to quality improvement (A3), or integrated care contracts (E6).<sup>3, 54</sup>



Figure 6 – Components of hospital remuneration in Germany in the year 2008



Source: Geissler et al., 2011<sup>45</sup>; \* Exception: classification as a special facility; DRG = Diagnosis Related Group; LOS = Length of stay



#### 5.4.4 *Proportion of hospital expenditures covered by the DRG-based payment*

Schreyögg et al. calculated that all reimbursement components besides the G-DRG system accounted for approximately 20% of the total reimbursement for non-psychiatric inpatient care in the year 2005.<sup>54</sup> This implies that around 80% of hospital revenue is based on the G-DRG system.

#### 5.4.5 *System updates*

The G-DRG system is maintained and updated annually by the InEK with a time lag in data availability of 2 years.<sup>59, 64</sup>

The diagnostic (ICD-10-GM) and procedural codes (OPS) employed by G-DRG are maintained and updated annually by the DIMDI, with a time lag in data availability of 2 years.<sup>59, 64</sup>

#### 5.4.6 *Future reforms*

Since the beginning of the G-DRG introduction, the grouping algorithm has been refined. The use of procedures to define the DRGs and their weights has been increased to better take into account complex treatments and repetitive surgical procedures.

Concerning the future reforms, a prospective payment system for psychiatric and psychosomatic services is in progress and the inclusion of capital costs in the G-DRG system is under discussion.

##### 5.4.6.1 *Introduction of a prospective payment system for psychiatric and psychosomatic facilities*

The old system for psychiatric and psychosomatic care, i.e. prospective budgets with per diems charges, was perceived as a system providing insufficient reimbursement and as not reflecting new scientific developments in the treatment of psychiatric patients. The new prospective payment system for psychiatric and psychosomatic facilities will be based on per diem payments adjusted for patient characteristics, patient length of stay and treatment intensity (procedures). This system will mirror the G-DRG system for acute inpatient services: patients will be classified in medically disparate groups and reimbursement will be done according to a cost weight approach (in this case, a per diem base rate multiplied with

calculated cost weights). The base rate will be the sum of psychiatric care costs divided by the sum of psychiatric inpatient care days. Patients are currently classified by the Psych-PV classification system and a new classification system will be developed by the InEK based on data collected in 2010.<sup>67</sup>

The classic G-DRG system was not used because for patients with psychiatric/mental disorder, the length of stays and treatment modalities vary highly even between patients with the same diagnosis.<sup>67</sup>

As with the G-DRG system, the prospective payment system for psychiatric and psychosomatic facilities is expected to:

- Improve transparency by an accurate and transparent measurement of the case-mix and the delivered services;
- Improve efficiency and quality of services by the introduction of performance incentives, the facilitation of performance comparison between facilities, the increased managerial capacity and the improved documentation of internal process.<sup>67</sup>

Self-governing bodies are relatively supportive of this system because they participate in its development and influence its design. Moreover, an increase of payments for psychiatric facilities is expected. Professional medical associations nevertheless fear an increase of administrative tasks (coding and documentation), and of economic pressures and an interference in clinical decision-making by hospital managers. The patients association 'Aktion Psychisch Kranke e.V.' is also rather critical.<sup>67</sup>

The development and the introduction of the system are done by the self-governing bodies for the inpatient hospital care sector, i.e. the federal association of SHI funds, the association of PHI funds, and the German Hospital Federation. InEK is responsible for the identification of medically meaningful and cost homogenous groups of patients.<sup>67</sup>

The (planned) implementation process can be divided in four stages: (i) 2010: data collection; (ii) 2011: patient classification in homogenous groups by the InEK; (iii) 2012: presentation of a preliminary version; (iv) 2014-2015 introduction of the system. The system will then be updated annually to reflect changes in medical knowledge, increased costs or infrastructure changes. An evaluation by the self-governing bodies is foreseen.<sup>67</sup>





As with the G-DRG system, additional payments are also foreseen (negotiation for services not covered by the prospective payment system). They will also look for possible alternative reimbursement for care in which integration of services between different sectors needs to be promoted.<sup>67</sup>

## 5.5 Evaluation of the hospital payment system

Three official evaluations of the impact of the G-DRG system were ordered by the InEK and performed by the Institute für Gesundheits- und Sozialforschung (IGES) for the years 2004-2006, 2006-2008, and 2008-2010. These official evaluations are the principal source of information used in sections 5.5.1 and 5.5.2.<sup>55-57</sup>

### 5.5.1 Fulfilment of reform objectives

#### 5.5.1.1 Transparency

Most stakeholders believe that the G-DRG system has increased the transparency of inpatient care and data on quality, costs, medical service provision are publicly available. The continuous refinements of the system and budget negotiations are also considered as more transparent. However, some stakeholders consider that the increasing number of DRGs increases the complexity of the system.<sup>45, 55-57</sup>

#### 5.5.1.2 Fair allocation of resources between hospitals

Because of the increased transparency of budget and remuneration negotiations, stakeholders consider that equity in reimbursement was increased.<sup>55-57</sup> Nevertheless, during the calculations, the InEK makes the assumption that hospital input prices do not differ and that hospitals are working under the same conditions (e.g. no adjustment for input price variations between areas). Hospitals with higher costs due to structural differences may therefore not be adequately reimbursed. Moreover, cost weight calculations are not made on a nation-wide scale but only on a sample of hospitals representing around 20% of all inpatient cases. The more the sample is small, the more the representativeness of the sample may be weak, which increases the risk of unfair reimbursement.<sup>45, 68</sup>

#### 5.5.1.3 Costs reduction

The increase of total hospital costs between 2003 and 2010 was only slightly lower than between 1991 and 2003 (compound annual growth rate of 3.4% between 1991 and 2003 and 3.1% between 2003 and 2010). For the adjusted average cost per inpatient case the opposite holds (compound annual growth rate of 2.0% between 1991 and 2003 and 2.5% between 2003 and 2010).

No evaluation of the efficiency of the system was found.

#### 5.5.1.4 Quality of care

Post-discharge mortality up to 365 days was analyzed to assess the quality of care after the introduction of the G-DRG system and a significant reduction was shown between 2004 and 2010. However, a comparison with post-discharge mortality before the implementation of the system was not possible (no data). According to the quality indicators measured through their quality assurance programme, the quality of care was stable or even slightly improved between 2004 and 2010 but again a comparison with data before the implementation of the G-DRG system was not possible.

Due to legal requirements on quality assurance, the number of structures and tools related to quality management has increased. The assessment of the system has also shown an increase in the number of clinical pathways (no legal requirement).

It was also expected that quality information provided by hospitals would be used by patients in their choice of health care providers. However, a study has shown that the use of quality information by patients was very limited.<sup>69, 70</sup>



## 5.5.2 *Unintended consequences*

### 5.5.2.1 *Up-coding*

To avoid up-coding, the regional medical review boards of the SHI funds regularly check the coding quality of the mandatory collected data for a random sample of hospitals. If unintended up-coding is found, hospitals must reimburse health insurance funds for the revenues they gained through up-coding. Moreover, if it can be demonstrated that the up-coding was intended to increase profits, hospitals must additionally pay a penalty. In 2009, 12% of all inpatient cases were audited, with an average claw-back of around €800 per audited case.<sup>45, 71</sup>

### 5.5.2.2 *Inappropriate early discharge*

A study on 30 German hospitals did not show inappropriate early discharge.<sup>1</sup> Concerning the length of stays, a homogenous decrease could be observed between 2004 and 2010 (compound annual reduction rate of 2.15%)<sup>55-57</sup> but a similar trend was already observed before the introduction of the G-DRG system (compound annual reduction rate of 2.77% between 1996 and 2002, own calculation from the European Health for All Database (HFA-DB)).

To reduce inappropriate early discharge, every readmission for the same reason within 30 days after discharge is reimbursed by only one DRG (i.e. the two cases are merged and reimbursed by one DRG which may be different than the one assigned during the first stay).<sup>45, 71</sup>

### 5.5.2.3 *Patient selection*

A study on 30 German hospitals did not detect cream-skimming.<sup>45, 72</sup> The insurance status of patients (PHI versus SHI patients) is a potential cause of patient selection because the expected remuneration of hospitals is higher for PHI patients. Indeed, PHI patients have some benefits not available in the basic SHI system (private rooms, access to more costly or more innovative treatments according to the catalogue for private tariffs). Moreover, because PHI patients tend to have higher incomes, they are expected to be less at risk of generating non-remunerated costs for the hospital (expected better health status, faster recovery and shorter length of stay). As a consequence, waiting times were higher for SHI patients than for PHI patients (based on 2007 data).<sup>73</sup> However, it was not possible

to determine if the additional days for SHI patients (higher estimate of three additional days) had an impact on health outcomes and a comparison with the waiting times differences between SHI and PHI patients before the implementation of the G-DRG system, was not done.

In terms of hospital activity, it should also be noted that to improve hospital income, a change of the hospital activity profile was observed (see also section 5.5.2.7) and that the range of cases treated (case-mix) increased between 2004 and 2010.<sup>55-57</sup>

To avoid cream-skimming, the Case Fees Catalogue is updated annually and cost-weights as well as trim-points are recalculated for the reimbursement of outliers. The fact that the expected DRG-based revenue for specific treatments is difficult to foresee in the long term reduces incentives for hospitals to adjust their capacities accordingly.<sup>45</sup>

### 5.5.2.4 *Inappropriate cost reduction*

Hospitals with a cost level higher than the average may be incentivized to cut in expenditure, which could adversely affect quality. Reimbursements with the current G-DRG system are not adjusted for quality except via specific contracts negotiated with the health insurance funds (see section 5.5.3.2). Mandatory measures of quality assurance have nevertheless been introduced (e.g. public reporting) and the evaluation of the system has shown that the introduction of the G-DRG system has not had a negative impact on the quality of care (see also 5.5.1.4).

### 5.5.2.5 *Shift of services*

Shifts not specifically linked to the G-DRG system were observed within hospital services (see also section 5.5.2.7) but not much toward rehabilitation services or toward home care. Moreover, the number of physician-patient contacts was compared between patients without an inpatient stay and patients with an inpatient stay for the years 2005-2007 and a similar increase was observed for both groups. So, a shift from inpatient services to SHI physician care did not seem to have occurred.<sup>55-57</sup>

On the other hand, an increase in outpatient day surgery in hospitals was observed, with a stronger increase during the implementation phase of the system than the years after. The number of pre-inpatient treatment without subsequent inpatient stays and the number of cases in emergency units of hospitals also increased. According to the IGES, the link between these



increases and the introduction of the G-DRG system is nevertheless uncertain.<sup>55-57</sup>

#### 5.5.2.6 Increase of activity

No significant increase in the number of cases was found during the introduction phase of the G-DRG system (2004-2006) but a sharp increase was observed the years after (compound annual growth rate of 2.1% between 2006 and 2008 and of 1.5% between 2008 and 2010). According to the IGES, similar increases were already observed before the introduction of the DRG system (e.g. in the second half of the 90ies).

To avoid an increase in the number of inpatient cases, Germany has introduced a global expenditure control measure, i.e. DRGs are used to negotiate budgets that limit hospital revenues from DRG-based case payments. If hospitals provide more DRGs than negotiated, they have to pay back a percentage of the difference with the negotiated level.

#### 5.5.2.7 Concentration on selected activities and changes in hospital structure

In terms of capacities, the number of hospitals and the number of hospital beds per 100 000 inhabitants followed a long-term decreasing trend that had already begun before the introduction of the G-DRG system. This trend was nevertheless weaker in the years after the implementation of the system (the compound annual reduction rate in the number of beds was of -1.7% between 1991 and 2003; -2.3% between 2003 and 2006; -0.8% between 2006 and 2008; and -0.1% between 2008 and 2010). The number of departments in gynaecology and obstetrics, internal medicine, ophthalmology, surgery and Ear, Nose and Throat decreased while it increased in neurosurgery, neurology, cardiac surgery, plastic surgery, and paediatric surgery. According to the IGES, these changes could nevertheless not exclusively be attributed to the introduction of the G-DRG system (multiple confounding variables).

In addition, the following changes were observed: an increase in the cooperative relationship with other hospitals; organizational and operational changes of the structure, such as the set up or development of medical centres, outpatient surgery, intermediate care units and sub-specialization; an increase in investment in large medical devices, with a more important part used in cooperation with physicians in private practice

and ambulatory medical centres; an increase in the use of IT and of controlling instruments; and the development of functions related to the G-DRG system, i.e. medical cost controller, specialists in medical coding and in discharge management.

According to the IGES, however, the impact of the G-DRG system on the specialization or diversification of inpatient activities is not clear. Moreover, even if the proportion of revenues from outpatient surgery slightly increased between 2004 and 2010, no significant change in hospital revenue structure was observed.

#### 5.5.3 Capita selecta

##### 5.5.3.1 Access to new technologies / Innovation management

The G-BA, the main decision-making body of the German self-governing SHI system, is charged to define the health benefit basket of the SHI scheme. For the inpatient sector, any technology that has not been excluded by the G-BA can be used (negative list). However, because of the time lag for DRG updates, a financing gap may occur. If technological innovations increase the cost per admission, hospitals are not incentivized to adopt the innovation before the update of the DRG-based payment system. To tackle this problem, Germany has developed a specific mechanism to incentivize the adoption of technological innovation, i.e. the process for new diagnostic and treatment methods ('Neue Untersuchungs- und Behandlungsmethoden', NUB). The InEK has created this 'on-top' funding process for innovative diagnostic and treatment procedures. Every hospital must apply every year at InEK separately for this 'on-top' payment for technologies that have just been introduced in Germany. The agreement is based on the following criteria: the benefits to patients, the groups of patients who will be treated using this technology, the associated additional labour and material costs and the reason why the cost of the new technology is not adequately covered by the G-DRG system. Successful hospital applicants can then negotiate the amount of the on-top payment with the SHI funds via contracts. The amount may differ between hospitals.<sup>59</sup>



Data are then collected and analyzed by the InEK to integrate the technology the next year either within the DRG classification or within the list of supplementary fees payment for expensive drugs, medical devices and procedures. If the use of a technology does not yet justify creating a specific DRG or a national valuated supplementary fees payment, the technology will be included in the category of local valuated supplementary fees payment, i.e. negotiation between health insurers and hospitals on an individual basis. It should be noted that in this case, all hospitals may start negotiations while with the NUB reimbursement, only hospitals having applied to the InEK are allowed to start negotiations.<sup>45</sup> Hospitals have the possibility to send another NUB-application for the next year if the data collected do not allow integration in a new specific DRG or in the list of supplementary fees payment.<sup>3</sup>

It has nevertheless been shown that even if the number of NUB payments has increased over the years, the number of hospitals receiving NUB payments remains limited and for hospitals receiving such a payment, it only accounts for 0.3 percent of the total hospital revenue.<sup>45</sup>

#### 5.5.3.2 *Quality of care*

This section only concerns quality measures linked to payment mechanisms. Other quality assurance measures such as public reporting or minimum volume thresholds are not described. Reimbursements with the current G-DRG system are not adjusted for quality in Germany except via specific contracts negotiated with the health insurance funds, i.e. they have the possibility to negotiate contracts with hospitals to improve the quality of care by increasing or decreasing payments if quality standards are met or not met.<sup>72</sup>

#### 5.5.3.3 *Integrated care*

Germany is characterized by an important fragmentation across the health care sectors. Planning, resource allocation and financing for outpatient and inpatient services are completely separated. Nevertheless, the Statutory Health Insurance Modernization Act (2004) aimed to promote integrated care models by allowing SHI funds to spend 1% of their overall expenditure on integrated care programmes via contracts with providers from different sectors. However, most of these integrated care programmes are disease specific (e.g. for knee surgery) and usually only

integrated rehabilitation and inpatient care sectors. A first initiative of integrated care programme centred on the patient, for the whole population and for all health care sectors has nevertheless been developed, i.e. the 'Gesundes Kinzigtal Integrated Care' model. This model has the following characteristics:

- 'Individual treatment plans and goal-setting agreements between physician and patient;
- Patient self-management and shared decision-making between doctor and patient (doctors receive training in shared decision-making);
- Follow-up care and case management (with clearly defined care coordinators);
- Right care at the right time (whereby tailored arrangements are made for patients that need to be seen urgently despite long waiting times for certain services);
- A system-wide electronic patient record (which is used to regularly analyse patient data and identify high-risk patients).<sup>62</sup>

Savings in the cost of care are shared between the management company and the two participating SHI funds according to a negotiated contract. Health care providers continue to be reimbursed according to the traditional system but additional reimbursement is given for services that are normally not covered but which are considered important to improve the quality of care and a part of the profit is given according to the individual performance of the provider.<sup>62</sup>



## 6 THE NETHERLANDS

The system of hospital payment and remuneration of medical specialists has been reformed several times in the past decades. Although the reforms for both actors are interrelated, they are described in separate sections to keep the overview (section 6.2 for hospitals and section 6.3 for medical specialists). Section 6.4 provides an evaluation of the system until 2011. The current system (since 2012) is examined in section 6.5. Section 6.6 focuses on innovation, the integration of quality in the payment or remuneration system and on integrated care. We first give a brief overview of the main characteristics of the current health care system and hospital sector.

### 6.1 Brief overview of the hospital sector

#### 6.1.1 Health care system

##### Health insurance

The Dutch health care system is divided into three compartments.<sup>74, 75</sup> The first compartment consists of a compulsory social health insurance scheme covering exceptional medical expenses (long-term care for chronic conditions and high-cost treatment). The scheme is regulated by the Exceptional Medical Expenses Act ('Algemene Wet Bijzondere Ziektekosten', AWBZ) and is financed through income-related contributions, supplemented by a general government revenue grant.

The second compartment also consists of a compulsory social health insurance scheme, covering the whole population for a legally defined, basic health insurance package of health care benefits, including most curative medical care (general practitioners, medical specialists and short-term hospital care). The scheme is regulated by the Health Insurance Act ('Zorgverzekeringswet', Zvw) and financed through income-related contributions (50%), community-rated premiums (45%) and general tax revenues (5%).<sup>76</sup> All citizens aged 18 years or older pay a community-rated premium directly to the health insurer of their choice. Income-related contributions are transferred to the Health Insurance Fund. Health insurers receive part of their resources from this fund through a risk-equalisation scheme. General tax revenues finance the expenditures for children below the age of 18. Health insurance is made affordable for every citizen by

means of income-related subsidies. Individuals can choose between insurers on an annual basis while insurers have to accept any applicant for basic health insurance. Insurers can selectively contract with health care providers.<sup>76</sup>

The third compartment relates to less essential care (e.g. orthodontic care, cosmetic plastic surgery) not covered by the AWBZ or Zvw. These health services are covered by supplementary voluntary health insurance (VHI) and by out-of-pocket payments.

In addition to the three compartments, prevention and social support are mainly financed through general taxation.

##### 2005/2006 reforms

In 2005/2006 structural reforms were implemented in the Dutch health care sector which entailed major changes in the financing and payment of health care providers. A central element of the reforms was the transition from supply-side government regulation towards a reinforced role of market mechanisms. This was done by increasing competition between health insurers and between health care providers. Moreover, it was the intent of the government to base the payment of care on quality.

In January 2006 the government implemented the Health Insurance Act integrating previously existing public sickness funds and private health insurers into one compulsory scheme in the second compartment. With the Health Insurance Act all residents (and non-residents who pay Dutch income tax) are obliged to buy a basic package of health care benefits from a private insurer. It replaced a dual system where public insurance was compulsory for about two-thirds of the population and one-third (higher incomes) relied on voluntary private insurance. Some of the insurers in the new system were formerly sickness funds while others had been active in the market for VHI.<sup>74, 77</sup> The reform aimed at strengthening the purchasing role of health insurers, to compete for customers by purchasing high-quality care.

Competition in hospital care was encouraged by allowing insurers and hospitals to negotiate on prices and by increasing the possibilities for new providers to enter the market of hospital care.<sup>78</sup> Also in 2006 the Health Care Institutions Entry Act ('Wet toelating zorginstellingen', Wtzi), which was intended to decentralize planning and investment decisions to hospitals, widened the room for establishing Independent Treatment





Centres ('Zelfstandige Behandel Centra', ZBC) by allowing them to compete with hospitals on prices for a selection of care products (see section 6.2.4).<sup>79</sup>

A third instrument in the market-oriented reforms was the introduction of a new system for the payment of hospitals and ZBCs in 2005, with Diagnosis Treatment Combinations ('Diagnose Behandel Combinaties', DBCs) as the basis for payment of care (see section 6.2).

### Central actors

All health care issues are the responsibility of the Ministry of Health, Welfare and Sport<sup>e</sup>. However, the 2005/2006 reforms also brought new regulatory mechanisms and structures to the health care system.<sup>75, 80</sup> The role of the Minister of Health changed from steering the system to safeguarding quality and keeping health care costs within the national health care budget ('Budgettaire Kader Zorg', BKZ). Responsibilities were transferred to health insurers, providers and patients.

Three independent institutions under the Ministry of Health act as central supervising and regulatory actors.<sup>74, 75, 81, 82</sup> First, the Health Care Inspectorate ('Inspectie voor de Gezondheidszorg', IGZ) monitors and controls the quality of health care services, prevention measures and medical products and develops or approves health quality standards. The second actor is the Dutch Health Care Authority ('Nederlandse Zorgautoriteit', NZa), funded by the Ministry of Health. The tasks of the Health Care Authority are defined in the Health Care Market Regulation Act ('Wet marktordening gezondheidszorg', Wmg). It is responsible for the supervision of the insurance, purchasing and provider market and is allowed to impose tariff and product regulation. It advises the Ministry of Health on setting the conditions for regulated competition and has powers to lay down general rules for providers and insurers to increase the transparency of the market for consumers. The third institution is the Dutch Competition Authority ('Nederlandse Mededingingsautoriteit', NMa<sup>f</sup>). The mission of the NMa is not restricted to the health care market. The institute has to enforce fair competition in all sectors of the Dutch economy. The

NMa supervises health insurers and health care providers, as these are subject to the Dutch Competition Act ('Mededingingswet', Mw).

The Health Care Insurance Board ('College Voor Zorgverzekeringen', CVZ) is an advisory body. It advises the Ministry of Health on issues related to the insured benefits package and administers the risk-adjustment system.

### 6.1.2 Hospital ownership and provided range of services

There are seven types of institutions that provide hospital or medical specialist care:<sup>74, 83</sup> general hospitals, university hospitals, categorical or specialized hospitals, ZBCs, top clinical centres, rehabilitation centres and private clinics. Hospitals provide inpatient, day and outpatient care. They also have 24-hour emergency wards. Outpatient departments are also used for pre- or post-hospitalization diagnosis. Categorical hospitals concentrate on specific forms of care or on specific illnesses (e.g., asthma, epilepsy or dialysis). Care of ZBCs mainly consists of non-acute care that can be provided in one-day admissions and which is covered by the Zvw or VHI, but some ZBCs also provide inpatient care. Many hospitals have established ZBCs to remain competitive. Top clinical centres are specialized in e.g. cancer, organ transplantation or IVF. Private clinics work on a for-profit basis and provide private medical specialist care which is not covered by the Zvw.

Hospitals are private organizations; most university hospitals are public organizations.<sup>84</sup> Currently, all hospitals and ZBCs are non-profit institutions by law. A for-profit motive is not allowed by the Health Care Institutions Entry Act ('Wet toelating zorginstellingen', Wtzi). The non-profit constraint implies that attracting private equity is almost impossible. However, in 2012 the Minister of Health introduced a bill in Parliament allowing general hospitals and ZBCs to pay dividends to private sector investors. To avoid private equity firms targeting short-term gains, dividend payments can be paid only under certain conditions (e.g., only after three years of investment). In February 2013 a proposed amendment was introduced, strengthening the conditions for dividend payments. The bill is planned to be brought into operation on 1 January 2014.<sup>85, 86, 87</sup>

<sup>e</sup> In the remaining of the chapter shortened to Ministry of Health.

<sup>f</sup> NMa was absorbed by the Consumer and Markets Authority in April 2013.



### 6.1.3 Number of hospitals, hospital size and hospital output

In 2011 there were 83 general hospitals, 8 university hospitals, 31 rehabilitation centres, 33 categorical hospitals, 180 ZBCs (in 2010) and 99 private clinics.<sup>88</sup>

About 25% of general hospitals have less than 300 beds and also 25% has more than 600 beds. All university hospitals have more than 600 beds. The average growth rate of the number of beds between 2007 and 2011 was -0.1% for general hospitals and -0.5% for university hospitals. The number of hospital beds per 1 000 population was 4.7 in 2010; 66% was allocated for curative care.<sup>88</sup>

Average length of stay in hospital for all causes equalled 5.8 days in 2010 whereas the EU25 average was equal to 6.9 days. In 2000, the Netherlands was above the (then) EU average.

## 6.2 Introduction of the DBC system

The scope of the overview in section 6.2 is restricted to hospitals. Section 6.3 provides an overview of previous and current remuneration schemes for medical specialists.

### 6.2.1 Previous system

Until 1983 a retrospective output-based financing system, which automatically reimbursed hospitals for every provided service, was in place. In 1983, this open-ended financing model was replaced with a global hospital budgeting scheme with each hospital receiving annually a prospectively determined budget. The main purpose of the global budgeting model was to control costs by controlling the volume of hospital services. Until 1988, the budgeting system was (partly) based on historical costs. The hospital budget did not cover all costs: interest and depreciation costs largely remained fully reimbursed. Moreover, hospital budgets included the fees of salary-paid medical specialists (about 30% of medical specialists) but not the fees of self-employed medical specialists who were paid fee-for-service.<sup>30, 89</sup>

In 1988 a Functional Budgeting (FB) system replaced the historical budgeting system for general and categorical hospitals with the goal of providing equal budgets to hospitals performing the same functions. In the historical budgeting system the more efficient hospitals were penalized and hospitals with high levels of expenditure were rewarded. Moreover, the system lacked objective and transparent norms for setting the hospital budget. The FB model consisted of three budget components: availability, capacity and production. The availability component was based on the number of inhabitants in the surrounding area; the capacity component was measured as the number of recognized beds and the number of authorized specialist units; the production component was established in production agreements between the hospital management and health insurers on the projected volume of services to be provided to the insurers' members. Volume contracts concerned the number of hospital admissions, inpatient days, outpatient visits and day-care visits. The availability component was assumed to cover the fixed costs of the hospital, the capacity component semi-fixed costs and the production component the variable costs. As was the case with the historical budget, the functional budget did not cover all hospital costs. Hospitals and (the collective of) insurers only negotiated on volumes; prices were set by the Central Agency for Health Care Tariffs ('Centraal Orgaan Tarieven Gezondheidszorg', COTG), now called the Dutch Health Care Authority<sup>9</sup>. Hospitals and insurers were obliged to contract with each other. The hospital budget was calculated by multiplying the negotiated volume (e.g., the number of inpatient days) with the price set by the tariff agency. Tariffs varied per hospital size with larger tariffs for larger hospitals.<sup>89, 30</sup>

Although the strong supply-side controls by the Ministry succeeded in containing costs, in 2001 the fixed global budgets were replaced by volume-based and open-ended budgets to enhance productivity and reduce waiting lists and times. The system was called 'cash on the nail' since realized extra production was rewarded with extra resources.

<sup>9</sup> The COTG was named later as the National Health Tariff Authority ('College Tarieven Gezondheidszorg', CTG). The CTG, together with the Supervisory Board for Health Care Insurance ('College Toezicht Zorgverzekeringen', CTZ), were joined into the Dutch Health Care Authority on 1 July 2006.





Decreasing inpatient admission rates turned into an increase of more than 3% per year.<sup>90</sup>

### 6.2.2 *Problems with the previous system and objectives of the DBC system*

Over the years the production component increased and the government had no instruments to control the contracted volume of production. The main drawback of the FB model was the lack of direct relationship between financing (tariffs for the parameters of the FB model) and real costs. Although the production parameters were based on hospital costs at the moment of introduction of the FB model (1988), after some years these costs became outdated. Other disadvantages were the lack of transparency of costs and budget and the separate financing of infrastructure costs. Furthermore, the FB model did not create incentives for substituting day care for inpatient care. The 2001 measure was, however, only designed for the short term; long-term objectives of the government were enhancing efficiency, affordability and patient centeredness by competition between insurers and providers in a new health insurance system.<sup>89</sup>

The objectives of the 2005 reform of hospital payment largely coincide with the goals of the 2006 reform of the health insurance system. The main reason for both reforms was a systemic shift from supply-side government regulation to managed or regulated competition. Already since the 1990s, the Dutch health insurance system had been undergoing a gradual transition, enhancing competition between insurers within the boundaries of a legal framework. The 2006 reform, implementing the Health Insurance Act, was a radical reform in this process. The main objectives of the introduction of managed competition were to improve accessibility, affordability and quality in health care by making health care more efficient, more demand-driven, more transparent and more innovative.<sup>91, 92, 93</sup>

At the supply-side of the health care market, however, a step by step introduction of price competition between providers has been stimulated with the introduction of DBCs in 2005. It was an explicit choice of the government to make insurers and hospitals the main actors by allowing them to negotiate on the volume, price and quality of care for a selected but increasing number of DBCs. By clearly defining hospital products (DBCs) and associated prices, the government intended to introduce more

transparency in the relationship between costs and output. DBCs were also introduced to better allow comparison of performance of hospitals and introduce a clear link between performance and income.<sup>89</sup>

In summary, the DBC system was introduced to serve the public goals of:

- efficient markets;
- transparency;
- accessibility;
- quality;
- low administrative burden

by means of increased market competition.<sup>94</sup>

### 6.2.3 *Stakeholder views on the introduction of the DBC system*

The DBC system was mainly the result of shared decision-making or concerted action.<sup>89</sup> All concerned stakeholders (hospitals, medical specialists, insurers, government) wanted a new system to meet the problems of the FB system and to introduce more competition. In general, there was broad support for the new health insurance scheme. However, the support of insurers has always been stronger than the support of providers (hospitals and medical specialists). Medical specialists were in favour of an output-based remuneration system ('loon naar werken') which would remove unacceptable differences in income between medical specialists. Government aimed at better aligning incentives of hospitals and medical specialists.<sup>91, 92</sup>

The stakeholders were also closely involved in the design of the DBC system.<sup>89</sup>



## 6.2.4 Implementation issues

### 6.2.4.1 The DBC episode-based case-mix system

#### Definition of a DBC

A DBC is defined as the entire range of hospital and medical specialist activities and services arising from the demand of care by a patient consulting a specialist in a hospital.<sup>74, 30, 89</sup> A DBC is episode-based since it registers the complete process of care, from the initial consultation or examination through the final check-up within a medical specialty. The DBC concept is independent of the setting of care delivery since inpatient and outpatient activities are included. Activities refer to medical and medical support services, including outpatient visits, days of treatment and day care. Hence, a DBC is the product delivered to a patient within a medical specialty. The price of the DBC includes the costs of the hospital for the use of its resources and the remuneration of medical specialists for the workload.

The above description of a DBC applies to a 'regular care' DBC. Two other DBCs exist. The first type, referred to as 'continuation of regular care' DBC, is opened to replace a regular care DBC when treatment exceeds 365 days. The second type is opened in addition to a regular care DBC when a patient needs treatment which is medically not related to the regular care DBC, opened at the moment of admission. This second type is referred to as an 'inpatient without days' DBC.<sup>74</sup>

#### Coding

The DBC system is not based on an internationally recognized classification system. Instead, it is a newly developed classification system with DBCs defined for each medical specialty by medical specialist associations, resulting in 24 product structures that cannot be compared amongst each other.<sup>74, 89, 95</sup> A DBC represents a sequence of activities performed during the treatment. At the end of the treatment, a DBC is a labelled data file which describes the episode of care in terms of activities. Every DBC has a unique code, consisting of 14 digits and containing information on:

- the specialty of the main medical specialist seeing the patient (2 digits);
- the type of care (e.g., regular care, emergency consult, second, follow-up treatment; 2 digits);
- the diagnosis (International Classification of Diseases 10<sup>th</sup> revision (ICD-10); 4 digits);
- the treatment axis (treatment setting and nature of treatment, e.g., open versus laparoscopic procedure; 4 digits).

For a restricted number of medical specialties, a fourth part of the DBC is the demand for care (2 digits) which contains the initial complaint(s) that motivated the patient to see a medical specialist.

All possible combinations result in a very detailed system of about 100 000 DBC codes. To improve manageability of the system and for reimbursement purposes, all DBCs were grouped in approximately 700 product groups using a data warehouse consisting of 1.5 million patients treated in 27 hospitals during 3 years.<sup>95</sup> The groups were formed such that they were homogeneous in terms of costs and belonged to the same specialty. The product structure was accepted by the scientific committees of medical specialists.

The five types of information to classify patients include clinical and resource-use data.<sup>74</sup>

An initial DBC is opened when a patient sees a medical specialist for the first time with a new demand for care; when a patient consults a specialist from another specialty; when a patient is transferred to another hospital or in case of a new demand that will lead to higher costs and effort. Only if the extra cost and/or effort are at least 40% of the initial DBC, a new DBC can be opened. Otherwise, the treatment must be continued within the initial DBC.

A DBC is closed when the treatment is completed or after 365 days. To monitor the patient after treatment, a 'chronic periodical check-up care' DBC can be opened.

Although a diagnosis is part of the DBC code, the ICD-10 codes as such are not used in the codification of the DBCs. The DBC system makes no distinction between primary and secondary diagnoses.



The medical specialist is responsible for choosing the most appropriate DBC upon first contact. The choice of DBC follows a set of guidelines on how to open, close and determine a DBC. During the care process, the first choice can be adjusted, e.g. if the treatment setting changes from outpatient to an inpatient admission. Although it is not allowed to close the initial DBC and open a new one in this case, it is an often performed strategy.<sup>89</sup> In the original system, each specialty had its own set of instructions. Later on guidelines for all specialties were harmonized.

### Validation of coding

After the medical specialist has closed the DBC, the code is validated in the hospital before it is sent to the health insurer for payment. By an internal control procedure, the treatment activities are matched with the selected DBC to see whether the correct DBC was chosen. IT-systems vary substantially among hospitals.<sup>89</sup>

### Comparison DBC – DRG

Although DBCs are similar to the typical case-mix classification system based on Diagnosis Related Groups (DRGs), they differ in some important ways (comparison with DRGs available at the time of introduction of the DBC system). First, the (original) DBC system is based on 24 different systems of diagnosis classification, developed by different medical specialist associations. The resulting product structures cannot be compared amongst each other. Second, in the DBC system the use of hospital resources and the workload of medical specialists are linked to the complete episode of care, while the encounter is the basis in typical DRG systems. Substitution effects between inpatient and outpatient care are better accommodated in the DBC system. Third, while DRG systems assign one DRG per patient according to the most important diagnosis or treatment (although exceptions exist), the DBC system provides one DBC for each diagnosis-treatment combination so that more than one DBC per patient is possible. Hence, DBCs provide more flexibility in case of multi-morbidity. Fourth, the level of detail of the system differs substantially.

While a typical DRG system consists of less than 3 000 DRGs, the original DBC system consisted of about 100 000 DBCs<sup>h 74, 30, 89, 93</sup>.

### 6.2.4.2 Implementation period

#### The build-up to DBCs

Already in 1994 the national associations of hospitals, medical specialists, insurers and the Ministry of Health started a project on a new financing scheme, based on case-mix.<sup>96, 89</sup> In 1996 a simplified version of the All Patient (AP)-DRG system was tested in six pilot hospitals.<sup>74</sup> One argument for developing a new system instead of adapting the AP-DRG system to the Dutch situation, was the fact that fees of medical specialists were not included in the AP-DRG system.<sup>89</sup> Also the inability of the AP-DRG classification system to adequately account for outpatient cases led to the (political) decision to develop a new case-mix system.<sup>96</sup> Moreover, the DRG system seemed not suitable for handling a standard time per final product, per specialty, in combination with an hourly rate.

Health insurers and hospitals initiated the development of DBCs. The specialty of urology piloted the DBC concept with a nationwide registration of DBCs in 1999. In 2000 the government took the decision to base an integrated payment of hospitals and medical specialists on DBCs. This decision was supported by the key stakeholders (associations of hospitals, medical specialists and health insurers). The project was referred to as DBC 2003, with 2003 the originally planned year of introduction.

The DBC project started in 2001 with the definition of the product structure. A representative sample of about 25 frontrunner hospitals registered detailed resource use and cost data for all inpatient and outpatient hospital services according to this product structure.<sup>74</sup> In January 2003 hospitals, insurers and medical specialists were offered the opportunity to negotiate on prices for DBCs for 17 interventions (with a very long waiting list) defined by the government.

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<sup>h</sup> Of which about two-thirds are theoretical combinations of diagnoses and treatments.



### From 2005 onwards

On 1 January 2005 the DBC system was introduced in all general hospitals, university hospitals, categorical hospitals and ZBCs. The DBC system is centrally monitored by a newly created private institution called DBC Maintenance ('Onderhoud', DBC-O), which is the Dutch case-mix office.<sup>74</sup>

DBC's belong to one of two lists with a different payment system (see also section 6.2.4.5): list/ segment A with fixed prices and list/segment B with negotiable prices. DBCs in segment B are mostly relatively simple routine procedures such as cataract, inguinal hernia, varicose veins, total hip and total knee replacement.<sup>74</sup> The implementation of the new payment system kept a strong relation with the Functional Budgeting system to avoid financial risks for hospitals, insurers and government. Therefore, the number of DBCs in the B-segment was increased only gradually.

Hospitals receive payments from the health insurers for all DBCs in segment A and B. For DBCs in segment A hospitals receive a nationally uniform payment, which is based on the same Functional Budgeting parameters as before the introduction of the DBC system in 2005. Hospitals send invoices to the health insurers or to patients, which are based on the coded DBCs. At the end of the year, total revenue from DBCs in segment A is compared with the FB for segment A. Hospitals are fully compensated for the difference between the prospective budget and DBC payments. Hence, when DBC-revenues are higher than the budget, the hospital has to pay the difference to the Health Care Authority. When it is lower, the difference is reimbursed to the hospital.<sup>75</sup>

The Health Care Authority does not set a budget limit for DBCs in segment B but hospitals receive a negotiated hospital-specific payment.<sup>74</sup>

Insurers can limit the maximum volume of DBCs a hospital is allowed to produce.

The number of DBCs in the B-segment increased from 1 246 in the period 2005-2007 to 4 921 in 2008 and 7 028 in 2009. The sharp increase in the number of DBCs is the result of the extension of the B-segment from 10% of activities in 2005-2007 to 20% and 34% in 2008 and 2009-2011 respectively (see section 6.5.1 for 2012 and later). The real size of the B-segment was, however, lower: 4.1% in 2005, 6.0 % in 2006, 5.9 % in 2007, 13.3 % in 2008 and 19.9 % in 2009.<sup>89</sup>

### 6.2.4.3 Medical data

The medical data consist of the type of care, the demand for care (health issue) and the diagnosis (see section 6.2.4.1).

### 6.2.4.4 Cost and resource use data

#### Data collection

When DBCs were first introduced, the hospital cost component in segment A was based on resource-use and cost data of a representative sample of about 25 frontrunner hospitals in the years preceding the introduction of the DBC system. Average resource-use profiles were multiplied with the national median unit costs. All hospital activities were classified into 15 resource-use categories, such as inpatient days, intensive care days, day-care hours, laboratory services and surgical procedures. Costs for these categories included wages, equipment and overheads. Since 2009 also capital costs are included. Hospital costs relating to education, teaching, research and commercial exploitation are not financed by the DBC system. The hospital cost component in segment B was the result of (bilateral) negotiations between insurers and hospitals.<sup>74</sup>

The data-collection process evolved over time. Hospital costs are now collected by a subdivision of DBC-O, called the 'DBC Information System' or DIS. DBC-O determines the hospital cost component in segment A on the basis of unit cost information from a varying number of 15-25 frontrunner hospitals who participate voluntarily (the size and composition varies from year to year); capital costs and resource-use information collected from all hospitals. After integration of all data in the DIS database, DIS gives feedback to medical specialists to achieve high-quality data.



### Costing method

For hospital services in segment A provided in the period **2005-2011**, there was no mandatory cost accounting model for hospitals, except for the frontrunner hospitals that had to follow a uniform product costing model:<sup>74</sup>

- A distinction is made between intermediate and final products.<sup>95</sup> DBCs are the final product. Intermediate products are detailed hospital services such as inpatient and outpatient clinics, laboratories and operating rooms. The product costing model consists of two parts. In the first part unit costs of intermediate products are calculated. The second part involves the calculation of unit costs per DBC, based on the unit costs of intermediate products and resource use.
- Relevant hospital costs are allocated from support cost centres to final cost centres. Final cost centres are hospital departments producing hospital services. Support cost centres or overheads do not provide patient care. They include departments for personnel, administration and finance. As it was found that the allocation method only had a minor impact on individual patient costs, hospitals have free choice of method. Most hospitals use simple direct allocation without interaction between the support cost centres. The allocation is based on specifications of the product costing model, e.g. the number of FTE (full time equivalents) to allocate administration costs and the area (m<sup>2</sup>) to allocate costs of accommodation.
- Total costs of final cost centres (including costs of support costs centres) are allocated to individual hospital services, based on weighting statistics which differ between hospital services. For example, to allocate the cost of the final cost centre 'operating rooms' to surgical interventions, the average time of surgical interventions is used as a weighting statistic.
- DBC-O calculates the national median unit cost of about 4 500 hospital activities from the weighted average of the frontrunner hospitals. There is a time lag of at least two years (in most cases 3 years).
- The Dutch Health Care Authority (NZa) determines tariffs for the hospital cost in the A-segment based on the unit costs and resource-use profile of the intermediate products. The NZa may deviate from the unit cost calculated by DBC-O.<sup>97</sup>

**Since 2012** the cost accounting model changed substantially. A major reason for adopting a new method was the variation in the allocation of costs to cost centres between hospitals. Second, the mandatory cost centres did always fit in with the operational management of hospitals. Moreover, there was a substantial increase in the number of DBCs in the B-segment in 2012 (see section 6.5.1) which raised doubts about the representativeness of the cost data of the frontrunner hospitals.

Therefore, the Dutch Health Care Authority (NZa) introduced a new costing model in 2012. The model is mandatory for all hospitals instead of only for a sample of frontrunner hospitals. A second modification concerns the allocation of costs. Where in the old model costs were allocated to mandatory cost centres, in the new model costs are directly allocated to DBC care products (see section 6.5.1) (or indirectly by means of freely determined cost centres which are more in line with the actual practice of each hospital). Third, the time lag between the collection of cost data and calculation of the DRG tariff is reduced to 2 years.

### Financing of data collection

DBC-O is financed by the Ministry of Health (13.6 million euro in 2012). The costs of the frontrunner hospitals are financed by the DBC system.

#### 6.2.4.5 Tariff per DBC

From its introduction in 2005, the DBC system consisted of two parallel regimes corresponding with the so-called segment A and segment B.

In segment A (introduced on 1 January 2005) the price of a DBC is centrally regulated by the Dutch Health Care Authority (NZa). DBCs in segment A are used only for administrative reasons, as a vehicle to transfer money from health insurers to hospitals.<sup>98</sup> The fixed price consists of a fee component for the remuneration of the medical specialist (see section 6.3.2) and a hospital cost component for the payment of hospital services. Rent and depreciation costs are reimbursed on a fee-for-service basis.<sup>89</sup>

In segment B (introduced on 1 February 2005) some regulated market principles have been introduced, by letting individual hospitals and insurers negotiate on the price (only hospital cost component) and volume of DBCs. For rent and depreciation costs, insurers and hospitals negotiate a mark-up on the DBC price to cover these costs.





The distinction between segment A and segment B has been used for a gradual introduction of price competition in hospital care.<sup>89</sup>

The DBC system also applies to non-contracted care; this is care provided to foreign patients, uninsured patients or patients whose insurer has no contract with the hospital. Hospitals are obliged to publish prices for non-contracted care on the internet. Prices for DBCs in the A-segment and for the fee component in segment B are the same as for contracted care. The tariff for the hospital cost component in the B-segment is determined by each individual hospital and may differ between contracted and non-contracted care.<sup>74</sup>

### 6.2.5 The DBC system in 2011

Because the DBC system changed fundamentally in 2012, i.e. with the introduction of 'DBC's On the way to Transparency' or DOTs ('DBC's Op weg naar Transparantie'), this section describes the system in 2011<sup>i</sup>. The introduction of the DOT care products can be found in section 6.5.1.

#### 6.2.5.1 System updates

DBC-O is responsible for the irregular but continuous update of the DBC classification system.<sup>74</sup> An update can be a split, merge or creation of DBCs. Associations of medical specialists notify DBC-O in case of problems or (data-) information is retrieved from the DIS.

#### 6.2.5.2 Range of costs included

All costs are included, except:

- core business expenses not related to general inpatient services (e.g., costs of education, scientific research and commercial exploitation);
- allowance for debts, taxes, charges and insurance for operational sections of the hospital that do not provide general inpatient services.<sup>1, 66, 74</sup>

#### 6.2.5.3 Range of services included

All services are included (mental health care since 2008 and rehabilitation care since 2009), except

- some very expensive and orphan drugs;
- intensive care.

#### Mental health care

Before 2008, curative mental care was covered by long-term care insurance (AWBZ). Since 2008, the first 365 days of curative mental care are covered under the Health Insurance Act (Zvw) with payment for mental care providers based on DBCs.<sup>75, 77</sup> This shift from the AWBZ to the Zvw was performed to facilitate coordination with somatic care. The DBC system was introduced to enable negotiations between mental care providers and health insurers. However, until 2012 a budgeting system still applied in mental health care institutions to preserve them from large budget shortfalls or increases. An output-based payment was introduced on 1 January 2013.

#### 6.2.5.4 Proportion of hospital expenditures covered by the DBC system

The proportion of hospital expenditures covered by the DBC system depends on the amount of additional payments (section 6.2.5.5) and of the percentage of output-based payment of the hospital (and remuneration of medical specialists).

Total revenues in general hospitals in 2011 were made up of revenues from segment A (58%), segment B (29%) and other revenues (12%).<sup>99</sup>

<sup>i</sup> Contrary to the other country overviews in this report, which describe the current system in this section.



### 6.2.5.5 Additional payments

An additional compensation in the DBC tariff exists for:<sup>100</sup>

- depreciation on buildings and fixed installations;
- interest payments (bank loans).

The mark-up price on each DBC to finance capital investments is equal to 8.7% on average in segment A. In segment B this is part of the negotiation between insurer and hospital.

Costs of intensive care and high-cost and orphan drugs are reimbursed in addition to the DBCs.

## 6.3 Remuneration of medical specialists

Except in cases of emergency, patients need a referral from a general practitioner to consult a specialist.<sup>74</sup>

### Private practice

Only a restricted number of specialists have their own private practice apart from the hospital or work in free-standing ambulatory health centres.<sup>101</sup> Typical examples of such specialists are psychiatrists and ophthalmologists.

Services provided by medical specialists working in private clinics are not covered by the Zvw. Patients pay for these services out-of-pocket or take a voluntary private health insurance. These services are not included in the scope of this chapter.

### Number of medical specialists

Medical specialists traditionally have worked within the walls of a hospital (and more recently in ZBCs) for both inpatient and outpatient care. About 5 900 medical specialists (full-time equivalent, FTE) working in hospitals are salaried whereas about 6 800 FTE are self-employed. Headcount figures show that about two-thirds are self-employed. Most self-employed medical specialists are organized in a partnership ('maatschap').<sup>102</sup> The share of salaried medical specialists varies widely across medical specialties with less than one third of cardiologists, radiologists, urologists, orthopaedic and cosmetic surgeons to more than 90% among paediatricians and clinical geriatricians. In academic hospitals, all medical specialists are salaried.

### 6.3.1 Before the introduction of DBCs in 2005

#### Salaried medical specialists

Salaries of medical specialists fall into one of six salary scales on the basis of experience and performance. The income of salaried medical specialists is included in the hospital budget since the global historical budgeting model introduced in 1983.<sup>89</sup>

#### Self-employed medical specialists

Since the introduction of the Act on Health Care Tariffs ('Wet Tarieven Gezondheidszorg', WTG) in 1982, fees for self-employed medical specialists are the result of negotiations between the associations of medical specialists and insurers. In the historical budgeting for hospitals the fees for self-employed medical specialists, paid on a fee-for-service basis, were not included. A major disadvantage was the opposite interest of the hospital management and medical specialists. Hospital management had an interest in keeping costs within the fixed budget by reducing activity volume, whereas the remuneration of medical specialists remained open-ended. Scarce resources also created conflicts between specialist groups. The Functional Budgeting (FB) system, introduced in 1988, did not change the remuneration scheme of medical specialists. In the eighties and early nineties, various efforts of the government to curb the growth of medical specialist remuneration remained unsuccessful.<sup>101</sup>

Under the threat of substantial fee cuts, the government introduced the possibility of a lump sum payment scheme for self-employed medical specialists in 1995.<sup>103</sup> Each hospital received a history-based lump sum, guaranteeing the historical income for the medical specialists (as a group, not at the individual level). Individual hospitals were responsible for the allocation of the hospital lump sum to their medical specialists. Due to the lump sum payment scheme, the government succeeded in removing incentives for increasing production. A drawback of the lump sum system was the lack of financial incentive for providing care once a medical specialist had reached the income limit. The system was introduced to control costs, but it led to increasing waiting lists, a slow diffusion of best medical practices and disincentives for efficiency and innovations.<sup>104</sup> From 2001 onwards, a small production incentive was introduced, with a yearly





increase of the lump sum based on the production parameters of the hospital.

### 6.3.2 *Gradual introduction of output-based remuneration between 2005 and 2011*

#### **2005-2007**

Since 2005 medical specialists are part of the DBC system. The new system was expected to increase productivity, improve performance, provide an incentive for efficiency and innovation and reduce differences in income between medical specialties.<sup>104</sup> Lump-sum payments were, however, only gradually abolished.

Between 2005 and 2007 activities in the A-segment (90% of hospital activity in this period) continued to be remunerated by lump-sum payments. For each DBC in the B-segment, a normative time spent by the medical specialist and a normative hourly tariff were established. The normative time per DBC was specific to the specialty and was determined by the different scientific associations of medical specialists.<sup>75</sup> A macro-neutral tariff of €148.5 was applied to all specialties.<sup>89</sup> Hence, if a medical specialist generated in 2005 the same number of DBCs as in 2004, his or her income for the DBCs in the B-segment remained equal.

#### **2008-2011**

Until 2008, the remuneration system of medical specialists and the payment system of hospitals were similar, i.e. a situation where extra production in segment B generated extra income while in segment A the lump-sum scheme put a ceiling on production and income. In 2008, lump-sum payments for self-employed medical specialists also ended in the A-segment and the income became fully based on the produced number of DBCs, giving stronger incentives to provide more (or more expensive) services.<sup>77</sup> Although self-employed medical specialists receive their income directly from the insurers, it does not depend on negotiations.

In this open-ended system, a uniform tariff was introduced in the A and B-segment. The tariff was based on research from the Commission Normative Hourly Tariff ('Commissie Normatief Uurtarief') and negotiations between the Minister of Health and the association of medical specialists. The result was a uniform tariff within a certain range. This range allowed

hospital management and medical specialists some room for negotiation. The uniform tariff equalled €135.50 in 2008 (it was initially set at €132.50 in 2005) and the range was plus or minus €6. The tariff consists of an income part and a compensation for practice costs. One of the aims of the uniform tariff was to reduce fee differences between medical specialists. Contrary to the tariff, the normative time per DBC differs between specialties and is established by the Dutch Health Care Authority (NZa). The normative income equals €129 500 per year and is based on 1 555 claimable hours. The normative practice costs equal €75 760 per year.<sup>75</sup> The actual income depends on the actual hours claimed and actual practice costs.

Already in 2008 there were clear signals of increased income, especially for the supporting specialties (e.g., radiology). Several studies were conducted to investigate the extent of budget overruns in 2008 and 2009 and the causes of the increase in remuneration. Some causes were price-related, others were volume-related.<sup>104, 89</sup> Price-related factors are

- the normative hourly wage. In retrospect, the tariff was considered as too high;
- the normative time per DBC. In some cases the time was set too high because advances in medical technology were not adequately taken into account;
- the compensation factor for supporting specialties. Since the number of supporting products (e.g. in radiology) was underestimated when the DBC system was introduced, supporting specialties received a compensation factor. When the DBC system was updated and a higher, more realistic number of supporting products was included, the compensation factor was not abolished.

Volume-related factors are

- an increase in production beyond the budget limits for hospital care, in line with the incentives created by a remuneration per DBC;
- a better registration. The DBC system in 2005 was based on data from 2003 when lump-sum payments were in place. In that system, medical specialists had no incentive to register their activities strictly, leading to incorrect low volumes.



To keep the remuneration of medical specialists within the budget framework health care ('Budgettair Kader Zorg', BKZ) generic and specific fee cuts were introduced. The generic fee cut equalled 12.7% in 2010. However, with these fee cuts volume was still open-ended since there were no limits on the number of produced DBCs. Therefore, budgeting for medical specialists was introduced once again to prevent future budget overruns.

## 6.4 Evaluation of the DBC system in 2011

The evaluation concerns the period 2005-2011, starting at the introduction of the DBC system and ending with the new wave of reforms starting in 2012. The reform of the hospital sector was one instrument in the transition to regulated competition, which is a gradual process that is still going on (see section 6.5). Therefore, it is difficult to measure the impact of a process that is subject to continuous modification and that is part of a broader system change.

The Dutch Health Care Authority (NZa) is responsible for checking whether the DBC system serves the public goals (see section 6.2.2). Hence, the evaluation of the system is to a large extent based on reports from this supervising health care actor. Other sources evaluating the DBC system are the Dutch Health Care Performance Report 2010<sup>105</sup>, the Health system review for the Netherlands by the European Observatory on Health Systems and Policies<sup>75</sup> and the 2012 OECD Economic Surveys: Netherlands<sup>106</sup>, are mostly based on data from the NZa.

### 6.4.1 Fulfilment of reform objectives

#### 6.4.1.1 Transparency

The very detailed structure of the DBC system was considered necessary by medical specialists to give an accurate estimation of the treatment and associated costs and to be able to compare DBCs within and between hospitals.<sup>95</sup> However, all concerned actors agreed that a system with about 100 000 (in theory) or 30 000 (in actual practice) products was too complex. Therefore, to facilitate negotiations between insurers and hospitals, DBCs have been grouped into about 700 product groups. A critique on these product groups was that they are not recognizable from a medical point of view, which makes them not suitable for insurer-hospital negotiations.<sup>89</sup>

Another problem hampering negotiations between insurers and hospitals is the lack of harmonization in coding scheme between medical specialties. 24 different systems, not comparable between each other, were developed by the respective associations of medical specialists. Hence, the same medical procedure performed by different medical specialists can have a different DBC code and cost.<sup>89</sup>

Uncertainty about the rules for opening a new DBC for a single patient (see section 6.2.4.1) leaving room for strategic behaviour to increase revenues, has resulted in heavy disputes between the hospital management/medical specialists and insurers. Parallel DBCs (multiple DBCs are open at the same time) and serial DBCs (DBCs are opened and closed shortly after each other) are allowed, but at the same time they create incentives for a fee-for-service use of the DBC system or overdeclaration. During the introduction phase of the DBC system, the average number of DBCs per patient was high. However, since this was mainly a problem in the A-segment where a budget ceiling applies, the impact on costs remained limited. An empirical analysis showed that the amount of overdeclaration varied largely between hospitals and medical specialties.<sup>89</sup>

#### 6.4.1.2 Quality

There is no clear evidence that the effectiveness of the hospital sector improved after the 2006 reform. Hospital mortality was reduced in 2003-2008, but the declining trend already started before the reforms.<sup>105</sup>

The Health Insurance Act and other measures have launched quality incentives: consumer quality indexes document client experiences in the health care system; increased quality information on consumer comparison websites such as [www.kiesbeter.nl](http://www.kiesbeter.nl); launch of the Health Care Transparency Programme ('Zichtbare Zorg') as a first step towards a uniform set of quality data. However, the viability and reliability of the available quality information is still disputed and health insurers have difficulties in obtaining an adequate picture of the quality of services.

Although negotiations between health insurers and providers rarely resulted in binding agreements on quality, the Dutch Healthcare Authority reported a growing emphasis on quality in negotiations in 2007 and 2008.<sup>105, 75</sup> According to insurers and providers, the lack of binding agreements was due to the fact that it is difficult to translate better quality



into a price. Increased interest in quality could be deduced from increased access to and use of quality indicators and health care profiles by health insurers. In 2011 the Health Care Transparency Programme published 40 indicator sets on the process, structure and outcome of care.<sup>107</sup> However, the price and volume of DBCs were and are still the dominating factor in negotiations.

Aside from a lack of adequate data on quality, insurers have been reluctant to negotiate on quality and to selectively contract with higher-quality hospitals because:<sup>75, 96</sup> the public debate on quality of care focuses on waiting lists and access time, not on effectiveness of care; patients are not aware of differences in effectiveness or safety of care; since hospitals have contracts with several insurers, the effort of one insurer to stimulate a hospital to improve quality is also beneficial for patients of competing insurers. Insurers are also afraid to acquire a bad reputation if they are restricting freedom of choice of patients.

#### 6.4.1.3 Efficiency

The reforms have had a mixed effect on cost-efficiency.<sup>77</sup> Real prices in the B-segment have declined, reflecting the increased bargaining power of health insurers since 2005 (-1.2% in 2006; 0.5% in 2007; -1.3% in 2008; 0.2% in 2009; -3.3% in 2010 and -1.4 in 2011).<sup>108</sup> Hospital prices in the freely negotiable B-segment have increased at a lower rate than in the budgeted A-segment.

However, total real hospital expenditures in segment B have increased by an annual 4% which may be explained by supplier-induced demand (SID), up-coding, excessive billing or increased demand. For the years 2009-2010 the volume increase was 1.5% in segment A and almost 14% (8.8% if corrected for the increase in segment B in 2009) in segment B. This difference between the A and B-segment is due to a larger volume increase in 2010 in the B-segment (1% in A-segment and 16% (uncorrected for policy change in 2009) for B-segment). Large volume increases were found for varicose veins, arthrosis and cataract. An empirical analysis identified SID for seven treatments (tonsillectomy, inguinal hernia, varicose veins, cataract, spinal hernia, mamma reduction and pelvic organ prolapsed) which were considered 'at risk' for supply inducement by medical specialists in the relevant areas.<sup>89</sup>

#### 6.4.1.4 Waiting times

An active policy to reduce waiting times is in place since 2000 with the introduction of the acceptable waiting time limits for different types of hospital care, known as the 'Treek norms'.<sup>109</sup> The maximum acceptable waiting time for the first visit to a hospital's outpatient clinic was set at four weeks (80% within three weeks); for (supplementary) diagnostics and medical assessment, four weeks (80% within three weeks); for outpatient (day-case) treatment, six weeks (80% within four weeks); and for inpatient treatment, seven weeks (80% within five weeks). The norms are the same across specialties. They are still used as a benchmark by the Dutch Healthcare Authority (NZa) in its annual evaluation of waiting times. To provide the NZa with more reliable information, in 2009 it became mandatory for Dutch hospitals to register and publish their mean expected waiting times for outpatient clinic diagnosis and treatment using uniform definitions and standard methods of measurement.

Health insurers are increasingly active in assisting their members to obtain faster treatment. Patients get information on waiting times through the government-sponsored patient-oriented health care portal [www.KiesBeter.nl](http://www.KiesBeter.nl) (literally: 'make better choices'). Although the impact of insurer mediation and publicly available information on waiting times has not been assessed, there is empirical evidence that patients are more likely to choose hospitals with below-average waiting times.

Mean waiting times have fallen substantially since 2000 and keep on declining gradually since the introduction of the reforms in 2005/2006. The mean waiting times for almost all surgical procedures in Dutch hospitals in 2011 did not exceed five weeks. There are, however, large differences between hospitals.



### 6.4.2 Unintended effects

#### 6.4.2.1 Increased volume

In an empirical study, based on a dataset with more than 2 million inpatient hospital discharge diagnoses, it was demonstrated that for a selection of 10 elective procedures the volume effect in the first year of the introduction of the DBC system was 8% larger in segment B than in segment A.<sup>89</sup>

Another volume effect is related to overdeclaration, when an additional DBC is opened for the same patient although there is no increase in cost or effort of 40% compared to the average cost of the original DBC (see also section 6.2.4.1).<sup>89</sup> Large differences in overdeclaration between hospitals and between specialties were found. The total amount of overdeclaration in the period 2006-2008 was over 1 billion euro.

#### 6.4.2.2 Up-coding

An empirical analysis for pairs of DBCs (a more and a less expensive DBC) for 5 conditions (pelvic organ prolapsed; inguinal hernia; diabetes mellitus; varicose veins treated by a dermatologist and treated by a surgeon) showed large variation between hospitals in the proportion of DBCs with expensive reimbursement.<sup>89</sup>

## 6.5 Reforms of hospital payment and remuneration of medical specialists 2012-2015

To address problems with the health care system in general and with the DBC system in particular, a new wave of reforms has been introduced since 2012. The main goal of the new reforms is the strengthening of the role of market forces in the provision of health services. For the hospital sector, the government aims at strengthening incentives for hospital efficiency while securing cost containment for hospitals and medical specialists.

### 6.5.1 Hospital payment: second generation of DBCs

#### Macro budget

First, from 2012 onwards a macro budget should guarantee that total annual hospital expenditures do not exceed a government-set limit. In case of budget overrun, all hospitals have to repay the excess revenue in proportion to their respective market share. Hence, the budget (or revenues) of each individual hospital not only depends on its own output but also on the output of other hospitals.<sup>77</sup> Contrary to previous budgeting systems, the allocation of the macro budget to hospitals is no longer the responsibility of the government but of insurers. Some experts fear that the macro budget will again boost waiting lists because of a crowding out of complex hospital care in the regulated price segment (A-segment) by hospital services in the B-segment.<sup>77</sup>

#### Prices

A second reform measure is the expansion of the market-based segment B from 34% to 70% of hospital revenue.

Third, in the regulated hospital segment A, the Functional Budgeting system will be replaced with an output-based payment system with regulated prices. Maximum prices will be set for hospital services for which effective competition is not feasible, e.g. for complex treatments concentrated in a few hospitals. Fixed prices will be set for hospital services for which sufficient capacity has to be constantly on standby, while demand is irregular and unpredictable. Examples are emergency rooms, trauma centres or burn centres. During the first two years of the reforms, hospitals are compensated for reallocation of budgets due to the new payment system (compensation of 95% in 2012 and 70% in 2013).<sup>77</sup>

#### Hospital products: DOTs

Fourth, on 1 January 2012 DOT care products were introduced, reducing the number of hospital products from about 30 000 to about 4400. The objectives of the DOT care products are the same as the original DBCs: increase transparency, stability, medical recognizability, and openness to innovation. The reduced number of products should make the system more manageable.<sup>77</sup>



Four pillars underlie the new hospital products. First, care products are deducted from registered activities by a web-based grouper, external to the hospital, instead of being selected by a medical specialist and then validated. The grouper is an algorithm that defines the DOT care product on the basis of registered activities and patient information. This will reduce the administrative burden of hospitals and medical specialists. Second, the number of care products is reduced substantially, which will facilitate negotiations between insurer and hospital. As is common in DRG-based systems, the patient case-mix of the hospital is measured to enhance a fair payment for every patient. Third, the classification of the DOT care products is based on the ICD-10 coding system and is used by all specialties. Multiple specialties that can treat the same diagnosis or multidisciplinary diseases can be combined into the same DOT care product. Before, DBCs were defined per medical specialty. Although the ICD-10 coding system increases the number of possible diagnoses and activities, due to the grouper the number of care products is reduced substantially. Compared to the care products in the DBC system, the ICD-10-based care products are medically more homogeneous. Fourth, as was the case in the original DBC system and contrary to DRG-based systems, DOT care products combine diagnosis and treatment in one care product.<sup>89</sup>

#### **Add-ons**

The costs of intensive care and of expensive and orphan drugs are paid to the hospital as an add-on to the tariff of DOT care products in order to guarantee the homogeneity of the care products.

#### **6.5.2 Remuneration of medical specialists**

##### **Transition period 2012-2014**

The reform of the remuneration system of medical specialists is based on a new agreement ('Beheersmodel') between the government and the associations of medical specialists and hospitals and is applied to self-employed medical specialists working in hospitals and in ZBCs. Medical specialists working in ZBCs were included in the agreement to prevent strategic substitution from hospitals to ZBCs.<sup>104</sup> The agreement does not concern medical specialists working in a private practice outside the hospital (solo-practice) or in private clinics. A previous and heavily

protested proposal to set an income ceiling for individual medical specialists was replaced with a macro budget for medical specialist remuneration, with a maximum increase of 2.5% per year.<sup>77</sup>

The macro budget is then distributed among individual hospitals by the Dutch Health Care authority (NZA) according to an allocation model based on historic revenue.<sup>110</sup> The revenue limit is a maximum revenue, not a guaranteed revenue, which means that medical specialists have to produce until the limit is reached if they want to earn that maximum revenue.

In addition, allocation models to distribute the budget at the individual hospital level amongst medical specialists have to be developed. The largest share of the budget (the fixed component; 75% to 85%) has to be allocated to the remuneration of regular activities. The aim of this part of the allocation model is to ensure equal remuneration for equal workload and equal productivity. Compared to the previous model, the income of some medical specialists will decrease while that of others will increase.

15% to 25% (the variable component) is allocated to the remuneration of practice costs, extra activities and for the hospital management to reward good performance (quality, innovation, education and production volume).<sup>77</sup> The exact percentage is the result of negotiations between management and medical specialists.

##### **Integral pricing of medical specialist care in 2015**

From 2015 onwards, integrated prices for the hospital and medical specialists will be introduced. Integrated prices will be negotiated between insurers and hospitals (in the segment B) or set by the government (in the segment A).<sup>77</sup> The standard time that medical specialists spend on a specific DBC will be recalibrated and the hourly wage will be negotiable with insurers.





## 6.6 Capita selecta

### 6.6.1 Access to new technologies / Innovation management

DBC-O is the gatekeeper for innovation in the DBC system. Before a new technology can be included in the DBC system, the following process has to be followed:<sup>74, 111</sup>

1. “DBC-O assesses the admissibility, completeness, nature, size and complexity of the application (= ‘Quick scan’);
2. The Health Care Insurance Board (CVZ) performs a systematic literature review to examine the extent and level of evidence supporting the specific technology;
3. DBC-O assesses the costs, effectiveness, ethical aspects, patient preferences and system consequences of the application (= ‘KEEPS-test’);
4. Based on the information acquired from steps 2 and 3, DBC-O decides upon the implementation of the technology in the DBC system;
5. The positive decision by DBC-O has to be approved by the Dutch Health Care Authority (NZa);
6. The CVZ advises the Ministry of Health whether the new technology should be made part of the insurance benefits package;
7. DBC-O incorporates the new technology (temporarily) into the DBC system.”

The seven steps should be taken within six months from registration (but the real throughput time is often longer). Since no average resource-use profile is available at first introduction in the DBC, DBC tariffs are based on expert opinion.

New or innovative treatments are introduced into the DBC system twice a year. Until the new technology is incorporated in the DBC system, additional payments exist only for innovative drugs. Innovative drugs can be provisionally included on the list of expensive or orphan drugs for four years since 2006 (Coverage with Evidence Development, CED). This allows hospitals to receive separate payments before the cost-effectiveness of the drugs has been formally established.<sup>1</sup> The conditions for inclusion on the list require added therapeutic value; a plan for the

assessment of cost-effectiveness in daily clinical practice approved by the pharmaceutical advisory committee; the drug accounts for over 0.5% (expensive drug category) or 5% (orphan drugs) of the annual hospital drug budget. Separate payments amount to 80% for expensive drugs and 100% for orphan drugs of the purchase price of drugs placed on the respective lists. After three years, data generated in the context of the assessment plan are used to inform decisions on further funding.

In addition, experimental DBCs that can be used in innovative and promising cases/devices where clinical data are not completely available were introduced to speed up the procedure for the introduction of innovation.

### 6.6.2 Quality

The scope of this section is restricted to quality initiatives integrated in hospital payment and medical specialist remuneration. Quality initiatives not linked to payment (e.g., public reporting) are out of scope.

For DBCs in the A-segment (or segment with fixed prices for the DOT care products), no quality related adjustments exist.

For segment B DBCs (or DOT care products in the free segment and segment with regulated prices), quality should be an important driver in the negotiations between insurer and hospital. A Purchasing Manual for Hospital Care (‘Inkoopgids Ziekenhuiszorg’), published by the association of health insurers (‘Zorgverzekeraars Nederland’, ZN) contains detailed information on quality indicators and guides the negotiations on quality (see also section 6.4.1.2).

### 6.6.3 Integrated care

Since 2010 bundled payments for chronic care have been introduced for three chronic conditions (diabetes, COPD and vascular risk management). Since hospital costs are not included in the bundled payments, we refer the reader to Chapter 8 on quality of care and integrated care for a detailed description and evaluation of the integrated care scheme (section 8.5.4).





## 7 U.S. MEDICARE

### 7.1 Brief overview of the hospital sector

#### 7.1.1 Health care system

Financing of health care in the United States (U.S.) is managed by many distinct organizations. Around one-third of Americans is covered by government health care programs, i.e. Medicare, Medicaid, the State Children's Health Insurance Program (SCHIP), the Department of Defense TRICARE and TRICARE for Life programs (DOD TRICARE), the Veterans Health Administration (VHA) program, or the Indian Health Service (IHS) program.<sup>112</sup> Medicare, which was introduced in 1965, provides both hospital and general medical insurance. In this chapter, only Medicare will be analyzed. We focus on Medicare because it was the first system to introduce prospective hospital payments based on DRGs. Beneficiaries of the Medicare programs are:

- People aged 65 or older;
- People under age 65 with certain disabilities; and
- People of all ages with End-Stage Renal Disease (permanent kidney failure requiring dialysis or a kidney transplant).<sup>113</sup>

Non-drug services can be covered by two distinct components of the Medicare program, i.e. the traditional Medicare 'fee-for-service' insurance plan and the Medicare Advantage program (or Medicare Part C), in which private health plans are competing.

Hospital costs are covered via the Medicare Part A ('hospital insurance program'), including semi-private rooms, meals, nursing care, drugs as part of the inpatient treatment, and other hospital services and supplies from acute care hospitals, critical access hospitals, inpatient rehabilitation facilities, long-term care hospitals, inpatient care as part of a qualifying clinical research study, and inpatient mental health care (see also section 7.4.2). Private-duty services, private room (unless medically necessary), television and phone, and personal care items such as razors are not covered. To be covered, a doctor must have prescribed inpatient hospital care (official order), the care needed must only be given in hospital, the hospital must accept Medicare, and the Utilization Review Committee (URC) of the hospital or the Quality Improvement Organization (QIO) must

approve the stay.<sup>j</sup> Medicare part A is mainly financed by payroll tax (1.45% for both employers and employees). Individuals who receive cash benefits from Social Security are automatically entitled to Part A on the basis of age or disability, with a 2-year waiting period for the disabled.<sup>113</sup>

Medicare part B ('supplemental insurance program') covers medical services (like lab tests, surgeries, and doctor visits) and supplies (like wheelchairs and walkers) that are necessary to treat a disease or condition and preventive services (e.g. cardiovascular disease screenings or flu shots). Enrolment is voluntary. Medicare part B is financed by premiums paid by beneficiaries (around 1/4) and by government's general funds (around 3/4).<sup>113</sup>

Medicare part D ('prescription drug benefit') covers the costs of prescription drugs and is financed by premiums paid by beneficiaries enrolled in this plan (around 1/4) and by general funds (around 3/4). Enrolment is voluntary.<sup>113</sup>

#### 7.1.2 Ownership

Health care facilities in the US are mainly private organizations but some of them are also owned by federal, state, county, and city governments. Among the 5724 registered US hospitals in 2011, 51% are nongovernment not-for-profit community hospitals, 18% are for-profit community hospitals, 18% are state and local government community hospitals, 7% are non-federal psychiatric hospitals, 4% are federal government hospitals, 2% are non-federal long term care hospitals, and less than 1% concern hospital units of institutions (Prison Hospitals, College Infirmarys, etc.).<sup>115</sup> Medicare beneficiaries have access to almost 5000 inpatient acute-care hospitals nation-wide and over 3/4 of these hospitals are paid under the inpatient

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j URC must decide whether medical services are necessary based on specific criteria mainly related to intensity of the service and the severity of illness. The attending medical specialist must agree with the decision of the URC. If he disagrees, the hospital must request a review by the QIO. If patients are refused, the denial must be in writing and patients can appeal the decision. The mandatory approval by the URC was implemented because Medicare investigate hospitals with a high frequency of short inpatient hospital stays and give sanction if inappropriate admissions are found.<sup>114</sup>



prospective payment system (IPPS) for Medicare beneficiaries while the rest is paid based on costs, i.e. the so-called Critical Access Hospitals (CAH). CAH must satisfy specific conditions such as being located in a rural area and providing no more than 25 inpatient beds. Because critical access hospitals have their own method of payments (no prospective payment system), they are not investigated in this chapter.<sup>116</sup>

## 7.2 Remuneration of medical specialists

### 7.2.1 Fee schedule

Medical specialist services, billed to Medicare part B, include office visits, surgical procedures, and a broad range of other diagnostic and therapeutic services provided in all settings (medical specialist offices, hospitals, etc.).<sup>117</sup>

From 1992, the remuneration previously based on reasonable and customary charges, moved to a prospective, flat fee per visit using the Resource-based relative value scale (RBRVS, also called physician fee schedule). The RBRVS lists payment rates for about 7000 separate services. Payment rates for each of covered medical specialist services are calculated in three steps:

- Specification of the relative value units (RVUs) measuring the resources required to provide the service;
- Adjustment of payments according to the geographical differences in input prices using the Geographic Practice Cost Indices (GPCIs, reviewed by the Centers for Medicare & Medicaid Services (CMS) at least every 3 years);
- Conversion of the geographically adjusted RVUs into a dollar amount. The conversion factor is updated annually according to a Sustainable Growth Rate (SGR) mechanism.<sup>118</sup>

The RVUs take into account a professional component (about 50% of the RVUs) that value the medical specialist work expense (time and skill as well as the intensity and stress associated with the service), a practice expense component (about 45% of the RVUs) that value the average expenses related to the maintenance of a practice (e.g. office rents and employees' wages), and a malpractice component (about 5% of the RVUs)

that value the average cost of malpractice insurance premiums. RVUs are reviewed and if necessary revised at least every 5 years by the CMS.<sup>118, 119</sup>

Updates of the payment rates are constrained by a SGR mechanism since 1998, i.e. a target (tied to growth in real Gross Domestic Product (GDP) per capita) is set for visits spending and payment rates are adjusted to reflect the difference between the actual spending and the target spending (both on an annual and cumulative basis). If there is no difference, the fee schedule is increased by the percentage change in the Medicare Economic Index (MEI, see below). If the actual spending is above (below) the target, the update payment rate will be smaller (higher) than the MEI increase. The update adjustment factor is determined in a way that, over a period of several years, cumulative spending will be brought back in line with the cumulative target spending. This SGR mechanism was nevertheless overridden from 2003 onwards because of objections from medical specialists and negative updates were replaced by small positive or zero updates. Hence, the SGR mechanism does not operate as wanted and created instability for both providers and beneficiaries. A revision of this system is currently discussed.<sup>118</sup>

The MEI used for payment update was previously only based on the percentage change in the average cost of providers' inputs (e.g. labour and equipment) while now, it is based on percentage changes in the average cost of providers' inputs minus the 10-year moving average of growth in productivity in the economy overall.

The RBRVS list fee maximums but the payment can then be adjusted on the basis of the characteristics of the providers and other factors. Medical specialist assistants are paid at a reduced rate (65-85% of the payment rate established by the RBRVS). Adjustments are also done for some surgical procedures, e.g. partial procedures are paid at a reduced rate and procedures with complications are paid at a higher rate. Non-participating physicians (see section 7.2.2) also only receive from Medicare 95% of the payment established by the RBRVS.<sup>118, 120</sup>



Moreover, there is also a difference according to the place of the medical specialist service. There are both a facility and a non-facility rate. It should be noted that for office visits in a freestanding practice, medical specialists are paid by Medicare according to the fee schedule (non-facility rate) but for office visits in hospitals outpatients departments (OPDs), Medicare pays a facility fee to the hospital and a reduced fee for the medical specialist (facility rate). When a service is performed in a facility (e.g. a hospital) the practice expense component of the RVU is lower. The non-facility rate is the payment rate for services performed in the medical specialist office. The total fee paid for office visits in OPDs may be 80% higher than in freestanding practice, inducing cost shifting (see also section 7.5.2.3).<sup>121</sup>

There are also fee schedules for ambulance services, for clinical laboratory services, and for durable medical equipment, prosthetics, orthotics, & supplies.<sup>122</sup>

Medicare accounts for about 23% of all payments for medical specialist and clinical services and about 28% of all hospital payment in 2011.<sup>118</sup>

For most medical specialist services, 80% of the fee schedule amount is paid by Medicare and the remaining 20% is paid by the beneficiary (coinsurance) or by a supplemental insurer. Medicare also pays bonus payment (Medicare payments increased by 10%) under the Medicare incentive payment program for services provided in health professional shortage areas (HPSAs).<sup>117</sup>

### *7.2.2 Participating providers, non-participating providers and private contracts*

Most medical specialists accept Medicare assignment, i.e. they have signed an agreement to accept Medicare-approved amount as full payment for covered services. Non-participating medical specialists did not sign the agreement but they can still choose to accept assignment for individual services. These providers can charge more than the Medicare-approved amount to Medicare beneficiaries but the amount is capped by a 'limiting charge' of 115%, i.e. the provider can only charge up to 15% over the amount that non-participating providers are paid (i.e. Medicare pay only 95% of the fee schedule for non-participating providers). So, for non-participating physicians, the fee-schedule rate must be multiplied by 1.0925 (i.e. 95% \* 115%) to obtain the maximum amount that can be billed

(Medicare payment + patient cost-sharing). This limiting charge applies only to certain covered services (not for some supplies and durable medical equipment).

Private contracts are written agreements between the patient and the medical specialist (or other providers) who decided not to provide services to anyone through Medicare. Medicare beneficiaries are not obliged to sign a private contract. They can always go to another provider who provides services through Medicare. If Medicare beneficiaries have signed a private contract with a physician, Medicare does not pay any amount for the services provided from this medical specialist, even if it is a Medicare-covered service. Private contracts can nevertheless not be signed for emergency or urgent care.<sup>123</sup>

## **7.3 Introduction of the DRG system**

### *7.3.1 Problems with the previous system and objectives of the DRG system*

Before 1983, hospitals were financed by Medicare on a cost reimbursement basis. This retrospective cost-based reimbursement system was considered inefficient and increasingly expensive. The increase in annual Medicare hospital expenditures (from \$3 billion to \$37 billion between 1967 and 1983) and in employers' health insurance premiums became unsustainable. Hospitals had no incentives to reduce costs. Significant and inexplicable price differences for the same service were also observed across hospitals. An inpatient prospective payment system (IPPS) based on Diagnosis Related Groups (DRGs) was therefore introduced in 1983 with the aims of containing hospital costs and improving the efficiency of the system. The objectives of this system were (i) a reduction of the length of stays and strict discharge planning, (ii) an elimination of unnecessary tests and services, (iii) a search for economies of scale and improvement of productivity through more selective use of staff and high-technology equipment, (iv) an increase in the concentration of specialized procedures in referral centres, and (v) a reduction of underutilized hospital capacity.<sup>124-126</sup>



### 7.3.2 Stakeholder views on the introduction of the DRG system

The IPPS system was viewed as triggering a shift in the balance of political and economic power between the providers and the payers. The economic risk shifted from the federal government to hospital administrators. As a result, the control of hospital administrators on medical specialist practice habits increased and some stakeholders were afraid of the effects of cost containment on the quality of care.<sup>124, 125</sup>

### 7.3.3 Implementation issues

#### 7.3.3.1 Implementation period

Acute care IPPS was introduced in 1983 for the Medicare Part A, except for capital costs which continued to be reimbursed on costs. The implementation was done over a five year period to give hospitals time to adjust their costs. During this period, an important weight was given to hospital-specific and regional-specific cost data in the formula used to establish the DRG-rates. DRG payment rates were exclusively based on national data from 1988. Capital costs were only included into the IPPS from 1990.

Initially four states were exempted from the Medicare IPPS because they had already instituted their own PPS consistent with the intent of the federal legislation, i.e. Massachusetts, Maryland, New York and New Jersey. New York, Massachusetts, and New Jersey joined the Medicare IPPS in 1985, 1986, and 1988 respectively. Maryland is still exempt.<sup>127, 128</sup>

At the introduction, payments of hospital services were made by the first version of the DRG system, the Health Care Financing Administration Diagnosis Related Grouper (HCFA-DRG) which comprised 470 DRGs across 23 major diagnostic categories (MDCs).

This chapter only focuses on the traditional short-term acute care IPPS which excludes psychiatric hospitals and units, rehabilitation hospitals and units, long-term care hospitals, and Children's hospitals. DRG-like systems were also introduced for rehabilitation facilities in 2002, for Long-Term Care Hospitals in 2003 and for psychiatric facilities in 2005.<sup>68</sup>

#### 7.3.3.2 Medical data

Classification of patients into DRGs is done according to the affected organ system, the surgical procedures performed, the discharge status, the patient complications and co-morbidities, and patient characteristics (age, gender). The principal diagnosis and up to 24 secondary diagnoses that may include co-morbidities or complications as well as up to 25 procedures are taken into account.<sup>126, 129</sup> The current grouping algorithm is called the 'Centers for Medicare & Medicaid Services Medicare Severity Diagnosis Related Grouper' (CMS MS-DRG). This algorithm is used since 2008 and allows to better taking into account for severity of illness and resource consumption (749 groups). There are three levels of severity which are determined according to secondary diagnoses: (i) major complication/co-morbidity; (ii) complication/co-morbidity; (iii) no complication/co-morbidity.<sup>129</sup>

Diagnoses and procedures are coded according to the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). Since 2009, a move towards the use of the 10th edition of the international classification of diseases using the Clinical Modifications for reporting patients diagnoses (ICD-10-CM) and the Procedure Coding System for reporting inpatient procedures (ICD-10-PCS) is in progress and will replace the ICD-9-CM. The compliance date is October 2014.<sup>130</sup>

The expected benefits of ICD-10-CM/PCS are:

- 'Improved ability to measure health care services, including quality and safety data;
- Augmented sensitivity when refining grouping and reimbursement methodologies;
- Expanded ability to conduct public health surveillance;
- Decreased need to include supporting documentation with claims;
- Strengthened ability to distinguish advances in medicine and medical technology;
- Enhanced detail on socioeconomic, family relationships, ambulatory care conditions, problems related to lifestyle and the results of screening tests;



- Increased use of administrative data to evaluate medical processes and outcomes, to conduct bio-surveillance and to support value-based purchasing initiatives.<sup>131</sup>

#### 7.3.3.3 Cost data and calculation of reference costs and prices

Charges represent the amount that hospitals billed for services but do not reflect how much hospital services actually cost. The hospital Cost-to-Charge ratio enables the conversion. Cost information is obtained from the hospitals cost reports collected by the CMS.<sup>129</sup> Every Medicare-certified institutional provider is required to submit an annual cost report to a Medicare Administrative Contractor (MAC). This cost report contains provider information such as facility characteristics, utilization data, costs and charges by cost centre (in total and for Medicare), Medicare settlement data, and financial statement data. The cost-to-charge ratio is determined for each hospital based on these data.<sup>132</sup>

A weight is assigned to each DRG by CMS. The same DRG weights are used to determine operating and capital payment rates. They are recalibrated annually and are based on the average level of resources (estimated using charges multiplied by cost-to-charge ratios) used to treat Medicare patients in that DRG. Even if the methodology to determine DRG weights has been refined over time, the core characteristics of the process remain the same and are currently as follows:

- Hospital costs (i.e. charges multiplied by cost-to-charge ratios) for all IPPS cases are standardized by removing the effects of regional wage differences (adjustment of labour-related costs according to a wage index applicable to the area) and of cost of living variations (only for hospitals in Alaska and Hawaii for which the non-labour costs are adjusted by a cost of living factor). Indirect medical education costs and additional payments to hospitals that treat a large percentage of low-income patients (see also section 7.4.3 on additional payments) are also not taken into account.<sup>129</sup>
- Determination of the average standardized costs for each DRG, i.e. the sum of standardized costs for all cases in the DRG divided by the number of cases in that DRG.<sup>129</sup>

- Elimination of outliers: outlier cases are eliminated (see also section 7.4.3) and the average standardized cost is recomputed without taken them into account.

Hospital payments are then determined on a per case basis as followed:

- For each Medicare discharge, the hospital submits a bill to the Medicare Claims Administration Contractor which will categorize the case into a DRG.
- The separate operating and capital base payment rates, determined on a national basis and updated annually by the CMS (see also section 7.4.5), are adjusted for geographic factors. In 2013, the national IPPS operating base rate was \$5348.76 and the national IPPS capital base rate was \$425.49. Geographic adjustments are done according to the wage index and the cost-of-living of the hospital area. A percentage (i.e. the labour share) of the operating base payment rate is adapted by the area wage index of the hospital. If this index is greater than 1, the labour share of the base payment rate equals 68.8%, otherwise the share is equal to 62%. The non-labour related share is adjusted by a cost-of-living factor for Alaska and Hawaii. The wage index is also applied to the whole capital base rate.
- The base payment is multiplied by the relative weight for the DRG.
- If applicable, additional amounts are given (see section 7.4.3 on additional payments).





## 7.4 Current system

### 7.4.1 *Range of costs included*

Both operating costs (routine nursing services, room and board, support, diagnostic and ancillary services) and capital costs (depreciation, interest, rent, and property-related insurance and taxes) are included in the DRG payment rates. Hospitals are also reimbursed for 70% of bad debts resulting from non-payment of copayments and deductibles by the beneficiaries if efforts have been made to collect the unpaid amounts.<sup>129</sup>

Direct medical education costs, outpatient services (except some of them within 3 days before inpatient admission, see section 7.4.2) or other services covered by Medicare part B (such as medical specialist services) are not included.<sup>126</sup>

### 7.4.2 *Range of services included*

Every inpatient service is included except medical specialist services (see Table 7 for more details). Payments for medical specialist services during a hospitalization are made separately.<sup>126</sup> Outpatient diagnostic services and admission-related outpatient non-diagnostic services provided by the admitting hospital (or an entity that is wholly owned or operated by the admitting hospital) within 3 days before or the day of the inpatient admission to a hospital subject to acute care IPPS are also included (one day before for inpatient admission to a hospital not paid under the acute care IPPS, i.e. psychiatric hospitals and units, inpatient rehabilitation hospitals and units, long-term care hospitals, children's hospitals, and cancer hospitals).<sup>133</sup>

Hospitals can provide ambulatory care through outpatient departments and emergency rooms as well as home health, skilled nursing facility, psychiatric, and rehabilitation services which are not covered by the inpatient prospective payment system (IPPS). Since 2000, outpatient services in hospitals are covered by the outpatient prospective payment system (OPPS). The IPPS and OPPS have a similar structure. Via the OPPS, hospitals are paid a predetermined amount per outpatient services (classification in one of the 850 ambulatory payment classification (APC) groups). The relative weight for each APC corresponds to its median cost of service compared to the median cost of a clinic visit. IPPS generally pays for a bundle of services while OPPS generally pays for individual services.<sup>121</sup>

In the 1990s, a "Centers of Excellence" model was tested on several hospitals. Under this model, participating hospitals received a bundled payment for heart bypass surgery that covered both facility and medical specialist costs. This model was nevertheless abandoned, perhaps due to opposition from non participating facilities. Medicare is also currently testing an 'Acute Care Episode' model, which bundles hospital and medical specialist payments for designated orthopaedic and cardiac procedures at five hospitals. A full evaluation of this model is not yet available. Other bundled payment demonstrations are also in progress (see section 7.5.3.3).<sup>134</sup>



**Table 7 – Included and excluded hospital services****Included services:**

- 'Bed and board;
- Nursing services and other related services;
- Use of hospital or CAH facilities;
- Medical social services;
- Drugs, biologicals, supplies, appliances, and equipment;
- Certain other diagnostic or therapeutic services;
- Medical or surgical services provided by certain interns or residents-intraining;
- Transportation services, including transport by ambulance"<sup>135</sup>

**Excluded services:**

- "Post-hospital SNF care furnished by a hospital or a critical access hospital that has a swing-bed approval;
- Nursing facility services that may be furnished as a Medicaid service in a swing- bed hospital that has an approval to furnish nursing facility services;
- Medical specialist services that meet the requirements for payment on a fee schedule basis;
- Medical specialist assistant services;
- Nurse practitioner and clinical nurse specialist services;
- Certified nurse mid-wife services;
- Qualified psychologist services;
- Services of an anaesthetist"<sup>135</sup>

Source: CMS 2010<sup>135</sup>. CAH = Critical Access Hospital; SNF = Skilled Nursing Facility



### 7.4.3 Additional payments and adjustments

Medicare also provides the following add-on payments:<sup>121, 126, 129</sup>

- Direct graduate medical education (DGME) payment for approved teaching hospitals (i.e. hospitals training residents in approved Graduate Medical Education (GME) Programs) to cover the direct costs of the training program. DGME payments are made separately from the IPPS and vary according to the hospital-specific costs per resident in a historical base year, the number of residents a hospital trains, and the proportion of Medicare inpatient days to total inpatients days in the hospital.
- Indirect graduate medical education adjustments for approved teaching hospital to reflect the higher indirect patient care costs of teaching hospitals relative to the non-teaching hospitals. A percentage add-on payment is applied for each case paid through IPPS. This percentage varies depending on the hospital's teaching intensity (i.e. the ratio of residents-to-beds under the IPPS for operating costs and the ratio of residents-to-average daily census under the IPPS for capital costs).
- Outlier payments for extremely costly cases. Limits to be qualified as 'cost outliers' are established annually by the CMS, i.e. the so-called fixed-loss threshold. Hospitals that may qualify for a cost outliers payment must make a specific request and identify the actual cost of each outlier case to obtain this payment (no automatic payment). They are paid 80% of their costs above the fixed-loss thresholds (90% for burn DRGs).
- Disproportionate Share Hospital adjustment for hospitals treating a high-percentage of low-income patients, i.e. hospitals that qualify under one of the statutory calculation formulas designed to identify hospitals that serve a disproportionate share of low-income patients. A percentage add-on payment is applied for each case paid through IPPS. This percentage varies based on the outcome of the statutory calculation.
- 'Sole Community Hospitals' or 'Medicare Dependent Hospitals' are hospitals located in rural areas that can also receive add-on payments.

- New technology add-on payments for treating patients with approved technologies that are new, costly and offer a substantial clinical improvement compared to existing treatments available to Medicare patients. Applicants for new technology add-on payments must demonstrate that they would be inadequately paid otherwise under the DRG system (see also section 7.5.3.1 on access to new technologies).
- Payment can be reduced if the beneficiary has a short LOS (at least 1 day less than the geometric mean LOS for the DRG) and is transferred to another acute care hospital or in some conditions, to a post-acute care setting.
- Since 2011, there are also temporary payments for many hospitals, i.e. a revised low-volume adjustment and special payments for health information technology.
- Since October 2012, a proportion of operating IPPS payment is also adjusted via the Hospital Value-Based Purchasing Program and the Hospital Readmissions Reduction Program (see also section 7.5.3.2).

### 7.4.4 Proportion of hospital expenditures covered by the DRG-based payment

Medicare payments represent about 28% of hospital revenues.<sup>118</sup>

### 7.4.5 System updates

DRG classifications (reclassification of existing DRG codes and creation of new codes), the relative weights and the wage index are annually updated by the CMS. CMS receives comments from the public throughout the calendar year. A list of issues is then done by the CMS in December and January. Final updates are published in August and are effective in October of the same year. The 3M Corporation provides recommendations to CMS for DRG reclassification based on a sample of Medicare cases from a 2-year old period. DRG changes are then tracked for a 2-year period to determine if they are appropriate. Recalibration of DRG weights is done in a way that maintains budget neutrality.<sup>126, 129</sup>

The operating base payment rate is set annually by Congress on the basis of the projected increase in the market basket index that measures the price increases of goods and services buy by hospitals to provide care.



The update is reduced if hospitals do not report specific quality data. The capital base payment rate is set annually by the Secretary of the Department of Health and Human Services.<sup>126, 129</sup> Since 2011, the updates to the base payment rates have been reduced by an amount equal to the 10-year moving average increase in multi-factor productivity.

## 7.5 Evaluation of the hospital payment system

### 7.5.1 Fulfilment of reform objectives

#### 7.5.1.1 Decrease of underutilized hospital capacity

The expected decrease of underutilized hospital capacity was not observed. At the introduction of the system, the overall hospital occupancy rates decreased strongly, from 72.2% in 1983 to 63.4% in 1985.<sup>124</sup> Because of a reduction in the number of inpatient hospital beds, the overall hospital occupancy rate slightly increased the following years and then stabilized to reach 67.8% in 2009.<sup>136</sup>

#### 7.5.1.2 Concentration on selected activities and changes of hospital structure

A change in medical practice patterns was observed with the introduction of the IPPS, e.g. an increase in surgical management of heart disease patients and a shift to outpatient setting for patients with less complex need of care (see also section 7.5.2.3 on cost shifting). An increase in durable medical equipment spending was also observed.<sup>124</sup> The percentage of hospital days in special care units also increased from 6.4% before the introduction of the system to 7.1% the first year.<sup>137</sup> Between 2005 and 2010, the number of specialized hospital services continued to increase as well as high-tech services (robotic surgery, PET/CT scans, MRI).<sup>119</sup>

#### 7.5.1.3 Costs reduction

##### Cost per case and length of stays

The introduction of the IPPS had an effect on the average length of stays, which decreased by 25% between 1980 and 1985 while the decrease was only of about 5% for non-Medicare patients under age 65 for the same period. The decrease was more important for hospitals under financial pressure (measured by the gap between actual costs and actual revenues) than for the others.<sup>124</sup>

Cost savings related to IPPS introduction were more a one-shot result that was not maintained the years after. While the hospital cost per case decreased between 1983 and 1985, it increased the years after (increase of the case-mix).<sup>124</sup>

A recent study also analyzed the cost per case difference between hospitals under high and low financial pressure for the years 2006-2010. The financial pressure was measured by factors such as non Medicare profit margin, i.e. hospitals under high pressure (26% of hospitals) had non-Medicare profits of less than 1%, while hospitals under low pressure (59%) had non-Medicare profit margins of more than 5 %. As a result, hospitals with the high financial pressure had median standardized costs per case that were about 8% lower than the national median and generated a median overall Medicare profit margin of 4 %, which was 9% points above the national median (-5%). Hospitals with low financial pressure had median standardized costs per case that were about 4% above the national median and generated a median overall Medicare profit margin of -10%, which was 5% points below the national median (-5%).<sup>121</sup>

##### Medicare payments and total U.S. health care spending

The increase in real Medicare inpatient hospital payment was reduced after IPPS introduction, with an average increase rate of 7.1% between the 1977-1982 period and an average increase rate of 3.5% between the 1984-1987 period. However, even if the real growth in Medicare spending per beneficiary was slower, total Medicare payments and total U.S. health care spending remain a problem.<sup>124, 138, 139</sup>

Total private and public spending for health care as a share of the GDP in the U.S. has risen significantly over the past several decades (with a slight break from 1993 to 2000). It has been shown that new medical



technologies and the rising of incomes were the most important factors explaining this growth but a recent study showed that the expansion of insurance coverage resulting from the introduction of Medicare also had a substantial impact on health care spending.<sup>140, 141</sup>

Federal spending for Medicare has grown quickly in the last decades (from 1.7% of GDP in 1985 to 3.7% of GDP in 2011) and represents 21% of total health care spending in 2010.<sup>140</sup> Medicare payments to medical specialists are one of the rapidly growing components of Medicare spending. Even after an adjustment for changes in the MEI (see also section 7.2) and in the number of Medicare beneficiaries, spending on medical specialist services has increased by 34.5% between 1997 and 2005. The per-beneficiary spending for medical specialist services adjusted by the MEI increased at an average rate of 3.8% per year between 1997 and 2005 while the per-beneficiary spending for other Medicare benefits (Hospital Insurance (part A)) and other coverage provided under the supplemental medical insurance (Part B) increased at an average rate of 1.4% over the same period. It has been shown that the decrease (increase) in payment rates was associated with an increase (decrease) in volume. The increase of spending for medical specialist services was nevertheless also explained by the underlying trend in the quantity of services (including the effects of new technologies and the increase in the prevalence of diseases).<sup>118</sup>

#### 7.5.1.4 Efficiency

The impact of the IPPS system on efficiency was unclear. Even if a part of the decline in the length of stays and in the number of admissions could be related to improvements in organizational efficiency in some area of care (e.g. utilization of new technologies/procedure and development of home or ambulatory care), two studies having assessed the impact of the introduction of the IPPS on hospital technical efficiency were rather negative. In these studies, technical efficiency was measured using a Data Envelopment Analysis method which takes into account all the inputs<sup>k</sup> and

k In the first study: Total full time equivalents (FTEs); Nursing FTEs; Other non-payroll expenses; and Beds / In the second study: the number of beds; the total number of diagnostic and special services; both inpatient and outpatient, the number of non-physician, full-time employees plus the

outputs<sup>l</sup> of interest at one time to calculate efficiency scores. They showed that the introduction of the IPPS did not improve the operational performance of hospitals in technical efficiency, and that the gap between efficient and inefficient hospitals was enlarged. These studies were nevertheless limited to a single state and did not take into account quality of care criteria while the goal of some hospitals may have been to provide better quality of care instead of either maximizing profits or minimizing costs.<sup>142, 143</sup>

A recent national study tried to determine if efficient hospitals received adequate payments during the 2008 to 2010 period. Efficient hospitals were defined as hospitals which performed relatively well on standardized inpatient costs per case, hospital-level mortality rates, and readmission rate (potentially preventable readmission). Of the 2161 screened hospitals, about 14% were found to be relatively efficient. The analysis also showed that urban hospitals, teaching hospitals and non-profit hospitals were more likely to be efficient: 19% of teaching hospitals vs. 11% of nonteaching hospitals, 9% of rural hospitals vs. 15% of urban hospitals, 10% of for-profit hospitals vs. 15% of non-profit hospitals were designed as efficient hospitals. Even if for-profit hospitals tended to be low-cost providers (63% of for-profit hospitals had below-average costs), only 40% of them had below-average mortality, and 37% had below average readmissions. In terms of appropriate payments, Medicare payments are usually less than costs (see also section 7.5.2.7) but this study showed that for efficient hospitals, Medicare payments were usually more than costs (margin of 2% for the median efficient hospital in 2011).<sup>121</sup>

weighted (by 0.5) number of part-time personnel employed, and other operating expenses.

l In the first study: Cases treated in each of the eight DRG categories with the highest volumes; and cases treated in the remaining DRG categories / In the second study: inpatient discharges adjusted by the Medicare case-mix index and outpatient visits.



## 7.5.2 *Unintended consequences and effects not related to reform objectives*

### 7.5.2.1 *Up-coding*

After IPPS introduction, almost all hospitals purchased DRG grouper software that allowed them to determine the most remunerative way of ordering diagnostic codes and to identify the most highly reimbursed cause of admission. The fact that hospitals' efforts to report more co-morbidity codes led to better financial rewards can partially explain the increase in severity of illness (a 3% annual increase was observed for the case-mix index between 1983 and 1988). In 2008, the implementation of the MS-DRG system (that focuses more on the severity of diseases) also increased the reported case-mix due to changes in hospitals' documentation and better coding.<sup>121</sup>

A study on a sample of 20% of all Medicare hospitalizations between 1985 and 1991 showed that hospitals having up-coded patients to DRG codes with large price increases have generated an estimated \$330-\$425 million of additional reimbursement annually, with for-profit hospitals being more likely engaged in up-coding.<sup>144</sup>

### 7.5.2.2 *Inappropriate early discharge*

The average length of stays declined on average by 3.4 days (-24%) between 1981-1982 and 1985-1986. The number of readmissions did not increase after IPPS introduction but a larger proportion of patients was discharged in unstable or sicker conditions than before. Between 2007 and 2011, the median 30-day readmission rates were around 20% for pneumonia, acute myocardial infarction, and heart failure, with no significant change over the years. Because avoidable readmissions are both poor quality outcomes and unnecessary costs, a specific policy was recommended by the Congress and the hospital readmission program was implemented (see section 7.5.3.2)<sup>121, 145</sup> From 2011, the potentially preventable readmission rates decreased by 0.7% (2009-2011), showing the first effects of the readmission program.<sup>121</sup> Although claims data are not yet final for 2012, hospital readmission rates for all Medicare FFS beneficiaries seem to have dropped significantly during this year.<sup>146</sup> Penalties were about \$300 million in 2013 and potential savings from reducing avoidable readmissions are expected to be much higher.<sup>121</sup>

### 7.5.2.3 *Patient selection*

Medicare beneficiaries' access to care, measured by assessing the capacity and supply of providers as well as the volume of services over time, was considered as good. Between 2004 and 2011, the number of hospitals participating in the Medicare program and the range of services offered (see also section 7.5.2.7) continue to grow. The volume of services also increases but with a shift to outpatient services (outpatient volume continued to grow while per beneficiary inpatient admissions continued to decline).<sup>121</sup>

Concerning the hospital Medicare case-mix index, a 3% annual increase was observed between 1983 and 1988, resulting in a 20% increase in IPPS payments in 1988.<sup>124</sup>

### 7.5.2.4 *Cost-shifting*

Because hospitals treat different kind of patients (Medicare patients, privately insured patients, and uninsured patients) a reduction of Medicare payments may result in cost-shifting by increasing prices for other patients. A study has shown that in the years 1980s, reduction in Medicare payments resulted in cost-shifting to private payers but that such cost-shifting was reduced in the 1990s due to the growing role of managed care in private insurance.<sup>147</sup> Currently, cost-shifting to private patients seems to be limited and varies according to the share of private patients in the hospitals.<sup>148</sup> A recent study even showed that lower Medicare hospital payment rates for inpatient care led to lower private payment rates, which goes in contradiction with the cost-shifting theory.<sup>149</sup>

### 7.5.2.5 *Services-shifting*

At the introduction of the system, a shift to outpatient settings was also observed. The decline in both hospital admissions and length of stay was compensated by an increase in the use of skilled nursing facilities, intermediate care nursing homes, home health agency visits, psychiatric and rehabilitation facilities, hospice services and outpatient surgery between 1983 and 1985.<sup>124</sup> Such a shift continues to be present now. Inpatient admissions per Medicare beneficiary had a cumulative reduction of 7.8% from 2004 to 2011 while the volume of hospital outpatient services per Medicare beneficiary increased by 33.6 percent cumulatively from 2004 to 2011. Inpatient admission has also decreased for non-Medicare





beneficiaries, resulting in a reduction of the inpatient occupancy rate. The difference of payment level for office visits in outpatient departments (OPDs) compared to freestanding practices is also responsible for a shift from freestanding practice to OPDs practices and results in higher program spending and beneficiary cost-sharing without significant changes in quality of care. Discussion on identical payments of services across settings is therefore currently under discussion.<sup>121</sup>

#### 7.5.2.6 Hospital activity

The expected increase in hospital admissions was not observed. Hospital admissions per Medicare beneficiary fell by 15.9% between 1983 and 1987 while this number fell by 11.3% for the whole population during the same period. This could partly be explained by the effectiveness of the Federal Professional Review organizations which monitored hospitals for unnecessary admissions but also by a shift to outpatient settings.<sup>124</sup>

#### 7.5.2.7 Hospital profitability and fairness of payments

A measure of hospital profitability is the hospital margin, i.e. ((payments - costs) / payments). Between 1983 and 1985, 80% of all hospitals had positive payment margins. However, a decline was observed the years after. The percentages of hospitals having a negative Medicare operating margin were 34% in 1986 and about 67% (2/3) in 1988. With the introduction of the IPPS, higher cost hospitals that served a large number of Medicare patients were more at risk. Margins were higher for urban, proprietary, teaching and regional referral hospitals than for rural hospitals. Additional payments were therefore given to maintain the fairness of Medicare payments across hospitals (see section 7.4.3 on additional payments).<sup>124</sup>

With the series of changes and adjustments adopted (see section 7.4.3n additional payments for rural hospitals), the margin is now higher for rural hospitals than for urban hospital and this difference is yet expected to rise due to the introduction of low-volume adjustments in 2011 - 2013. It should also be noted that Medicare margins are on average higher in for-profit hospitals and efficient hospitals usually have a positive margin (see also section 7.5.1.4 on efficiency).<sup>121</sup>

#### 7.5.2.8 Quality of care

A study of the RAND study<sup>150</sup> was funded by the Health Care Financing Administration (HCFA, currently called the CMS) to measure the impact of IPPS introduction on quality of care for hospitalized patients (1981-1982 compared to 1985-1986). Five clinical conditions were analysed, i.e. congestive heart failure, acute myocardial infarction, hip fracture, pneumonia, and cerebrovascular accident. The study showed an improvement in the process of care (concerning physician cognitive assessment, nurse assessment, use of diagnostic and therapeutic technologies, and monitoring with intensive care and telemetry) but these changes could not be directly attributed to the IPPS introduction. Moreover, the proportion of patients with one or more readmissions within one year was slightly reduced (-3%,  $p>0.05$ ) and in-hospital mortality significantly declined (3.3% point reduction,  $p<0.01$ ). However, a larger proportion of patients were discharged in unstable or sicker conditions than before the introduction of the IPPS system, with an impact on post-discharge mortality. Because no significant difference was observed concerning the 30 days and 180 days post-admission mortality rates, IPPS seemed to only induce a change in timing and place of death.<sup>150</sup>

An evaluation of the quality of care using the in-hospital and 30-day mortality rate indicators for 5 clinical conditions (acute myocardial infarction, congestive heart failure, stroke, pneumonia and hip fracture) and six patient safety indicators (iatrogenic pneumothorax, postoperative respiratory failure, postoperative pulmonary embolism or deep-vein thrombosis, post operative wound dehiscence, accidental puncture or laceration, and death rate among surgical inpatient with treatable serious complications) developed by the Agency for Healthcare Research and Quality (AHRQ) was also done on 2007 to 2011 data.<sup>121, 145</sup> The analysis showed that quality of care improved between 2007 and 2011. In-hospital and 30-day mortality were significantly reduced for four of five clinical conditions (reduction for hip fracture was not significant) and patient safety indicators improved significantly for 5 out of the 6 indicators (non-significant difference for the rate of death among surgical inpatients but the event was rare).





### 7.5.3 *Capita Selecta*

#### 7.5.3.1 *Access to new technologies / Innovation management*

This section only refers to Medicare payments for new technologies in hospital inpatient services (outpatient services are out of scope). The cost of new technologies is incorporated in the hospital IPPS through an annual review of payment rates (with a usual time lag of 2 years for the coding and recalibration processes) as well as through add-on payments for specific new technologies. Short term add-on payments for new technologies are only given if the concerned technology either offers considerable quality improvements over existing alternatives or offers options for diagnosis or treatment of previously untreatable conditions. Moreover, applicants for new technology add-on payments must demonstrate that they would be inadequately paid otherwise under the DRG system. When a technology is eligible for additional payment, the additional payment only covers 50% of the hospital costs above the standard DRG payment, capped at 50% of the estimated cost of the new technology. Moreover, this add-on payment is budget neutral, i.e. CMS lowers the base payment rate prospectively by a same percentage for all services to finance the add-on payments. The total amount of add-on payments is capped at 1% of total operating payments. Add-on payments are given until data are available to reflect the cost of the technology in the DRG weights through recalibration (no less than 2 years and no more than 3 years).<sup>151</sup>

#### 7.5.3.2 *Quality of care*

This section only investigates quality measures in hospitals linked to payment mechanisms.

#### **Public reporting of quality information – Hospital Compare**

Medicare encourages hospitals to participate in public reporting of quality information by introducing a threat of payment reductions for non-reporting of quality data (hospitals that do not report quality data currently receive a 2% point reduction in their annual payment update under the IPPS). There are currently over 4 000 participating hospitals. Performance measures related to heart attack, heart failure, pneumonia, surgery and other conditions are available on the Medicare website 'Hospital Compare'

([www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov)) and include clinical process of care and clinical outcome measures as well as patient experience of care topics. Information is categorized in 6 sections:<sup>152</sup>

- Patient survey results, providing patient experience of care measured by a national, standardized survey of hospital patients, the so-called Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS);
- Timely and Effective Care, providing process of care measures to be able to compare which hospitals give recommended care most often (e.g. average number of minutes before outpatients with chest pain or possible heart attack got an ECG, giving aspirin to heart attack patients at discharge, or flu vaccinations to pneumonia patients);
- Readmissions, Complications, and Deaths (e.g. 30-day readmission and 30-day mortality for heart attack, heart failure and pneumonia patients, serious complications using the AHRQ patient safety indicators, hospital-acquired conditions, and healthcare-associated infections);
- Use of medical imaging, providing information about hospitals' use of medical imaging tests for outpatients. Measures assess how hospitals protect patient safety (e.g. keeping patients' exposure to radiation and other risks as low as possible), follow up properly when screening tests such as mammograms show a possible problem, and avoid the risk, stress, and cost of doing imaging tests that patients may not need;
- Linking quality to payment, provide information on how much Medicare spends per patient in a specific hospital compared to the national Medicare spending per patient. The measure includes any Medicare Part A and Part B payments made for services provided to a patient during the 3 days prior to the hospital stay, during the stay, and during the 30 days after discharge from the hospital;
- Medicare Volume, showing the number of Medicare patients with a certain condition (MS-DRG) that a hospital treated.



However, it has been shown that the 'Hospital Compare' initiative has only modest or even no impact on mortality rates for these conditions (heart attack, heart failure, pneumonia, surgery and other conditions). A criticism of this program is the fact that there are no summary statistics, overall rankings of hospitals or assessments provided for the patients. They have to sort through the various measures themselves.<sup>134</sup>

### **Hospital Outpatient Quality Reporting Program**

A quality reporting program has also been implemented for outpatient hospital services, including process, structure, outcome, and efficiency measures. Non-participating hospitals receive a 2% point reduction in their annual payment update under the OPPI. Information is also available via the Hospital Compare website.<sup>153</sup>

### **Premier Hospital Quality Incentive Demonstration**

CMS wished to pursue the improvement of the quality of care by expanding the information available and by giving direct incentives to reward the delivery of superior quality of care via the so-called 'Premier Hospital Quality Incentive Demonstration (PHQID)' pay-for-performance project implemented in 2003. This project was led by the CMS and the Premier healthcare alliance. Data on more than 30 evidence-based clinical quality measures from more than 200 participating hospitals were collected. Six clinical areas were investigated, i.e. Acute Myocardial Infarction (AMI), Heart Failure (HF), Isolated Coronary Artery Bypass (CABG), Pneumonia (PN) and Hip or Knee Total Replacement. Participating top performing hospitals were rewarded by an increase in their payments for Medicare patients. At the end of the third year, penalties were also established for lower-performing hospitals. Participation was voluntary and the project was budget neutral. An assessment of the program showed a raise of the overall quality in participating hospitals by an average of 18.6% over six years (e.g. reduction of heart attack mortality). Improvements in the process of care were also observed (e.g. improve on process of care quality measures for smoking cessation, discharge instructions and pneumococcal vaccination). Nevertheless, some studies also showed no improvement on risk-adjusted mortality for pneumonia, acute myocardial infarction, congestive heart failure, and cardiac bypass surgery in the PHQID under financial incentives.<sup>154, 155</sup> This program was extended in 2009 for a three-year period.<sup>156</sup>

### **The value-based purchasing program**

The value-based purchasing program is a nation-wide pay-for-performance project applied since 2013 and based on the experience from the PHQID. This project must be budget neutral, i.e. operating base payments are reduced to fund value-based incentive payments according to the overall performance of the hospital measured by a set of quality indicators. The first year of the program (2013), CMS has reduced DRG payments to the about 3 100 participating hospitals by 1%. The total redistribution in 2013 was estimated at \$850 million. For this first year, 12 clinical process of care measures and one patient experience measure based on the HCAHPS were assessed. In 2014, one clinical process measure and three outcome measures will be added. The Total Performance Score (TPS) is comprised of both the Clinical Process of Care domain score (weighted as 70% of the TPS) and the Patient Experience of Care domain (weighted as 30% of the TPS). Five clinical areas where Medicare is focused on improving care and paying for good quality care are investigated: acute myocardial infarction or heart attack, heart failure, pneumonia, surgical care, and health care associated infections. Clinical process of care measures are detailed in Table 8.

Experience of Care Domain scores encompass eight aspects of hospital quality: communication with nurses, communication with doctors, responsiveness of hospital staff, pain management, cleanliness and quietness of hospital environment, communication about medicines, discharge information, and overall rating of hospital.<sup>157</sup>

**Table 8 – Clinical process of care measures****Acute Myocardial Infarction (AMI or heart attack)**

- AMI-7a: Heart Attack Patients Given Fibrinolytic Medication Within 30 Minutes of Arrival
- AMI-8a: Heart Attack Patients Given PCI Within 90 Minutes of Arrival

**Heart Failure (HF)**

- HF-1: Heart Failure Patients Given Discharge Instructions

**Pneumonia (PN)**

- PN-3b: Pneumonia Patients Whose Initial Emergency Room Blood Culture Was Performed Prior to the Administration of the First Hospital Dose of Antibiotics
- PN-6: Pneumonia Patients Given the Most Appropriate Initial Antibiotic(s)

**Surgical Care Improvement Project (SCIP)**

- SCIP-Card-2: Surgery Patients Who were Taking Heart Drugs called Beta Blockers Before Coming to the Hospital, Who were kept on the Beta Blockers During the Period Just Before and After Their Surgery
- SCIP-VTE-1: Surgery Patients Whose Doctors Ordered Treatments to Prevent Blood Clots After Certain Types of Surgeries
- SCIP-VTE-2: Patients Who got Treatment at the Right Time (Within 24 Hours Before or After Their surgery) to Help Prevent Blood Clots After Certain Types of Surgery

**Healthcare Associated Infections (HAI)**

- SCIP-Inf-1: Surgery Patients Who are Given an Antibiotic at the Right Time (Within One Hour Before Surgery) to Help Prevent Infection
- SCIP-Inf-2: Surgery Patients Who are Given the Right Kind of Antibiotic to Help Prevent Infection
- SCIP-Inf-3: Surgery Patients Whose Preventive Antibiotics are Stopped at the Right Time (Within 24 Hours After Surgery)
- SCIP-Inf-4: Heart Surgery Patients Whose Blood Sugar (Blood Glucose) is kept under Good Control in the Days Right After Surgery

Source: Medicare.gov 2013<sup>157</sup>



### The hospital readmission program

The hospital readmission program measures the hospital's excess readmission rate compared to the national average for three conditions: acute myocardial infarction, heart failure, and pneumonia. Readmissions concern each admission to an acute care hospital paid under the IPPS within 30 days of a discharge from the same or other acute care hospitals. Medicare payments in 2013 are reduced up to 1% for hospitals that had above-average readmission rates within 30 days from July 2008 through June 2011 (i.e. data from a 3-year period).<sup>158</sup> The excess readmission ratio is measured by dividing, for each of the applicable conditions, the hospital's number of predicted 30-day readmissions by the national average for the hospital's set of patients with that condition. Results are risk-adjusted to account for differences in hospital patients' characteristics such as age, gender, past medical history, and other diseases or conditions (co-morbidities) that patients had when they arrived at the hospital. Aggregate payments for excess readmissions are then calculating by multiplying the sum of base operating DRG payments by the 'excess readmission ratio -1' for each applicable condition having an excess readmission ratio greater than 1.

Total penalties for 2013 payments amounted to \$280 million. Following enactment of the program in 2010, a small decline in risk-adjusted readmission rates was observed (see also section 7.5.2.2). However, 12.3% of all 2011 Medicare admissions were still followed by a potentially preventable readmission.<sup>158, 159</sup> The readmission policy will be refined and continued. For 2014 payments, it is foreseen to apply an algorithm to account for planned readmissions and to increase penalties up to 2%. For 2015 payments, it is foreseen to increase penalties up to 3% and to increase the number of applicable conditions, i.e. patients admitted for an acute exacerbation of chronic obstructive pulmonary disease and patients admitted for elective total hip arthroplasty and total knee arthroplasty.<sup>160</sup>

### Differentiation between complications (caused by the hospital) and co-morbidities (which the patient already has upon admission)

To reduce adverse events, hospitals must now use 'present-on-admission' codes for both primary and secondary diagnoses. For ten selected conditions (e.g. pressure ulcers, dislocation of patella open due to a fall, or catheter-associated urinary tract infection), the diagnosis code is not taken into consideration in the grouping process if the conditions were not present at admission. These conditions are considered as avoidable hospital-acquired events and Medicare will not anymore pay for these extra costs.<sup>72</sup>

#### 7.5.3.3 Payments for integrated care

This section only focuses on coordination of care initiatives that include hospitals.

#### Bundled payments

Traditionally, Medicare makes separate payments to providers for each of the individual services they provide. The possibility of rewarding health care providers through a process known as 'bundled payments' that links payments for multiple services beneficiaries received during an episode of care is currently examined by the CMS. The aim is to improve the quality and coordination of care by binding all settings and all providers. This system is currently in a testing phase and providers can participate on a voluntary basis to one of the four models of bundled payments that cover:

- Model 1: Inpatient stay and related preadmission services. Hospital is paid a discounted amount based on the payment rates established under the IPPS original Medicare program and medical specialists are always paid separately for their services on a FFS basis but gains due to a change of practice can be shared between the hospital and medical specialists (this model will be suspended from 2014).
- Model 2: Both hospital and medical specialist services during an inpatient stay and related preadmission services, as well as post-acute services, medical specialist visits, hospital readmissions, and some other services as specified by the applicants provided within 30-60 or 90 days after discharge. The payment is retrospective, i.e. providers are paid their usual FFS rates and the incurred costs are compared to



a target cost for the episode. The agreed target cost is negotiated in advance and must reflect a discount from historical episode costs. If the incurred costs are below the target, the difference can be shared between participant providers but if the incurred costs are above the target, they have to pay back Medicare.

- Model 3: Services provided post-discharge but not the initial inpatient stay. The episode of care must begin within 30 days after discharge and will end either a minimum of 30, 60, or 90 days after the initiation of the episode. The payment is also retrospective (see the previous point).
- Model 4: Prospective payment (negotiated amount with a discount of at least 3% from historical fee-for-service costs for similar episodes in that hospital) to the admitting hospital to cover both hospital, medical specialist and other provider services during the inpatient stay. Medical specialists and other practitioners will directly be paid by the hospital out of the bundled payment (no FFS payment). Related readmissions for 30 days after hospital discharge are also included.

Up to 48 different clinical condition episodes can be selected by the participants (e.g. major joint upper extremity, amputation, urinary tract infection, stroke, or chronic obstructive pulmonary disease).<sup>161</sup>

### Accountable Care Organizations (ACOs)

ACOs are assigned a spending target that reflects expected spending for a defined group of beneficiaries and receives bonuses for achieving both financial and clinical targets. ACOs may comprise a wide range of providers with at least primary care physicians, medical specialists and one or more hospitals. They come together on a voluntary basis with the aim of giving high quality care to Medicare patients, avoiding unnecessary duplication of services, and ensuring that patients, especially the chronically ill, receive the right care at the right time. Gains are shared among the providers.<sup>162</sup> A description of the three ACO-models funded by Medicare can be found in section 8.5.5.

## 8 PROSPECTIVE CASE-BASED HOSPITAL PAYMENT SYSTEM AND QUALITY OF CARE

### 8.1 Introduction

**Diagnosis related groups (DRGs)** were originally developed in the 1970's to condense the large number of individual patients treated by hospitals into a manageable number of clinically meaningful and economically homogenous groups (e.g. primary hip replacement in elective patients or transient ischaemic attack in patients under 70 without complications).<sup>12</sup> Since then, they gradually became the **basis for prospective case-based hospital payment systems** in most industrialised countries, especially in Europe.<sup>12, 163</sup> In this chapter we will elaborate on two dominant trends in the development of DRG systems (to improve or complement them) that are since recently observable in Europe:<sup>12</sup>

1. The integration of incentives for improving quality in payment systems;
2. The use of payment systems to improve integrated care.

Many countries are trying to **integrate incentives for improving quality into their payment systems**.<sup>72</sup> Prospective payment systems are thought to provide incentives for hospitals to limit the services per patient. As a consequence, if the introduction of prospective case-based hospital payment introduces an incentive to reduce services that are beneficial to the patient or to discharge patients earlier than clinically appropriate, then a reduction in the use of services could result in a reduction in quality. On the other hand, it might also improve the quality of care by reducing the use of unnecessary services, or by facilitating activities that are not billable under other payment schemes (e.g. coordinating of care under a fee-for-service scheme).<sup>12, 164</sup>



In this chapter we will give an overview of:

- Evidence on effects of prospective case-based hospital payment on quality measures (section 8.2);
- Examples of payment incentives within (section 8.3) and outside (section 8.4) the DRG-based payment system to improve quality and to counteract its potential unintended perverse effects on quality of care.

Although the definition of quality of care includes 7 dimensions (see text box), most studies and evaluations of prospective case-based hospital payment systems focus on 'clinical effectiveness' and/or 'safety'. We did not perform specific searches for all 7 dimensions.

An additional limitation of this chapter is that we will not focus on 'efficiency' as a quality dimension. This dimension is discussed in previous chapters since efficiency is one of the main objectives of a DRG-based hospital payment system. Finally, other quality initiatives, not linked to payment (e.g. public reporting; audit and feedback) are out of scope.

In most industrialized countries health care systems are challenged by the rapidly ageing population and the rising prevalence of chronic diseases and multi-morbidity. The pre-dominantly hospital-centred systems focusing on treatment of acute illnesses need to be reformed in integrated care systems.<sup>165, 166</sup> This requires also **payment incentives that encourage the implementation of integrated care systems**. In this chapter we will provide a broad overview of such initiatives.

### Definition Quality of care

**'The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.'**<sup>167</sup>

A former KCE report by Vlayen et al. (2006)<sup>168</sup> proposed the following dimensions of quality of care:

- **Safety:** avoiding injuries to patients from the care intended to help them;
- **Clinical effectiveness:** the professionals giving care should be competent, provide services based on scientific knowledge to all who could benefit and refrain from providing services to those not likely to benefit;
- **Patient centeredness:** providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide major clinical decisions;
- **Timeliness:** avoiding waits and potentially harmful delays;
- **Equity of care:** services should be available to all people and care should not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status;
- **Efficiency of care:** the society should get value for money by avoiding waste, such as waste of equipment, supplies, ideas, and energy;
- **Continuity and integrativeness:** all contributions should be well integrated to optimise the delivery of care by the same health care provider throughout the course of care (when appropriate), with appropriate and timely referral and communication between providers.





We conducted a ‘**scoping review**’ to study the different topics discussed in this chapter. It is clear from the start that there is no one ideal model to improve or safeguard the quality of care or to stimulate integrated care. Therefore, most (if not all) health care systems use a combination of different models.

The review included a grey literature search by the screening of the websites of the following international organizations:

- European Observatory on Health Systems and Policies (<http://www.euro.who.int/en/who-we-are/partners/observatory>);
- Agency for Healthcare Research and Quality (<http://www.ahrq.gov/>);
- Rand Corporation (<http://www.rand.org/>);
- WHO-Europe (<http://www.euro.who.int/en/home>);
- OECD (<http://www.oecd.org/>).

This search was complemented with a targeted Medline search for systematic reviews using the MeSH-terms (Prospective Payment System/\*Capitation Fee/ combined with \*‘quality of health care’/ or exp \*quality indicators, health care/). Additional articles were consulted using the snowball method. Also information that emerged during the country studies as described in the previous chapters was used.

## 8.2 Prospective case-based hospital payment: effects on quality

The evidence presented in this section is largely based on a recent systematic review performed by the Agency for Healthcare Research and Quality (AHRQ).<sup>164</sup> This study reviews the evidence published between 1985 and 2011 about the **effects of bundled payment on health care spending and quality of care relative to either fee-for-service or cost-based payment**. The evaluation of the Medicare Inpatient Prospective Payment System was based on 4 review articles. An additional 58 studies were included to evaluate the effect of 19 other bundled payment systems.<sup>164</sup>

The majority of bundled payment programs (i.e. 16/20) in the included studies focused on **single institutional providers**, such as inpatient hospitals, skilled nursing facilities, or inpatient rehabilitation facilities. The generalizability of findings for the emerging bundled payment programs

that include multiple providers and/or provider types (see 8.5 payment systems that encourage integrated care for the chronically ill) is, as such, limited. More evidence is likely to become available when evaluations of ongoing programs are published.

### Description of bundled payment systems

**‘Bundled payment’ is a method in which payments to health care providers are related to the predetermined expected costs of a grouping, or ‘bundle,’ of related health care services.’ Within the bundled payment model, a variety of specific payment methods are possible.**<sup>164</sup>

Despite the **heterogeneity of settings** (e.g. inpatient hospitals; skilled nursing facilities; inpatient rehabilitation settings) findings were consistent across different care settings. Given this consistency, results are relevant to our more narrow research question (i.e. effect of prospective case-based hospital payment on quality of care).

The published evidence suggests that transitioning from retrospective reimbursement of costs or fee-for-service payment to bundled payment resulted in **declines in spending and utilization** often measured as reductions in length of stay or utilization of specific services (5-percent to 15-percent reductions in many cases).<sup>164</sup> Surprisingly, the authors did not study whether effects of transitioning to a bundled payment system were different if the system of origin was a fee-for-service system versus a system with retrospective reimbursement of costs.

The **effects on health care quality are less certain**. The available evidence does not support concerns about the worse potential adverse effects of bundled payment.<sup>164</sup> In general, findings on quality measures are inconsistent and include both differences in the direction and magnitude of effects on different quality measures within a single study and differences in the direction and magnitude of effects for similar quality measures between studies. For a given bundled payment intervention, either some quality measures improved while others worsened or studies arrived at different conclusions about the effect of bundled payment on related quality measures.<sup>164</sup>



This can be illustrated by the example of ‘inappropriate early discharge’, an unintended consequence believed to result in higher readmission rates.<sup>72</sup> An early evaluation of the introduction of an inpatient prospective case-based hospital payment system (i.e. Medicare), indeed, showed a 20 percent rise in the likelihood that a patient will be discharged home in an unstable condition.<sup>72, 169</sup> Nevertheless, the systematic reviews evaluating the effect of this program did not suggest that Medicare led to increases in hospital readmissions<sup>170</sup> (nor to increased one-year mortality rates<sup>164, 169, 171</sup>). Neither did a more recent evaluation of a prospective payment system in England coincide with higher readmission rates (after hip fracture).<sup>72, 172</sup> On the other hand, it should be noted, that one study also reported a higher proportion of previously hospitalized patients residing in nursing homes indicating a potential shift of utilization to other settings of care.<sup>164</sup>

**The strength of body of evidence was rated as ‘low,’** indicating that there is low confidence that the evidence reflects the true effect, and that further research is likely to change confidence in the estimate of effect and is likely to change the estimate. The results of included studies were consistent in the direction of the effect for spending and utilization measures but inconsistent for quality measures.<sup>164</sup>

Despite the potential for undesired effects of bundled payment on quality of care, **programs generally did not include quality as an intrinsic part of the bundled payment mechanism.** Many of the bundled payment programs studied, were implemented prior to the recent proliferation of pay-for-performance (P4P) programs and other quality incentives. In some cases, the bundled payment programs reviewed will be accompanied in the future by a separate P4P program (see 8.4) or quality incentives integrated within the DRG-system (see 8.3). It is unclear how these pay-for-performance programs will interact with the bundled payment programs studied or the differential impact they will have on quality.<sup>72</sup>

### 8.3 Mechanisms within the DRG-based payment system to incentivize quality of care

The potential unintended adverse effects of DRG-based hospital payment systems on care quality can potentially be avoided by modifying features of the DRG-based hospital payment systems. In this section we will describe: the best practice tariff system in England; the inclusion of post-acute care services in the treatment episodes; the exclusion of hospital-acquired conditions and never events from payment and some other mechanisms.

#### 8.3.1 Including evidence-based practice in the DRG payment

Including evidence-based practice as a parameter in the DRG payment aims to encourage medical practice that is considered to be ‘good quality’ by moving away from pricing simply based on average observed costs per episode.<sup>72</sup> Adjusting payments for certain DRGs based on the quality of all patients treated within that DRG requires reliable indicators of patient-level data and evidence and agreement on what constitutes ‘good quality’.<sup>72</sup> In this paragraph we elaborate on the ‘best practice tariffs’ that have been introduced in England since 2010.

#### Definition Best Practice Tariff

**A best practice tariff (BPT) is defined as ‘a (mandatory) national tariff that has been structured and priced to both incentivise and adequately reimburse care that is high quality and cost effective’.**<sup>13</sup>

The best practice tariff program has three goals. First, there are best practice tariffs to incentivize the appropriate care setting for a set of surgical procedures (e.g. cholecystectomy in day care). Second, there is a best practice tariff for cataract treatment that aims to reduce variability in the entire care pathway. As such, this tariff covers the price of the entire care pathway, so that commissioners only pay for events in the streamlined pathway (e.g. elective cataract).<sup>72</sup> Third, there are evidence-based best practice tariffs.

Here we focus on ‘**evidence-based**’ **best practice tariffs**. For further details on the former two types of best practices (i.e. incentivizing day care; streamlining pathway of care) we refer the reader to the Chapter on England.

### 8.3.1.1 Selection of best practices

The service areas covered by the BPTs have been selected using the following criteria:

- High impact (i.e. high practice volumes, significant unexplained variation in practice, or significant impact of best practice on outcomes);
- A strong evidence base on what constitutes best practice;
- Clinical consensus on the characteristics of best practice.

There are evidence-based best practice tariffs for: acute stroke; fragility hip fracture; adult renal dialysis; paediatric diabetes; transient ischaemic attack; primary total hip and knee replacements; interventional radiology; major trauma care; diabetic ketoacidosis and hypoglycaemia; early inflammatory arthritis; endoscopy procedures; paediatric epilepsy; and Parkinson disease.

### 8.3.1.2 Base tariff and conditional payment

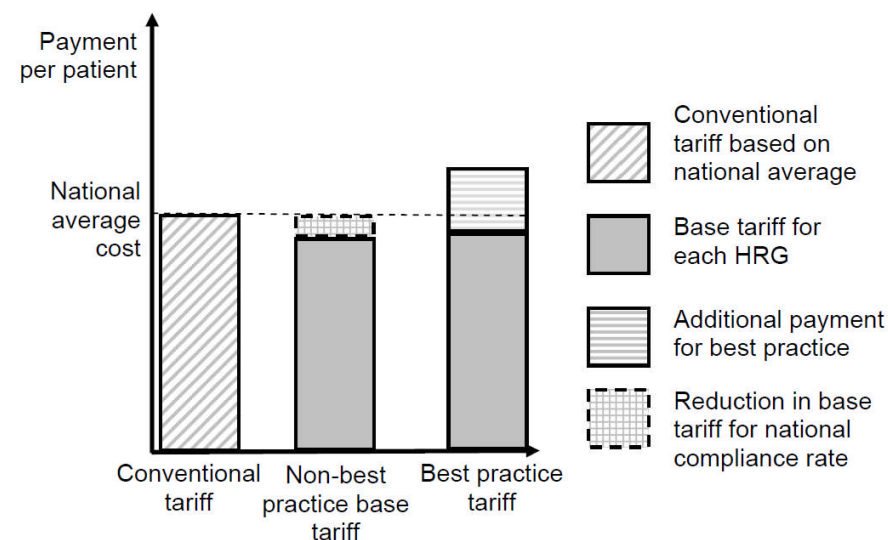
Evidence-based best practice tariffs have two components: the base tariff and the conditional component. The **base tariff** is payable to all activities irrespective of whether the characteristics of best practice are met. The **conditional component** is payable if the treatment meets several characteristics of evidence-based best practice. The price of the conditional component is calculated on the basis of the additional costs to deliver best practice. The base tariff is set below the national average cost, and hospitals that are below average performers have therefore an added payment incentive to change practice.

In the early stages of implementation of evidence-based best practice tariffs with conditional payment, the sum of the base tariff and of the conditional payment was higher than the national average costs (see Figure 7).

Over time, increases of conditional payment have come at the expense of corresponding and sometimes larger decreases in the base tariff, making the base tariff increasingly punitive as a way of pushing hospitals to improve. This mechanism also ensures that Payment by Result (PbR) expenditures (the NHS prospective case-based hospital payment system) do not grow too much with the introduction of best practice tariffs, as the

sum of the base tariff and the conditional payment is at the level of national average costs.<sup>22</sup>

**Figure 7 – Early stages of price setting for evidence-based BPTs**



Source: *Payment by Results guidance 2010/11*<sup>19</sup>; BPT = best practice tariff; HRG = Healthcare Resource Group

This system of base and conditional tariffs is not followed for all best practice tariffs. In fact, for some evidence-based best practice tariffs<sup>m</sup>, the price setting is based on an 'additional payment model', i.e. the best practice tariff is higher than the national average costs of current practice and there is no reduction in base tariff for non-best practice. In this case, there is a payment incentive to shift to 'better practice', but there is no negative financial consequence of not achieving best practice.<sup>22</sup>

<sup>m</sup> It is unclear from the consulted references who and on which criteria it is decided to implement best practices for some conditions/procedures differently.



### 8.3.1.3 Evaluation of best practice tariffs

In 2012 'The Audit Commission' assessed the impact of BPTs.<sup>22</sup> The report combined quantitative and qualitative analyses to assess hospitals' clinical and financial performance. It looked in detail at the best practice tariffs for day-case surgery, fragility hip fracture and acute stroke.

The total value of best practice tariff payments for these procedures in 2011/2012 amounted to £71 million nationally, and total payments to hospitals for these procedures were £532 million. This is to compare with the total of tariff costs for acute care amounting to some \$30 billion. For the individual hospital or specialty, the actual amount of best practice tariff was often immaterial. Furthermore, best practice tariff **payment models are complex and hospitals do not perceive the effect of best practice tariffs in relation to their previous income.** Therefore, hospitals consider that best practice tariffs do not provide much payment incentive but that they can focus attention to a specific area of clinical practice and can help to bring improvement of practice. In this sense, best practice tariffs are viewed as '**recognition for doing the right thing**'.

The detailed evaluation of the three best practice tariffs shows a real impact, but the Audit Commission recommends to simplify the payment models of the tariffs and to accompany best practice tariffs by public reporting of quality.<sup>22</sup>

#### An example: Fragility Hip Fracture Best Practice Tariff

For fragility hip fracture the aim is to incentivize hospitals to prepare patients quickly to surgery, to stabilise them quickly, to respond to their frail conditions and complex needs and to provide adequate post-surgery care.

The best practice tariff for fragility hip fracture is made up of a **base tariff** and a **conditional payment**, payable if all of the following characteristics are achieved:

- Time to surgery within 36 hours from arrival in an emergency department, or time of diagnosis if an admitted patient, to the start of anaesthesia;
- Admitted under the joint care of a consultant geriatrician and a consultant orthopaedic surgeon;

- Admitted using an assessment protocol agreed by geriatric medicine, orthopaedic surgery and anaesthesia;
- Assessed by a geriatrician in the perioperative period (within 72 hours of admission);
- Postoperative geriatrician-directed multi-professional rehabilitation team;
- Fracture prevention assessments (falls and bone health);
- Two Abbreviated Mental Tests (AMT) performed and all the scores recorded in 'National Hip Fracture Database (NHFD)' with the first test carried out prior to surgery and the second post-surgery but within the same stay.

Although not compulsory, hospitals that want to compete for a 'best practice tariff for fragility hip fracture' should submit their data to the NHFD.

The evaluation of the fragility hip fracture best practice showed that there was a clear and steady increase in care meeting the fragility hip fracture criteria between the beginning of 2010/2011 and the end of 2011/2012. Achievement against the individual criteria was high at the end of 2011/2012, with **90% compliance for four criteria and 70% for the other two** (time to surgery < 36 hours and assessment by a geriatrician within 72 hours). Compliance with all the criteria together was achieved for 55% of the fragility hip fracture at the end of 2011/2012 against 25% at the beginning of 2010/2011. It is reasonable to assume that **this improvement is due to the focus placed on fragility hip fracture as a result of the national audit** (the NHFD) and the implementation of the best practice tariff.

Nevertheless, the quality of data collected from the non-mandated NHFD is not always good: in the sample reviewed by the Audit Commission, Primary Care Trusts (called Clinical Commissioning Groups (CCGs) since 2013) made 61% of payments without valid documentation and thus no proper evidence of compliance.<sup>22</sup>





### 8.3.2 Extending treatment episode to post-acute care

To incentivize coordination and integration of care it is desirable to **extend the DRG-related payment for an integrated set of treatments**, including outpatient visits, rehabilitation, and so on. But this is challenging and requires a sophisticated integrated information system (see also section 8.5).

**In the Netherlands**, the DBC-based ('Diagnose Behandel Combinaties', Diagnosis Treatment Combinations) DRG system covers the whole spectrum of inpatient and outpatient care provided at hospitals, relating to a specific diagnosis from the first specialist visit to the end of the care process (treatment completed). It includes inpatient days, outpatient visits, laboratory services, medical imaging services, medications, medical materials, (surgical) procedures, and so on.<sup>72</sup> Consequently, as long as a patient is treated for the same condition, the hospital does not receive an extra payment. However, the Dutch system does not provide incentives to reduce postoperative infections or readmission rates, since these are coded as new DBCs.<sup>72</sup>

Traditionally, **Medicare** makes separate payments to providers for each of the individual services they furnish to beneficiaries for a single illness or course of treatment: inpatient hospital services are bundled into 'stays,' skilled-nursing-facility services are bundled into 'days,' and home-health-agency services are bundled into 'episodes'.<sup>173</sup> This approach can result in fragmented care with minimal coordination across providers and health care settings. Chandra et al. (2013)<sup>174</sup> found that spending on post-acute care (i.e. long-term hospital care, rehabilitation care, and skilled nursing facility care) was the fastest growing major spending category and concluded that policies aimed at controlling acute care spending, such as prospective in-hospital case based payment, are likely to be more effective if they include post-acute care.

**In January 2013 Medicare launched the 'Bundled Payments for Care Improvement (BPCI) Initiative'.** A subset of Medicare providers receive a single payment for an episode of acute care in a hospital, followed by post-acute care in a skilled nursing or rehabilitation facility, the patient's home, or other appropriate setting.<sup>175, 176</sup>

Sood et al. (2011)<sup>177</sup> described two important implementation challenges for such a system. **First, the episodes have to be selected.** Given the voluntary nature of the program, provider participation can be increased by choosing conditions for which providers face less financial uncertainty. A standard measure of financial risk is the degree to which costs for patients with a given condition seen by a particular provider vary, after controlling for health – such as complications and other conditions – and demographic characteristics. Essentially, the remaining variability is unrelated to patients' or providers' observable characteristics and is thus difficult to incorporate into a payment system. A next criterion in the selection of episodes is the selection of episodes with the potential to reduce costs without compromising patient outcomes. This is typically measured by the variation across providers in adjusted costs and readmissions for a given condition. If the variation in costs is unrelated to patient outcomes, it reflects inefficiency on the part of providers. Similarly, variation in adjusted readmission rates across providers can indicate the potential for cost savings without compromising outcomes. This variation means that hospitals have varying readmission rates, even after patient characteristics are controlled for. This indicates that hospitals with higher adjusted rates could avoid costly readmissions by changing their practices.<sup>177</sup>

**A second implementation challenge is fixing the length of episode of care.** Longer episode lengths provide greater assurance that patients' conditions have stabilized and patients do not need ongoing care. However, longer episode lengths also imply more variation in costs across patients and therefore place increased financial risk on the hospital or other entity receiving the bundled payment.<sup>177</sup>

The BPCI demonstration project includes 4 different models of which two models include the payment for post-acute care services. Participants can select up to 48 different clinical condition episodes with a time span of 30, 60 or 90 days after discharge. For these models, Medicare payments will not change. Medicare will continue to pay each provider under the current applicable fee-for-service payment system at the applicable amounts for the dates of service. After the episode of care concludes, the aggregate Medicare expenditures for the episode of care will be compared to the target price. If the actual expenditures were less than the target price, Medicare will pay the difference to the awardee. If the actual expenditures



were more than the target price, the awardee will pay the difference to Medicare.<sup>176</sup>

The program is too recent to make an evaluation of its implementation. Nevertheless, some authors warn for **unintended consequences**.<sup>177</sup> In principle, patients currently have a free choice of post-acute care providers. In a payment bundling scheme, however, there are strong incentives for the entity receiving a bundled payment and coordinating care to take a more active role in overseeing post-acute care. Hospitals could well reduce the number of post-acute providers they use or increase the use of in-hospital post-acute units to save costs. Another reason for a hospital to reduce the number of post-acute care providers it uses is to reduce managerial and administrative burden.<sup>177</sup> Policy makers need to consider the effects of any regulation on patient welfare and cost. A reduction in the number of post-acute providers in a hospital's referral network could adversely affect patients' welfare. For example, patients may need to travel farther for care, or may end up being cared for by a post-acute provider whose skills or expertise are not well matched to the patient's particular condition. In addition, Sood et al. (2011)<sup>177</sup> warn of the reduction of valuable services that improve patients' health but do not affect the probability of readmission in the short run.<sup>177</sup> They recommend the following policy options to mitigate both financial risk and incentives to stint care: a robust outlier payment policy; P4P; gain and loss sharing. Under the latter policy option, Medicare would set a bundled payment target for providers who participate in the pilot program and would cover some portion of their spending in excess of this target. In return, providers would share with Medicare any savings achieved if spending fell below the target.<sup>177</sup>

### 8.3.3 *Excluding hospital-acquired conditions and readmissions from payment*

#### 8.3.3.1 *Hospital-acquired conditions and 'never events'*

One of the potential perverse effects of DRG-based prospective hospital payment systems is that hospitals receive extra budget for patients that develop complications during their hospital stay. Disentangling complications (caused by the hospital) from co-morbidities (which the patient already has upon admission) is therefore one of the strategies in new in-patient prospective payment systems.<sup>72</sup>

Since 2008 **Medicare no longer pays hospitals for additional costs associated with 10 conditions** (e.g. foreign object retained after surgery, catheter-associated urinary tract infection, stages III and IV pressure ulcers, falls and trauma, and surgical site infections following select surgeries) **considered to be preventable medical errors** (also known as hospital-acquired conditions). This change has profound implications for how medical specialists code and document hospital care.<sup>178</sup> After all, it is required to submit a Present on Admission (POA) Indicator with each claim. If a Medicare claim includes a selected hospital-acquired condition that was not identified on the POA Indicator the hospital will not receive a higher resulting DRG payment.<sup>179</sup>

While this approach to reducing adverse events is considered attractive, it should be noted that ensuring accurate and thorough coding of hospital diagnoses is challenging. Penalizing or rewarding hospitals based on their diagnosis coding **could heighten the risks of 'gaming' or coding manipulation**.<sup>72</sup> In addition, the budgetary impact of not-paying for only 10 hospital-acquired conditions has been found to be negligible (0.001 percent) and will unlikely encourage providers to improve quality.<sup>180</sup> Options to strengthen the incentives include further payment modifications (e.g. amount of penalty) for hospital-acquired conditions or expanding the hospital-acquired condition policy to exclude payment for other consequences and additional procedures.





The NHS in England has a similar system by **not paying for 'never events'**. Never events are serious patient safety events that are largely preventable. The NHS standard contract requires that no payment is made for treatment that results in one of the national never events, and/or for treatment to deal with the consequences of a never event. Examples of never events listed by the NHS are: wrong site surgery; wrong implant/prosthesis; retained foreign object post-operation; wrongly prepared high-risk injectable medication; maladministration of a potassium-containing solution; wrong route administration of chemotherapy; wrong route administration of oral/enteral treatment; death or severe harm as a result of intravenous administration of epidural medication.<sup>23</sup>

### 8.3.3.2 Readmissions

The Affordable Care Act (U.S.) of 2010 requires a hospital to establish a **readmission reduction program**. This program was designed to provide incentives for hospitals to implement strategies to reduce the number of costly and unnecessary hospital readmissions. A readmission in this context is **defined** as *'an admission to a hospital within 30 days of a discharge from the same or another hospital.'* Hospitals include short-term inpatient acute care hospitals excluding critical access, psychiatric, rehabilitation, long-term care, children's, and cancer hospitals.

The **conditions** included are acute myocardial infarction, chronic heart failure and pneumonia. The analysis of readmissions is based on the principal diagnosis at discharge and 'transfers to another acute care hospital'. 'Certain readmissions that are unrelated to the prior discharge' and 'certain planned readmissions for procedures related to the AMI measure' were excluded. In 2015 COPD, elective total hip arthroplasty and total knee arthroplasty will be added to the list.

The **analysis process and methodology** are complex and look at three years of discharge data and at least 25 records for each condition. The excess readmission ratio includes adjustments for clinical factors such as patient demographic attributes, co-morbidities, and patient frailty. Hospitals are compared with a national average readmission ratio that generally applies to a hospital's patient population and the applicable condition.

If the rates of readmission are deemed excessive, the **hospital's payments are decreased up to 1%** for all Medicare payments (the penalty will go up to 2 percent in 2014 and to 3 percent in 2015). Payments for medical specialist services are not directly affected, only payments for hospital services.<sup>181</sup>

Also in Germany, hospitals do not receive a second DRG payment if a patient is readmitted for the same condition within 30 days after discharge.<sup>72</sup> A similar system exists in England.

## 8.4 Pay-for-performance

### 8.4.1 Introduction

Pay-for-performance (P4P) is increasingly being used to drive improvements in health care quality and safety.<sup>182</sup> The policy of tying payment incentives to the quality of performance has strong face validity.<sup>154</sup> P4P goes further than the strict clinical outcome (see definition quality in section 8.1) and can be expressed in structural, process and outcome quality criteria. Many P4P programmes focus mainly on structure and process outcomes.<sup>183</sup> Several possible payment incentives structures are possible: bonuses, performance based fee schedule, performance based withholds, regular payment increase linked to performance and quality grants/financial awards/performance funds.<sup>183</sup> Some P4P programmes make use of an absolute reward whereby anyone who performs well obtains the reward no matter how the other providers perform. Other P4P programmes use a 'tournament approach', where providers compete against one another. The latter method has the advantage that the expenses are more under control, however the uncertainty about what can be achieved could provoke providers not to engage in the programme.<sup>183</sup>

This section is largely based on a recently published systematic review of systematic reviews<sup>184</sup>, combined with the consultation of the original studies and information that emerged from the country studies.

We will first elaborate on P4P initiatives in the U.S. Medicare program and the NHS in England, before discussing the evidence that is described in the systematic reviews.<sup>184</sup> We have chosen these systems since they include the dominantly cited and studied hospital pay-for-performance programs.



## 8.4.2 A description of P4P programs in Medicare and the NHS

### 8.4.2.1 U.S. Medicare

Over the past decade Medicare has put in place several pay-for-performance programs for hospitals. The aim of this section is not to give an exhaustive description. We only describe the 'Hospital Quality Incentive' demonstration project and the recently launched 'Value-based purchasing' program. Besides these initiatives, other initiatives exist within Medicare (e.g. non-payment policy for hospital-acquired conditions that were thought to be nearly 100 percent preventable: see 8.3.3.1<sup>185</sup> or reduced payments for readmissions: see 8.3.3.2).

#### Premier Hospital Quality Incentive Demonstration (HQID)

The Centers for Medicare and Medicaid Services (CMS) completed this 6-year demonstration program of pay-for-performance for hospitals.<sup>154</sup> In 2003, approximately 450 hospitals using the Premier Inc (Charlotte, North Carolina) data (i.e. a public reporting initiative) system were invited to participate, and more than 200 hospitals across 38 states volunteered. Hospitals were judged on their composite performance scores for the following 5 clinical conditions: Acute Myocardial Infarction (AMI), Community Acquired Pneumonia Acute (CAP), Chronic Heart Failure (CHF), Coronary Artery Bypass Graft surgery (CABG), and hip or knee replacement surgery.

Most of the 34 measures were clinical process measures, but the program also included risk-adjusted mortality, readmission, and complication rate measures for a selection of conditions (i.e. AMI, CABG, hip and knee replacement).

The program rewarded initially only hospitals that performed in the top two deciles with 1 to 2% bonuses in Medicare payments for the particular condition, whereas underperforming hospitals were liable for a 1 to 2% financial penalty starting in the fourth year of the program. The Premier HQID made modest changes<sup>n</sup> later in the program to offer additional

incentives for hospitals that made substantial improvements in care. Rewards and penalties are distributed in a revenue neutral manner with a linear distribution function. In other words, the net increases in rates for better-performing hospitals are funded entirely by net decreases in rates for poorer performing hospitals.<sup>185</sup>

An early but influential study examined changes in performance on 10 of 34 measures among 207 PHQID hospitals (i.e. Public reporting and P4P) and 406 control hospitals (Public Reporting, only) during the first 2 years under financial incentives. Control hospitals were matched on bed size, teaching status (teaching or non-teaching), region (Northeast, Midwest, South, or West), location (urban or rural), and ownership status (non-profit or for-profit). After adjustments were made for differences in baseline performance (selection bias introduced by voluntary character of HQID) and other hospital characteristics, an increase of 2.6 to 4.1 percentage points in process-quality measures was found.<sup>187</sup> With longer follow-up, however, these gains attenuated and almost disappeared.<sup>188</sup> Moreover, studies of risk-adjusted mortality for pneumonia, acute myocardial infarction, congestive heart failure, and cardiac bypass surgery in the HQID showed no improvement at all on these patient outcomes under financial incentives.<sup>154, 155</sup>

<sup>n</sup> From 2006-2009, hospitals were eligible to receive three types of rewards: a 'Top Performer Award,' given to hospitals with scores in the top 20 percent of HQID hospitals; an 'Attainment Award,' given to hospitals with composite scores exceeding the median from HQID hospitals 2 years prior; and an

'Improvement Award,' given to hospitals scoring above the median of HQID hospitals in the current year and also ranking within the top 20 percent in terms of quality improvement among HQID hospitals. Hospitals were able to receive Top Performer and Attainment Awards or receive Improvement and Attainment Awards, but they could not receive both Top Performer and Improvement Awards. A fixed incentive pool was determined with 60 percent of incentive payments allocated to Top Performer and Improvement Awards and 40 percent allocated to Attainment Awards.<sup>186</sup>



### Value-based purchasing program

In the Affordable Care Act, the U.S. Congress mandated the CMS to adopt a nationwide hospital pay-for-performance program. CMS responded by creating the value-based purchasing program that began in October 2012. It provides financial incentives for both high achievement and improvement in performance closely modelled after the Premier HQID. Currently, the value-based purchasing program (see Table 9) focuses on incentives for process measures (70%) along with metrics of the patient's experience (30%). In 2014, it will be broadened to include 30-day risk-adjusted mortality for AMI, CHF and pneumonia.<sup>189</sup>

The Affordable Care Act requires that 1% of Medicare hospital payments be withheld to be dispersed under pay-for-performance in the Medicare value-based purchasing program resulting in a pool of \$850 million for payment incentives in the first year. Under law, the incentive amount will rise gradually to 2% in 2017. Unless these incentives have a substantial effect, there will be strong pressure to increase them, because common sense dictates that large enough incentives will drive almost everyone to change behaviour.<sup>185</sup> However, higher incentives will also catalyze worry about access and quality for sicker populations and about threats to professionalism. Because any program change is likely to be budget-neutral, resulting in both winners and losers, higher incentives will also incite pushback from low performers.<sup>185</sup>

**Table 9 – Measures included in the initial value-based purchasing program**

Domain	Measure
<b>AMI (acute myocardial infarction)</b>	Fibrinolytic therapy received within 30 minutes of hospital arrival
	Primary percutaneous coronary intervention (PCI) received within 90 minutes of hospital arrival
<b>Heart failure</b>	Discharge instructions
<b>Pneumonia</b>	Blood cultures performed in the emergency department prior to initial antibiotic received in hospital
	Initial antibiotic selection for community-acquired pneumonia (CAP) in immune-competent patient
<b>Healthcare associated infections</b>	Prophylactic antibiotic received within one hour prior to surgical incision
	Prophylactic antibiotic selection for surgical patients
	Prophylactic antibiotics discontinued within 24 hours after surgery end time
	Cardiac surgery patients with controlled 6:00 a.m. postoperative serum glucose
<b>Surgeries</b>	Surgery patients on a beta-blocker prior to arrival that received a beta blocker during the perioperative period
	Surgery patients with recommended venous thromboembolism (VTE) prophylaxis ordered
	Surgery patients who received appropriate venous thromboembolism prophylaxis within 24 hours prior to surgery to 24 hours after surgery
<b>Survey measures</b>	Hospital consumer assessment of healthcare providers and systems survey



To estimate the impact of the value-based program, Werner et al. (2012)<sup>189</sup> calculated hospital performance scores and projected payments under the new program for all eligible hospitals. Despite differences across hospitals in terms of performance, expected changes in payments were small, even for hospitals with the best and worst performance scores. Almost two-thirds of hospitals would experience changes of just a fraction of 1 percent (i.e. between -0.25 and 0.24 percent). These results raise questions about whether the new pay-for-performance program will substantially alter the quality of hospital care, and they highlight the challenges of designing effective quality improvement incentives.<sup>189</sup> The authors suggested alternatives such as: a bonus payment per patient whose care met a performance standard (e.g. AMI-patients receiving fibrinolytic therapy within 30 minutes of arrival at the hospital); increasing the percentage of payment at risk and direct payment toward areas of poor performance (by targeting measures that are not 'topped out', for example in 2007 the median score for a quarter of the process measures was 90 percent or above).<sup>189</sup>

#### 8.4.2.2 National Health Service (NHS) – England

The NHS has a **tradition in P4P in primary care** (see also 8.5.3), focusing in first instance on chronic diseases.<sup>190</sup> Primary care practices in the United Kingdom (England, Scotland, Wales, Northern Ireland) have received substantial financial rewards for achieving standards set out in the Quality and Outcomes Framework (QOF) since April 2004. Under this voluntary scheme general practitioners (GPs) can earn points for activities in a range of areas: improving patient experience; improving the management and organisation of care; and additional services and treatment indicators (typically chronic disease management). Yet, the Quality and Outcomes Framework is more than a payment scheme. It is a complex intervention comprising various elements such as financial incentives and information technology (computerized prompts and decision support), designed to promote structured and team-based care with the aim of achieving evidence-based quality targets. Observed improvements in quality of care for chronic diseases in the framework were modest, and the impact on costs, professional behaviour, and patient experience remains uncertain.<sup>190</sup>

The NHS in England has also three, more recent, **hospital payment programs** with as primary aim to improve quality of care: best practices tariff; advancing quality and Commissioning for Quality and Innovation. The first is a payment mechanism integrated in the DRG-system (see section 8.3) whereas the latter two are 'stand-alone' P4P programs.

#### Advancing Quality

In 2008, the Advancing Quality program was the first hospital-based pay-for-performance program to be introduced in England, including all 24 NHS-hospitals in the northwest region of England (population, 6.8 million) that provided emergency care. The program was **based on the HQID**, including the same indicators and conditions.<sup>191</sup>

Hospitals were required to collect and submit data on 28 quality measures covering five clinical areas: acute myocardial infarction, coronary-artery bypass grafting, heart failure, hip and knee surgery, and pneumonia. Like the HQID, Advancing Quality began as a pure tournament system. At the end of the first year, hospitals that reported quality scores in the top quartile received a **bonus payment equal to 4%** of the revenue that they received under the national tariff for the associated activity. For hospitals in the second quartile, the bonus was 2%. For the next 6 months, the reward system changed so that bonuses could be earned on the basis of three criteria. Hospitals were awarded an '*attainment*' bonus if their achievement in the second year exceeded the median achievement level from the first year, an '*improvement*' bonus if their increase in achievement from the first year was in the top quartile of increases in achievement from the first year, and an '*achievement*' bonus if their level of achievement in the second year was in the top or second quartile of achievement levels in the second year. Hospitals could earn all three bonuses and had to achieve the 'attainment' bonus to be eligible for the 'improvement' and 'achievement' bonuses. There were **no penalties** for poor performers at any stage.<sup>191</sup>

At the outset of the program, the chief executive officers of the 24 hospitals collectively agreed that bonuses would be allocated internally to clinical teams whose performance had earned the bonus. This could not be taken as personal income but would be **invested in improved clinical care**. Quality improvement was supported by **other mechanisms**, including feedback of data on performance, centralized support to ensure standardization of data collection, and a range of quality-improvement



activities within hospitals. In addition, despite the competitive nature of the program, there were regular shared-learning events for hospitals involved in the program. Composite results were publicly reported on a dedicated website.<sup>191</sup>

Sutton et al. (2012)<sup>191</sup> studied the implementation of the 'Advancing Quality' program in only one region as a natural experiment using 132 hospitals from outside the region as control group. They found that the introduction of pay-for-performance was **associated with a reduction in mortality** of 1.3 percentage points in the combined mortality for the three conditions studied.<sup>191</sup> The largest change, for pneumonia, was significant (1.9 percentage points), with non-significant reductions for acute myocardial infarction and heart failure (both 0.6 percentage points). Although the improvements were modest, they stand in positive contrast to the American findings.<sup>191</sup>

The key questions are how and why this program was associated with reduced mortality when previous studies have found little evidence of an effect of pay-for-performance on outcomes<sup>192</sup>, including studies of the HQID in the United States.<sup>154, 155</sup> The finding that a program that appeared similar to a U.S. initiative was associated with different results in England reinforces the message from previous research<sup>193</sup> (see also 8.4.3) that **details of the implementation of incentive programs and the context in which they are introduced may have an important bearing on their outcome**. Beyond the obvious differences between the National Health Service (England) and Medicare (U.S.) health care settings, some striking differences between the British and American versions of pay-for-performance might help explain the contrasting results. Although the British program was partly modelled on the HQID, the bonuses were larger and awarded to a greater proportion of participants. They covered all patients, not just those insured by Medicare. In addition, British hospital leadership agreed to invest awarded money internally toward efforts to improve clinical care. The bonus money was invested in a range of quality-improvement approaches, including specialist nurses, new data-collection systems that linked performance feedback to clinical personnel, and participation in regular shared-learning events.<sup>194</sup> It is, however, uncertain that these differences in the design and implementation of the P4P programs caused the different outcome. This requires more research.

The 'Advancing Quality' program was **absorbed into a new pay-for-performance program that applied across the whole of England** (see next paragraph) with different design characteristics.

### Commissioning for Quality and Innovation (CQUIN)

CQUIN is a program that was introduced in England in 2009 in acute care, mental health care, ambulatory care and community service provision. CQUIN makes a proportion of income conditional on the achievement of **locally agreed quality improvement and innovation goals**. This local flexibility is intended to capitalise on agreement and enthusiasm about local priority areas (in contrast to having goals imposed in a 'top down' fashion). CQUIN payment is not directly linked to DRGs, but is an annual non-recurrent payment available to the provider if locally determined targets in any of **three domains of quality – safety, effectiveness and patient experience** – are met.<sup>195</sup> The CQUIN framework has undergone various changes since April 2009 and it has been implemented against a background of considerable change in the NHS more generally. The size of the incentive in the CQUIN scheme was increased from 0.5% to 1.5% after the first year of introduction and to 2.5% from April 2012. Additionally, despite the emphasis on local negotiations and ownership, two national goals were introduced for acute providers in 2010/11 (and other national goals have since been introduced).<sup>195</sup>

The CQUIN program has been recently evaluated by a series of interviews (n=373) and quantitative analysis of the structure and content of all locally developed CQUIN schemes as well as their impact on outcome improvement.<sup>195</sup> The descriptive analysis revealed that the local flexibility in the CQUIN design introduced **local schemes that were often highly complex**. For acute care, for instance, a single CQUIN scheme could have up to 25 different goals, operationalised with up to 52 different indicators per scheme (median=16 indicators per scheme). Although CQUIN schemes were intended to generate changes in outcome, the majority of indicators were classified as structure or process indicators. Moreover, **only 19% of locally developed indicators were evidence-based** according to the scheme developers. Assessing the impact of CQUIN on quality is problematic due to the wide range of schemes and indicators.





However, the analysis of nine indicators did not result in evidence of impact of CQUIN goals on performance improvement except for hip fracture. None of the other estimated impacts is statistically significant and the estimated coefficients represent both negative and positive effects on quality.<sup>195</sup>

The fact that CQUIN has been implemented in a turbulent policy environment has potentially impacted negatively, although there are **aspects of the design and implementation of the CQUIN framework which also appear to detract from its impact**. These include changing CQUIN goals and schemes annually and related to this, insufficient mechanisms and time to engage clinicians. Additionally, the local nature of goals and proliferation of indicators make benchmarking difficult, if not impossible. Furthermore, the fact that many goals concern processes as opposed to outcomes and are based on at best, weak evidence of effectiveness, may also contribute to limited clinical engagement. These features contrast with other financial incentive initiatives (such as Best Practice Tariffs and Advancing Quality) which appear to have greater buy-in and impact.<sup>195</sup>

While there is clearly an important case for local strategic and clinical input into the design of pay-for-performance schemes, MacDonnald et al. (2013)<sup>195</sup> recommend to do this separately from the technical design process. This later process involves defining indicators, agreeing thresholds, and setting prices. Defining good performance indicators requires evidence based knowledge of the relationship between structures, processes and outcomes, and providers' ability to affect these measures. Balancing policy goals of localism with the objective of improving patient outcomes leads to the conclusion that a firmer national framework would be preferable. This might take the form, for example, of a 'pick list' of national indicators from which commissioners and providers can choose a subset to fit their current priorities. From the interviews, the authors concluded that there is no major opposition to national indicators.<sup>195</sup>

### 8.4.3 Evidence reviews

This section is largely based on the review of Eijkenaar et al. (2013)<sup>184</sup> which included 22 systematic reviews published between January 2000 and June 2011 with the aim of summarizing the P4P effects in a broad sense. In addition, the authors compared the findings of these reviews with the findings from several primary studies that are not included in any of the reviews (based on a scoping, non-systematic review). The included reviews are heterogeneous in terms of designs (e.g. RCTs only versus descriptive uncontrolled studies); scope (e.g. only one condition versus different sectors). While most reviews only included studies from the U.S. and the U.K., studies in other countries (e.g. Spain, Taiwan, Germany) have increasingly been identified. Although the evidence comes predominantly from the primary care setting, lessons relevant for the hospital setting can be drawn. It should be noted that all results must be interpreted with caution since evidence mainly comes from observational studies.

#### 8.4.3.1 Effect on quality

As noted above, the notion that payment for health care should be determined, at least in part, based on meaningful indicators of quality or value has high face validity.<sup>184</sup> It seems natural to tie a portion of providers' compensation to their performance given deficiencies in quality of care, their responsiveness to financial incentives, and the fact that current payment methods do not explicitly stimulate quality.<sup>184</sup> Besides the improvement of clinical-effectiveness, proponents of P4P postulate that these programs are cost-effective. This would be the case when improved quality is achieved with equal or lower costs or when the same quality is achieved with lower costs. Even in case P4P leads to cost increases it may still be viewed as cost-effective, as long as quality improvements are large enough.<sup>184</sup>

The evidence for **clinical-effectiveness**, however, shows mixed results. When analyzing only RCTs (mainly relatively dated U.S. based studies in the primary care setting), results are mixed and inconclusive with both negative and (at best moderate) positive effect sizes. Yet, reviews including also non-randomized studies showed improvement in selected quality measures. The most comprehensive review was conducted by Van





Herck et al. (2010)<sup>196</sup> including 30 studies that reported effect sizes ranging from negative<sup>o</sup> or absent to positive (1 to 10%) or very positive (above 10%). Negative results were only reported in 3 studies.<sup>196</sup> In general there was about 5% improvement due to P4P use, but with a lot of variation, depending on the measure and program. Van Herck et al. (2010) found that compared to primary care services, P4P has more often failed to improve acute care. The findings on acute care are based on an analysis of the effects of hospital P4P-programs in the U.S. Medicare program in essence (see section 8.4.2.1 for a detailed description). Van Herck et al. (2010) found that the positive effect was higher for initially low performers as compared to already high performers.<sup>196</sup>

Only few studies that evaluated the **cost-effectiveness** of P4P programs exist. Based on the results that they produce it can at best be concluded that P4P has the potential to be cost-effective, but that convincing evidence is lacking.<sup>184, 196, 197</sup>

In addition to affecting clinical effectiveness, P4P programs are believed to affect other dimensions of quality of care such as timeliness and **equity**. Inequalities may widen if P4P encourages risk selection or results in reduced income for providers serving minority populations. Summarizing results from 28 studies (mainly from the QOF) Van Herck et al. (2010)<sup>196</sup> conclude that the evidence points to a reduction in inequalities across socioeconomic groups rather than an increase. In addition, Ryan (2010)<sup>198</sup> tested if access to the health care system decreased for minority patients after the introduction of a hospital-based P4P program (i.e. PHQID). Only minimal evidence of minority patients avoidance exists. When studying 5 ethnic groups (i.e. white; black; Hispanic; non-white and other race), only 'other race' beneficiaries had a significant reduction in admissions to PHQID hospitals and only for AMI (not for heart failure and pneumonia). Eijkenaar et al. (2013)<sup>184</sup> suggest that widening inequalities can be prevented by rewarding improvement in performance (rather than only rewarding the top performers), adequate risk adjustment, inclusion of measures that are more important for minority patients, or directly rewarding reductions in inequalities. In any case, monitoring of avoidance should continue for P4P programs.<sup>198</sup>

<sup>o</sup> It is noteworthy that 'negative' in this context means less quality improvement compared to non-P4P use and not a quality decline.

#### 8.4.3.2 *Unintended consequences*

Despite the mixed results on the effectiveness of P4P programs there is a growing enthusiasm for, and adoption of, pay-for-performance mechanisms around the world.<sup>184, 196, 197</sup> Nevertheless, there remains some dissent. In this section we will describe the evidence on several potential unintended consequences that are often postulated: risk selection; spill-over; and gaming.

**Risk selection** is a potential unintended consequence of P4P programs. When differences in case-mix between providers are not adequately taken into account, providers have an incentive to select healthy/compliant patients and to avoid severely ill/noncompliant patients, especially for outcome and resource use measures. There is only limited and weak evidence to support this unintended consequence. Moreover, the studies that report indications for risk selection were conducted in a context of public reporting.<sup>184, 199</sup> It should be noted, however, that adequate risk adjustment and exception reporting (i.e. a process used in, for instance, QOF to allow doctors to use their clinical judgment to remove inappropriate patients from achievement calculations for clinical indicators) are important in this context. After all, a qualitative study found that the inability to exception reporting led some physicians to deter non-compliant patients.<sup>184, 200</sup>

**Spill-over** could occur when P4P programs may cause providers to focus disproportionately on aspects of care that are incentivized and possibly neglect other important aspects that are not. There is some evidence of (negative) spill-over effects, with some studies finding reductions in continuity of care<sup>184, 201</sup> and less improvement for excluded conditions than for included conditions.<sup>202</sup> A broad set of measures (including e.g. clinical quality, patient satisfaction, continuity of care) seems therefore important.



**Gaming** is the manipulation of data so that performance looks better than it is in reality in order to improve income. There are 4 reviews included in the Eijkenaar meta-review<sup>184</sup> that discuss gaming. Most of these reviews include an early study that found that U.S. nursing homes tended to claim they were admitting extremely disabled patients, who then 'miraculously' recovered over a short period.<sup>203</sup> One review discusses 'exception reporting' in the QOF, which allows GP practices to exclude (noncompliant) patients from performance calculations but also provides opportunities to increase income by excluding patients for inappropriate reasons. One study found low rates of exception reporting in the first year, but it was the strongest predictor of performance; a small number of practices may have achieved high scores by excluding large numbers of patients. A follow-up study again found little evidence of widespread gaming; there seemed to be good clinical reasons for the exception reporting rates, which were still low in the second year.<sup>184</sup>

#### 8.4.3.3 *Design features that contribute to (un)desired effects of P4P programs*

**P4P incentives.** It is hypothesized that the incentive size should be large enough to have an effect. However, very little evidence is available on dose-response relationships.<sup>184</sup> Nevertheless, the different incentive size is believed to be one of the factors that could explain the differences in results of a similar P4P program implanted in England and the U.S. (see 8.4.2.2). This finding is underscored by a U.S. study that found that an increase in payments triggered an increase in behavioural response.<sup>204</sup>

There is very little evidence available to support the choice for a particular type of incentive. Incentives of a purely positive nature (financial rewards) seem to have generated more positive effects than incentives based on a competitive approach (in which there are winners and losers). This implies that P4P programs would require 'new money' rather than reallocating existing funds. However, this relationship is not straightforward and is clouded by the influence of other factors such as incentive size, level of stakeholder involvement, etc.<sup>184, 196</sup>

With regard to the target unit of the incentive, the results suggest that P4P may be more effective when directed at individuals or small teams than when directed at (large) groups.<sup>184</sup> It seems important that frontline workers see a direct (financial) effect that is tied to their performance. This

was also the case in 'the advancing quality' program where the target was the hospital, but where the received bonuses were directly invested in quality improvement initiatives (see 8.4.2.2).

**Type of performance measures and targets.** Eijkenaar et al. (2013)<sup>184</sup> included two reviews that illustrated that P4P programs (in preventive care) are more effective if desired behaviours are very specific and easy to track, and that complex rules for determining rewards are less effective.

Larger effects were found for measures with more room for improvement. Studies also tend to find more positive effects when absolute targets are used rather than relative targets. Furthermore, there is evidence that process measures generally yielded higher improvement rates than outcome measures.<sup>184, 196</sup> In that context, it is noteworthy that the recent evaluation of the CQUIN program (see 8.4.2.2) illustrated the importance of selecting evidence-based process measures as well as outcome measures (that can be linked to evidence-based processes) to have greater impact and buy-in from clinicians.<sup>195</sup>

**Quality measurement.** Results suggest that accurate/reliable data and adequate risk adjustment are vital and contribute to positive effects.<sup>184</sup> However, differences in data collection methods (chart audit, claims data, newly collected data, etc.) did not lead to substantial differences in P4P results.<sup>196</sup>

**Implementing and communicating the program.** In the U.K., P4P in primary care was not introduced in a stepwise fashion, while in other countries P4P was first introduced by means of demonstration projects. At present, it is too early to tell whether the lessons learned from a phased approach will lead to a higher impact of P4P programs. Anyhow, the immediate nationwide implementation of the P4P program had the disadvantage that subsequent nationwide corrections were required in terms of indicator selection, threshold definition and the bonus size per target.<sup>196</sup> There is also insufficient evidence to guide the choice between voluntary or mandatory implementation.<sup>196</sup>

Studies reporting involvement of stakeholders in target selection and definition seem to have found more positive P4P effects (above 10% effect sizes) than those without stakeholder involvement.<sup>196</sup> Several studies that found no P4P effects related their findings to an absent or insufficient awareness of the existence and the elements of the P4P program.<sup>196, 205</sup>



P4P programs are often part of larger quality improvement initiatives and are therefore combined with other interventions such as feedback, education, public reporting, etc. Van Herck et al. (2010)<sup>196</sup> found that overall, P4P appears to have had a large positive effect when it is part of a larger quality improvement strategy, although the evidence is not conclusive and not convincing as studies typically lack a control group.

#### 8.4.4 Concluding remarks

Although many studies have found improvements in selected quality measures and suggested that P4P can potentially be effective, at this point convincing evidence is still lacking as is typical for health service and policy interventions. Magic bullets do not exist in this arena. On the other hand, pay-for-performance has enormous face validity and ideological support and the interest in P4P worldwide is more likely to increase than decrease.

Therefore, it is important that in the coming years, policy makers and researchers should give high priority to gaining more insight in how these and other preconditions can be fulfilled to ensure that P4P will yield as much value for money as possible.<sup>184</sup> Published results do, after all, already show that a number of specific targets may be improved by P4P when design choices and context are optimized and aligned. Design elements that should be considered are:<sup>196, 205</sup>

- To select and define P4P targets based on baseline room for improvement;
- To make use of evidence-based process and (intermediary) outcome indicators. Important preconditions for the use of outcome measures are their link with evidence-based process measures as well as the use of adequate risk adjustment;
- To involve stakeholders and communicate the program thoroughly and directly throughout development, implementation, and evaluation;
- To focus on quality improvement and achievement. The evidence shows that both may be effective when developed appropriately. A combination of both is most likely to support acceptance and to direct the incentive to both low- and high-performing providers;
- To distribute incentives at the individual level and/or at the team level. An alternative is to give financial incentives at the organisational level

with the formal arrangement that bonuses are directly invested in quality improvement initiatives;

- To keep the monitor of potential unintended consequences ongoing (although evidence that P4P may have several unintended effects is limited);
- To carefully decide upon the size of incentives. As noted above, there is an urgent need for further research on the dose-response relationship in P4P programs. This is especially important, because although no clear cut relation of incentive size and effect has been established, many P4P programs make use of a remarkably low incentive size (mostly 1 to 2% of income);
- To embed P4P programs in a larger quality improvement strategy. Yet, evidence to support this is not yet conclusive and convincing.

### 8.5 Using payment mechanisms to encourage the provision of integrated care for the chronically ill

#### 8.5.1 Introduction

Payment by DRGs does not directly provide incentives for health promotion, disease prevention, self-management, coordination of care between multiple providers and settings.<sup>206</sup> The ageing population and the rising prevalence of chronic diseases underscore the need for new **innovative payment approaches that incorporate appropriate financial incentives for integrated care.**

This section mainly relies on a recent review about payment schemes that aim to promote integrated chronic care in Europe<sup>207</sup>, a recent review of the European Observatory on Health Systems and Policies that focused on innovative integrated care schemes, payment models, and financial incentives in some countries at the forefront of integrated care (i.e. Australia, Canada, Denmark, France, Germany, the Netherlands, the U.K., and the U.S.) as well as on the 5 country examples studied for the purposes of this KCE-report.<sup>166</sup>



We distinguish 4 levels in the payment incentives<sup>208</sup> for coordination and integration:

- Separate payment for coordination or extra effort: payment for coordination of care provided by different care providers;
- Pay-for-performance (P4P): payment or financial incentive associated to improvements in the process and outcomes of chronic care;
- Bundled payment for a group of services for a specific disease involving multiple providers;
- Global payment, risk-adjusted payment for the full range of services related to a specified group of people.

From the examples described in this chapter it will be clear that these payment approaches shift the point of gravity away from hospitals to the **primary care** setting. At present, there is limited evidence on the effects and effectiveness of financial incentives and other payment models in integrated care. Most of the incentives have been applied in very specific settings or are at an early stage of implementation, with little or no evaluation available as yet. Countries should therefore take a cautious approach when designing and implementing integrated care schemes with the use of financial incentives and innovative payment models, particularly as success in one setting may not be transferable elsewhere due to different cultural and organisational contexts across systems.<sup>166</sup>

### 8.5.2 *Separate payment for coordination or extra effort*

In various countries, providers are receiving financial support and/or incentives for coordination activities or other extra activities (e.g. use of electronic patient record) that aim to result in enhanced integrated care for the chronically ill.<sup>166</sup> In France, for instance, the Health Insurance Reform Act (2004) was an initiative targeting the primary care sector, promoting the expanded use of disease management programs for 30 chronic diseases including diabetes, COPD, cardiovascular diseases, musculoskeletal diseases and certain cancers.<sup>207</sup> Initiated as a negotiation between the social health insurance and the association of general practitioners, the aim of this program was to improve quality of care, patient monitoring, promote continuous medical education to communicate common guidelines to care providers, alleviate financial burden associated with unnecessary procedures, and strengthen the role of the general

practitioner.<sup>207</sup> It was accompanied by a payment for coordination, as GPs received supplemental €40 for care coordination..<sup>209</sup> In addition, since January 2008, France implemented a five-year scheme to improve preventative services and care coordination in primary care. These range from supplementary remuneration schemes to fee-for-service and were made available to group practices (which consist of groups of self-employed medical and paramedical health professionals on a single dedicated site).<sup>210</sup>

In Germany, the Risk Structure Compensation Reform Act was introduced in 2002. Under this scheme, health insurers received a fixed fee per patient per year for costs in primary and secondary care.<sup>207</sup> This compensation aimed on one hand to avoid cream-skimming from the insurers at the expense of chronically ill patients and on the other hand to promote disease management programs.<sup>207</sup> Initially, disease management programs existed for breast cancer, diabetes, coronary heart disease, asthma, and COPD and these were extended to more disease areas. To recruit participants, the insurer could reduce or waive patients' co-payments. The remuneration was contingent on whether the services provided were in line with the disease specific disease management guidelines.<sup>207</sup> Concerning the pay for coordination payment, the reform introduced financial incentives for health insurers and health care providers. Health insurers who enrolled chronically ill patients in disease management programs were provided with €85 per patient per year and coordinating physicians received €75 per patient per year for coordination costs, including necessary documentation.<sup>207</sup> Providers also received additional payment for disease-specific education programs for registered patients. Since 2009, health insurers received €180 per patient per year for coordination costs which was decreased by 2012 to €153.<sup>207</sup>

Another example of the support for multidisciplinary primary care practices can be found in Ontario, Canada. Physicians receive various (not only separate payments for coordination and other extra efforts) financial incentives to work in Family Health Teams (FHT), which enable primary care providers to work in cooperation with other specialists to treat chronically ill patients within one health care practice. Under this scheme, physicians are paid according to a blended funding model that includes payment by capitation, some fee-for-service payments, bonuses for achieving preventive care targets, and payments for extending the range of





services. For example, additional annual payments are provided for patients with chronic diseases: CAN \$60 (€45) per patient with diabetes or a serious mental health condition, and CAN \$125 (€94) per patient with heart failure. In addition, the Ministry of Health increases the incentives for physicians to work in FHTs by paying the salaries of interdisciplinary team members and providing funding for the development of electronic medical records.<sup>166</sup>

### 8.5.3 Pay-for-performance in primary care

Since 'Continuity and integrativeness' is part of quality of care, it is not a surprise that one of the payment mechanisms used to incentivize integrated chronic care delivery is P4P. A noteworthy example of this is **Quality and Outcomes Framework (QOF)** that was introduced in the U.K. in 2004, with the main aims of improving the quality of primary care, embedding preventive measures in the health system and stimulating an improvement in chronic disease management. The QOF rewards practices of General Practitioners (GP) with financial incentives for meeting quality targets, with more than half of all of its 142 indicators referring directly to the management of common chronic diseases.

Although participation by GP practices is voluntary, participation rates are very high. Moreover, mean achievement scores by GP practices were higher than expected when the QOF was introduced and scores have continued to improve.<sup>211</sup> However, the current evidence base for the impact of the QOF remains patchy and inconclusive and there is no consensus on whether the QOF has changed the underlying overall rate of quality improvement, despite some significant, albeit small, improvements for some conditions such as diabetes, asthma and cardiovascular care for diabetic patients.<sup>166</sup>

Another example of P4P in primary care was identified in France where 'Contrats d'amélioration des pratiques individuelles' was launched as a voluntary pilot in 2009 and expanded in 2012.<sup>207</sup> GPs who signed these contract for a three year period received additional remuneration on top of their fee-for-service income.<sup>207</sup> These contracts set a P4P payment scheme in which GPs were rewarded for adequately registered patient records and for following evidence based guidelines. The number of performance indicators started at 16 and increased to 29.<sup>207</sup> GPs could

possibly earn an additional €6000 annually when they achieved over 85% of the targets and treated more than 1200 patients.<sup>207</sup>

### 8.5.4 Bundled payment for a specific disease involving multiple providers

The Netherlands have piloted an innovative scheme (called 'Keten-DBC' in Dutch) providing an annual payment for the complete package of care required by patients with chronic diseases. Since 2010 (after a 3-year experimentation period for diabetes only), health insurers are able to purchase all of the health care services needed to manage a range of chronic diseases (diabetes, COPD, or vascular disease) through the payment of a single fee to newly created contracting entities called 'care groups'.

Comprised of multiple health care providers, **care groups are clinically and financially responsible for all assigned patients in the care program**. The care group can either provide the various components of care itself through one of its own GPs, or it can subcontract other health providers to deliver the care, such as other GPs outside the care group, dieticians, specialists and laboratories.

The services to be covered in the generic care bundles are set by **national disease-specific health care standards**, but the price for each bundle of services is negotiated individually between insurers and care groups to spur competition. While the recording and reporting of care-related data are stipulated in contracts between care groups and insurers, to date, most care groups do not have information technology systems that are able to deliver the information needed by providers, care groups and health insurers to monitor and assess process and outcome indicators.

Importantly, however, the bundled payment scheme remains **voluntary**. Some insurers prefer an alternative integrated care payment scheme in which they continue to pay GPs on a capitated basis, but offer a separate fee for the coordination of care, which covers overhead costs as well as information and communication technologies. Others still continue to provide diabetes care outside the realm of integrated care on a fee-for-service basis.

In principle, this payment structure incentivizes the care groups to achieve greater value for money, thereby potentially resulting in lower use of more



expensive specialist and hospital services. **Preliminary evaluation** of bundled payments for diabetes care, however, indicated that these had higher cost increases than for patients not enrolled in a disease management programme. Between 2008 and 2009, cost increases for such patients were €288 higher than the cost increase of care-as-usual patients not enrolled in a disease management scheme. Meanwhile, the increase in the cost of curative care for management fee patients (i.e. patients enrolled in disease management schemes where the insurer pays the GP a coordination of care fee) did not significantly differ from that of care-as-usual patients. On the other hand, 25% fewer bundled payment patients and 12% fewer management fee patients utilised specialist care in 2009 in comparison to care-as-usual patients. With regard to diabetes-specific specialist care, bundled payment patients utilised 40% less care than patients receiving care as usual. This contributed to a saving of €36 per patient in the cost of diabetes-specific specialist care in 2009. Nevertheless, when non-diabetes costs are included, total specialist costs for bundled payment patients increased by €142 more than the costs for care-as-usual patients, and decreased by €128 for management fee patients.<sup>212</sup>

Some possible explanations have been proposed. First, the higher costs associated with bundled payment could be due to possible start-up costs, as care groups and health insurers were just beginning to gain experience in managing the scheme. Second, given that diabetes complications often take a long time to develop, the short-term findings may be underestimating the long-term effects of bundled payments. Lastly, the predicted effects of bundled payments on care costs may be less likely to materialise for diabetes care than for other chronic illnesses given the already high standard of diabetes care, even for care-as-usual patients.<sup>213</sup> Nevertheless, it is still too early to draw definitive conclusions about the long-term impact of bundled payment schemes on the costs and quality of diabetes care.<sup>166, 212</sup>

### 8.5.5 *Global payment for the full range of services related to a specified group of people*

Two examples of a transition towards global payment arrangements are: the *Gesundes Kinzigtal Integrated Care* model in Germany and Medicare's *Accountable Care Organizations*, U.S.

#### 8.5.5.1 *Gesundes Kinzigtal Integrated Care model*

Since 2004, German sickness funds have the opportunity to spend 1% of their overall expenditure on integrated care programs. Contrary to the expectations of health policy makers, however, most of the integrated care programs that were established focused on specific indications (e.g. knee surgery) and usually integrated only two sectors (e.g. rehabilitation and inpatient care). The *Gesundes Kinzigtal Integrated Care* initiative is one of the few population-based integrated care systems in Germany that covers all sectors and indications of care for a specified population.<sup>214</sup>

The *Gesundes Kinzigtal Integrated Care* model is in the first place **an organisational model** characterised by five key components:

1. Individual treatment plans and goal-setting agreements between physician and patient;
2. Patient self-management and shared decision-making between physician and patient (physicians receive training in shared decision-making);
3. Follow-up care and case management (with clearly defined care coordinators);
4. 'Right care at the right time' (whereby tailored arrangements are made for patients that need to be seen urgently despite long waiting times for certain services);
5. A system-wide electronic patient record (which is used to regularly analyse patient data and identify high-risk patients).

Actively enrolled members receive enhanced care coordination across all sectors, access to physicians outside normal hours, and discounts for gym memberships among other benefits.





Besides organisational innovations it also includes an **innovative payment model**. Profit is derived solely from realised savings relative to the average costs of care, which is then shared between the management company and the sickness funds on the basis of a negotiated shared savings contract. Importantly, health care providers continue to be reimbursed in the same way by statutory health insurers, with additional pay-for-performance reimbursement provided by Gesundes Kinzigtal GmbH (the management company) for services not normally covered but which are considered important to achieve better quality of care. In addition, all providers are given a share of the company's profit on the basis of individual provider performance – an innovative alignment of the interests of health care providers and health insurers to achieve efficiencies. Collectively, these additional payments comprise 10% – 15% of providers' other income.<sup>214</sup>

While an overall evaluation of the system is still underway, various safeguards to mitigate the potential for risk selection have been put in place. These have been appeared to be successful not only in preventing traditional risk selection, but in achieving an 'inverted' risk selection, such that the scheme has primarily enrolled members with above average morbidity and costs.<sup>166</sup>

#### 8.5.5.2 Accountable care organizations

Accountable Care Organizations (ACO) are a new payment mode used in the U.S. by both private and public sectors. Under this model, provider groups willing to be accountable for the overall costs and quality of care for their patients are eligible for a share of the savings achieved by improving care. It is believed that ACOs will encourage providers across the full range of practice settings – from individual office-based practices to integrated delivery systems – to improve quality and slow spending growth. Under this model, payers establish quality benchmarks and risk-adjusted spending targets for the patients cared for by the physicians in the ACO. If the organization meets the quality benchmarks, it is then eligible for a share of the savings achieved below the set spending target.<sup>215</sup>

In this chapter we limit the description to the three ACO-models funded by Medicare:

- **The Medicare Shared Savings Program** is a national ACO program, not a demonstration or pilot project, established under the Affordable Care Act. The program – the largest of the three, offers two incentive options: one in which ACOs obtain bonus payments if their costs are below their spending target, with no penalties if costs exceed the target (no risk); and a second option that offers greater bonuses but requires ACOs to pay a portion of costs that exceed spending targets (risk bearing).
- **The Pioneer ACO program** is a demonstration project involving organizations that are required to bear at least some degree of risk for costs that exceed their spending targets; the program has six slightly different financial incentive designs.
- **The Advance Payment ACO program** is a demonstration project that provides some upfront federal funding to help smaller and poorly capitalized organizations – a subset of the Medicare Shared Savings Program sites – launch an ACO.<sup>215</sup>

ACOs are meant to take responsibility for health outcomes over long periods of time, defined by **episodes of care lasting a year or more**. Unlike fee-for-service, where providers function as 'revenue centres' that are paid more for delivering more services, each accountable care organization receives a budget that reflects expected spending for a defined group of beneficiaries and receives bonuses for achieving both financial and clinical targets.<sup>216</sup>

ACOs may comprise a **wide range of providers** with at least primary care physicians, specialists and one or more hospitals. This is different from some European models (e.g. bundled payment for chronic diseases in the Netherlands) that are dominated by GP practices.

The ACO model does not require enrolment: patients are **attributed to the ACO on the basis of their patterns of service use**. That is, if a patient typically sees a primary care physician who belongs to an ACO, all of that patient's care is attributed to that ACO. A minimum of 5000 patients must be enrolled in an ACO.



Because patient choice is guaranteed under the Affordable Care Act, ACOs are responsible for the cost and quality of care provided by specialists outside their organization. To reduce its risk, an ACO may contract with out-of-network providers who agree to abide by its requirements.<sup>217</sup>

ACOs must be able to collect information on the quality of care, create new incentives, and accept and distribute bonus payments. Building these capabilities will entail **substantial up-front costs for new legal entities**, information systems, and other infrastructure. This is identified as a major barrier for participation since most primary care physicians do not work (yet) in large multispecialty groups.<sup>218</sup>

Currently, to our best-knowledge an evaluation of the envisaged effects of Medicare's ACOs has not yet been published.<sup>216</sup>

### Key points

- When a transition takes place from a fee-for-service or retrospective cost-based payment to inpatient case-based prospective payment the effects on quality of care are inconsistent in direction and magnitude.
- Potential adverse effects on quality of care are counterbalanced by adjustments within the DRG-based prospective payment system:
  - Best practice tariffs in the NHS (England) aim to align payment with compliance to best practices for a selection of high impact (i.e. high volume, significant unexplained variation in practice or outcomes) DRGs (e.g. Fragility Hip Fracture);
  - Including post-acute care (e.g. Medicare's Bundled Payments for Care Improvement Initiative: a single payment for an episode of care in a hospital followed by post-acute care in a skilled nursing or rehabilitation facility, the patient's home or another facility for a selection of episodes and fixed period of up to 90 days post-acute care) in the treatment episode that is covered by the DRG payment aims to incentivize coordination and integration of care;

- Excluding beneficial effects of hospital acquired conditions from the DRG-based payment by disentangling co-morbidities from complications in the coding system;
- Penalizing hospitals financially for readmissions within 30-days for the same condition (e.g. only reimbursing one episode of care; decreasing hospital payments in case readmission for a selection of DRGs is deemed excessive compared to a benchmark).
- Pay-for-performance (P4P) ties financial incentives to the quality of performance. This mechanism is increasingly used by policy makers to drive improvements in health care quality with two renowned (and described) examples in the hospital setting:
  - Medicare's Premier Hospital Quality Incentive Demonstration (PHQID) program is a P4P program that operates in a budget-neutral manner (1 or 2% bonuses versus 1 or 2% penalties) using 34 predominantly process measures for 5 clinical conditions (AMI; CAP; CHF; CABG; hip or knee replacement surgery). Evaluation programs showed initial (first two years) improvements in process measures that attenuated with longer follow-up (i.e. after 6 years). No improvement on patient outcomes was found at any stage of the program. Based on this program, Medicare now introduced the value-based purchasing program (a nationwide P4P program that still needs to be evaluated);
  - Advancing Quality is a P4P program, based on PHQID, that was introduced in all NHS-hospitals in the Northwest region of England. Its implementation was associated with a reduction in mortality. Important differences with the U.S. program were the larger bonuses (4%) that were awarded to a greater proportion of participants. In addition, bonuses were directly invested in quality improvement initiatives. The program was absorbed by a new P4P program, implemented in the whole of England: the Commissioning for Quality and Innovation (CQUIN). This program was not associated with an improvement in process or outcome measures. CQUIN is based on locally agreed targets and measures. Although local strategic and clinical input in P4P programs was



evaluated as valuable it seems better to centralize technical design issues (e.g. defining indicators; agreeing thresholds; setting prices);

- Many studies have found improvements in selected process measures of quality and suggested that P4P can potentially be effective. But at this point convincing evidence, especially on patient outcomes, is still lacking. Nevertheless, published results do show that a number of specific targets may be improved by P4P when design choices and context are optimized and aligned (i.e. P4P targets selected on room for improvement; selection of evidence-based process and (intermediary) outcome indicators; stakeholder involvement; reward both quality improvement and achievement; distribution of rewards at the individual level and/or at the team level; monitoring system for potential unintended consequences; well thought-out incentive size; larger quality improvement policy).
- The ageing population and the rising prevalence of chronic diseases underscore the need for new innovative payment approaches that incorporate appropriate financial incentives for integrated care. We distinguish 4 levels in these payment incentives:
  - Separate payment for coordination or extra effort: payment for coordination of care provided by different care providers;
  - Pay-for-performance (P4P): payment or financial incentive associated to improvements in the process and outcomes of chronic care;
  - Bundled payment for a group of services for a specific disease involving multiple providers;
  - Global payment, risk-adjusted payment for the full range of services related to specified group of people.The evaluation of these payment incentives is very limited or non-existent.

## 9 DISCUSSION AND CONCLUSION

The discussion and conclusion can be found at the end of the Synthesis of this study, which is published as a separate document on our website. It can be accessed from the same referral page as the current document.



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