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# *chapter* fourteen

## **Germany: Understanding G-DRGs**

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### **14.1 Hospital services and the role of DRGs in Germany**

#### ***14.1.1 The German health system***

A key characteristic of the German health care system is the sharing of decision-making powers between the 16 *Länder* (states), the federal Government and statutory civil society organizations. Moreover, Bismarckian principles dominate statutory health insurance (SHI), that is, important competences are legally delegated to membership-based, self-regulated organizations of payers and providers.

In the most important pillar of the German health care system, the SHI, sickness funds, their associations and associations of SHI-affiliated physicians have assumed the status of quasi-public corporations. These self-regulated corporate structures operate the financing and delivery of benefits covered by SHI within a general legal framework. They are based on mandatory membership and internal democratic legitimization. They have the power and a duty to define benefits, prices and standards (at federal level) and to negotiate horizontal contracts to manage and sanction their members' behaviour (at regional level). The vertical implementation of decisions made at superior levels is combined with strong horizontal decision-making and contracting among the legitimate stakeholders involved in the various sectors of health care.

The corner-stone of health service provision in Germany is the fifth book of the German Social Law (SGB V). The SGB V separates the provision of outpatient and inpatient services. Planning, resource allocation and financing are undertaken completely separately in each sector. Beyond the established decision-making organizations, other organizations have been given formal rights to contribute to decision-making bodies by consultation (for example,

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nurses and allied health professions), participation and proposals (for example, patient organizations) or by becoming a decision-making and financing partner in the process (for example, private health insurance for case-based payments in hospitals).

### *Financing*

Germany spends about 10.4 per cent of gross domestic product (GDP) on health care, with the three main sources being statutory health insurance (57.5 per cent of total expenditure on health), private health insurance (9.3 per cent) and out-of-pocket spending (13.5 per cent) (DESTATIS 2009; data for 2007).

Since 2009, health insurance has been mandatory in Germany, while previously it was only mandatory for around 75 per cent of the population (while de facto over 99.5 per cent were covered). About 86 per cent of the German population are covered by SHI and 10 per cent are privately insured (with the remainder falling under special provisions). Premiums in private health insurance are risk related. One can opt for insurance under this type of health insurance if the earned income passes a certain threshold (€49 950 per year or €4162.50 per month in 2010) for three consecutive years. The SHI system is based on wage-related contributions (since 1 July 2009: 14.9 per cent on gross income up to a threshold of €3750 per month).

### **14.1.2 Hospital services in Germany**

In Germany one can distinguish between three different types of hospital ownership. Almost half of all beds are found in public hospitals. In terms of the remaining capacity, ~35 per cent is provided by non-profit-making hospitals and ~16 per cent by private profit-making hospitals, which have increased their share since the beginning of the 1990s. Table 14.1 summarizes the key statistics for the German hospital sector.

#### *Planning and ensuring hospital capacities*

In the inpatient sector, the reimbursement of hospitals follows the principal of 'duality' introduced with the Hospital Financing Act (KHG) in 1972. This means that hospitals are financed from two different sources: investments in infrastructure are covered directly by state budgets, while operating costs are reimbursed by sickness funds and private health insurance.

Each of the 16 state governments is responsible for maintaining hospital infrastructure. The main instruments used to do so are the so-called 'hospital requirement plans', which are set by the state governments after input by the respective hospital federation and the sickness funds. They specify hospital capacity and the range of services to be delivered across all hospitals within a state, as well as within individual hospitals.

The self-governing bodies – namely, provider associations and sickness funds – are responsible both for providing substantive detail to the provisions of the laws defining the framework of hospital financing, and for the continual

**Table 14.1** Key hospital figures by size and ownership, 2007

Size and type of ownership	Hospitals (overall)		Beds		Beds per 100 000 inhabitants		Occupancy		Cases		Cases per 100 000 inhabitants		ALOS*	
	Number (share in %)	Number (share in %)	Number	(share in %)	Number	%	Number	%	Number	%	Number	%	Number	Days
<b>Hospital size in beds</b>	<b>2 087 (100)</b>	<b>506 954 (100)</b>	<b>616</b>		<b>77.2</b>		<b>17 178 573</b>		<b>20 883</b>		<b>8.3</b>			
< 49	407	7 572	9		64.9		210 028		255		8.5			
50–99	264	19 354	24		73.3		529 579		644		9.8			
100–149	302	36 995	45		74.2		1 108 285		1 347		9.0			
150–199	208	35 903	44		74.8		1 179 137		1 433		8.3			
200–299	326	79 578	97		76.1		2 612 288		3 176		8.5			
300–399	203	69 613	85		77.4		2 361 352		2 871		8.3			
400–499	131	58 258	71		77.6		1 953 598		2 375		8.4			
500–599	96	52 545	64		77.1		1 870 325		2 274		7.9			
600–799	64	43 654	53		78.8		1 564 800		1 902		8.0			
> 800	86	103 482	126		80.7		3 789 184		4 606		8.0			
<b>Public hospitals</b>	<b>677 (32.4)</b>	<b>250 345 (49.4)</b>	<b>304</b>		<b>79</b>		<b>8 697 755</b>		<b>10 573</b>		<b>8</b>			
under private law	380	133 957	163		77.5		4 804 914		5 841		7.9			
under public law	297	116 388	141		80.5		3 892 841		4 732		8.8			
- legally dependent	161	54 319	66		79.5		1 755 576		2 134		9.0			
- legally independent	136	62 069	75		81.4		2 137 266		2 598		8.6			
<b>Non-profit-making hospitals</b>	<b>790 (37.9)</b>	<b>177 632 (35.0)</b>	<b>216</b>		<b>75</b>		<b>5 970 324</b>		<b>7 258</b>		<b>8</b>			
<b>Private hospitals</b>	<b>620 (29.7)</b>	<b>78 977 (15.6)</b>	<b>96</b>		<b>76</b>		<b>2 510 494</b>		<b>3 052</b>		<b>9</b>			

Source: Bölt (2010), with modifications.

development of the German diagnosis-related group (G-DRG) system. The G-DRG system applies to all hospitals, irrespective of ownership status, and all patients (except rehabilitation and psychiatric, psychosomatic or psychotherapeutic patients), regardless of whether or not they are members of the SHI system, have private health insurance, or are self-funding patients (Tuschen & Trefz, 2004). DRGs cover all clinical departments with the exception of institutions or facilities providing psychiatric care, psychosomatic medicine, or psychotherapy services. For these services the 2009 Hospital Financing Reform Act (KHRG) mandated the German self-governing bodies to develop and introduce a prospective payment system by the year 2013, which is to be based on per diem payments adjusted for patient characteristics and procedures.

#### *Range of activities and services in the hospital sector*

German hospitals concentrate on inpatient care because sectoral borders are still strict compared with the practice in other countries. Legally, hospitals still mainly provide inpatient services. Ambulatory care, including emergency care, is provided by the regional physicians' associations and their office-based physicians. Only university hospitals have formal outpatient facilities, officially for research and teaching purposes, while in most other hospitals, head physicians need to be authorized by the physicians' association if they (as individuals – and not the hospital as an institution) want to provide ambulatory services.

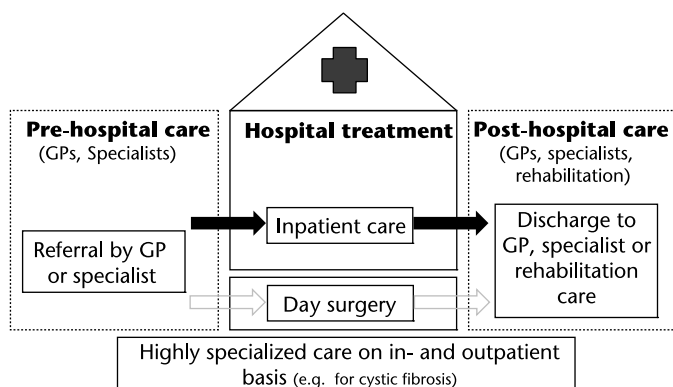
Activity levels for day surgery and ambulatory pre- and post-hospital care have increased. Since 2004, hospitals have been granted additional competences to provide services to outpatients that require highly specialized care on a regular basis. Also, participation in integrated care models (which require a contract between a sickness fund and providers from different sectors) offers new opportunities to become active in ambulatory care if their partners on the providers' side also include ambulatory care providers.

Nevertheless, hospital care remains clearly separate from outpatient care delivered by general practitioners (GPs) or specialists (Figure 14.1). A typical episode of care starts with a referral including patient's case history and preliminary diagnosis from a GP (or an office-based specialist) to a hospital and ends with a discharge or a transfer back to the GP (or specialist). Diagnostics (such as tests for cancer) are carried out in outpatient as well as inpatient settings.

#### *Relationship with third party payers*

As outlined above, the principle of 'dual financing' means that hospitals receive funds for infrastructure from the state governments, while operating costs are covered via DRGs by the sickness funds. Reimbursement for such costs is, to a certain extent, limited by volumes which are negotiated between every hospital accredited in the hospital plan and the sickness funds. If a hospital treats more cases than negotiated, the DRG reimbursement rate is reduced by a certain percentage (and vice versa – it is increased if the number of treated cases is lower).

Long-term infrastructural assets require a case-by-case grant application by each individual hospital. State governments distinguish between grants for



**Figure 14.1** Typical episode of care across sectoral borders

construction of hospitals and initial procurement or replacement of other assets. According to the KHG, a hospital acquires a legal claim to subsidy only as long as it is included in the 'hospital plan' of the respective state. Inclusion in the hospital plan also means that flat-rate grants for short-term assets (3–15 years economic life) can be granted. In practice, infrastructural hospital investments are mainly determined by the budgetary situation of the states and by political considerations. If a hospital is not included in a 'hospital plan' it cannot make a claim for state investment financing. The share of public investment in hospitals has decreased continuously since the early 1990s.

### 14.1.3 Purpose of the DRG system

The introduction of the G-DRG system sought to achieve several objectives. First, the primary motive for fundamentally reforming the old reimbursement system based on budgets with per diem charges as the unit for reimbursement was to achieve a more appropriate and fair allocation of resources by utilizing DRGs. Related goals were to facilitate a precise and transparent measurement of the casemix and the levels of services delivered by hospitals. Moreover, it was assumed that efficiency and quality of service delivery in the hospital sector would increase due to the improved documentation of internal processes and increased managerial capacity. As a consequence, a moderate contribution to cost-containment based on a reduction of length of stay and bed capacity was presumed (Braun et al., 2007).

## 14.2 Development and updates of the DRG system

### 14.2.1 The current DRG system at a glance

The national G-DRG system was introduced in 2003, based on the Australian Refined Diagnosis-Related Groups (AR-DRG, version 4.1). Outpatient services

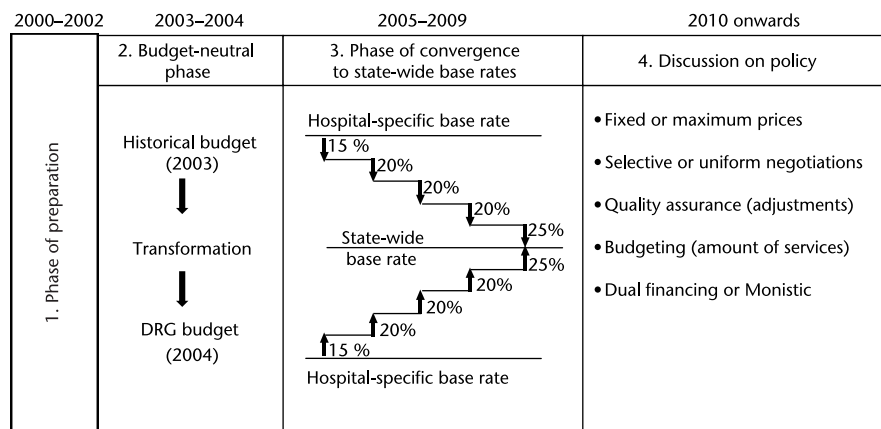
are not covered by the G-DRG system. The system has evolved so that the number of groups increased from 664 in 2003 up to 1200 in 2010. The procedure to assign treatment cases to a DRG is based on a grouping algorithm using the inpatient hospital discharge dataset, containing: major diagnosis and other diagnoses, medical procedures, patient 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). Specialized 'grouper' software assigns these data to a particular DRG (see section 14.3). Each DRG is assigned to one of 25 major diagnostic categories (MDCs) and has a fixed cost weight which is calculated by the Institute for the Hospital Remuneration System (InEK) based on average costs as documented by a sample of hospitals.

### **14.2.2 Development of the DRG system**

In 2000, the Statutory Health Insurance Reform Act paved the way for the G-DRG system. It represented the most significant reform of the German hospital sector since the system of 'dual financing' was introduced in 1972 by the KHG. The reform defined the fundamental features of the G-DRG system for case-based reimbursement of inpatient services. However, under this provision, the self-governing bodies at the federal level (that is, the Federal Association of Sickness Funds, the Association of Private Health Insurance, and the German Hospital Federation) were mandated to select (by June 2000) and then to introduce a DRG-based reimbursement system themselves. As a guiding principle they were required to ensure that the system would be guided by universal and uniform application, performance orientation and case payments, taking account of disease severity and case complexity. In June 2000 the German self-governing bodies decided to use the AR-DRG system as the foundation for the G-DRG system.

Four phases can be distinguished in the G-DRG introduction process (Figure 14.2): first, the *preparation phase*, from 2000 until 2002, in which the selected AR-DRG system was adapted to the German hospital environment in two major steps, as detailed here.

1. The Australian procedure codes based on the WHO's International Classification of Diseases ICD-9-CM (clinical modification) were transformed to the German procedure classification codes (OPS) and the ICD-10-WHO diagnosis codes were modified to the ICD-10-GM (German modification) by the German Institute for Medical Documentation and Information (DIMDI).
2. A cost-accounting system for calculating Germany-specific relative cost weights was developed by the InEK. The institute was founded for this purpose by the self-governing bodies. In 2001 a small set of hospitals tested the Australian grouper. The results were discussed in 2002 and requirements for a German system were derived. By the end of 2002 the first version of the G-DRG system had been prepared. For this early version, approximately 100 hospitals (of ~1800 acute hospitals falling under the DRG system) voluntarily shared their cost data with the InEK to calculate cost weights. Version 1 of the G-DRG system included 664 DRGs in the Case Fee Catalogue.



**Figure 14.2** Phases involved in introducing DRGs in Germany

Source: Neubauer & Pfister, 2008, with modifications.

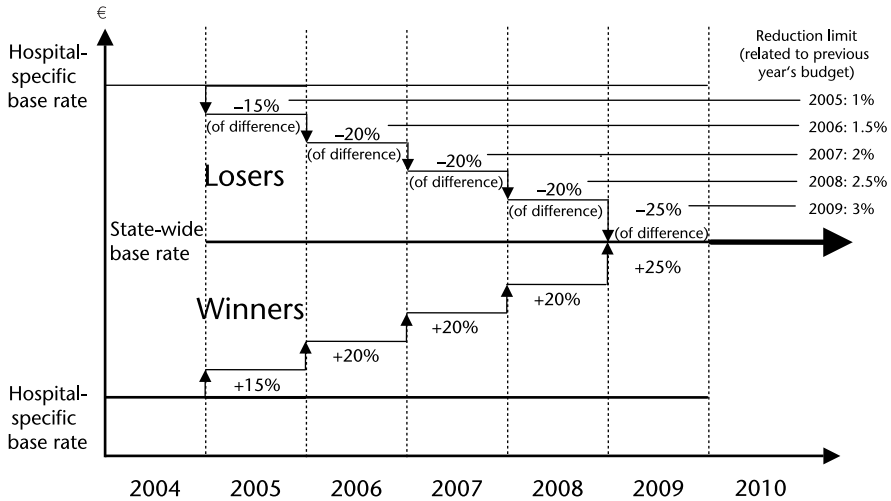
The second phase from 2003 until 2004 was the introduction of DRGs. This phase was called the *budget-neutral phase*, as hospitals were receiving the budgets as negotiated previously. The only difference was that the reimbursement units were no longer per diem charges, but were the DRGs instead. In 2003, hospitals could voluntarily group their patients using G-DRGs (incentivized by the option to be able to negotiate higher budgets), then in 2004 they were mandated to do so. In order to change from a budget based on per diem payment to one based on DRGs, it was necessary to transform the historically developed budgets into 'DRG budgets' ('revenue budgets'). This involved defining cost categories within 'DRG budgets' as additional activities by hospitals which continued to be reimbursed differently (for example, psychiatric services, teaching of nursing students).

Whereas until 2002 the budget was based on the agreed number of patient days to calculate the per diem charge, the budget in 2003/2004 was based on its casemix (that is, the number of relative weights for all patients) to give the hospital-specific base rate. For the first time in the German hospital sector, hospital efficiency became visible as it became apparent which hospitals with a high base rate (due to budgets set comparatively high for the patient casemix) produced the same services comparatively less efficiently than those with low base rates. 'Casemix' and the 'casemix index' (CMI) have become common terms in comparing hospitals. The casemix is equal to the sum of the cost weights of all DRGs for a specified time period. The average case weight or so called CMI is calculated by dividing the casemix by the total number of cases. The CMI is thus equal to the average DRG cost weight for a particular hospital and is an important indicator of the costliness of cases treated by a particular hospital. Small rural hospitals typically have CMIs of well below the average of 1, while university hospitals may have CMIs above 1.5.

During the third *phase of convergence* from 2005–2010, hospitals' individual base rates converged to state-wide base rates (one for each of the 16 *Länder*). As a starting point, state-wide base rates were negotiated for the first time in 2005.



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**Figure 14.3** Phase of convergence

Source: Neubauer & Pfister, 2008, with modifications.

These were used as a yard stick for the base rates of all hospitals in that state. While hospital budgets (or rather revenue budgets) were still negotiated and used to calculate hospital-specific base rates, the actual base rate used for each hospital diverged year by year from the (calculated) hospital-specific base rate to approach the state-wide base rate. In 2005, the individual base rate was determined by 15 per cent of the difference to the state-wide base rate, in 2006 by 35 per cent (15 per cent plus 20 per cent), and so on, until in 2009 it was meant to reach the state-wide base rate (Figure 14.3).

Initially, hospital-specific base rates varied considerably from ~€2200 (mostly minor hospitals in rural areas) up to ~€3200 (for major hospitals in urban areas), which to some extent reflected historical differences in their reimbursement negotiations (Friedrich et al., 2008). As the G-DRG system does not account for organizational characteristics – such as size, differences in input prices or the teaching status of a hospital – the convergence of the base rate put high-cost hospitals under significant pressure to lower costs.

To make the reform politically more acceptable, resulting losses of the negotiated budget were limited, initially to 1 per cent in 2005 (compared to 2004), but then increasing up to 3 per cent in 2009 (compared to 2008). As a result, not all hospitals with initially high hospital-specific base rates had reached the state-wide levels by 2009. In 2010, however, there was no safety net for losses so that the state-wide base rates were applied to all hospitals (and hospital-specific base rates consequently ceased to exist) (Figure 14.3).

With the fourth phase from 2010/11 onwards, further modifications of the G-DRG system are planned. Among them are:

- From 2010 onwards, a nationwide base rate will be calculated by the InEK. Until 2014 state-wide base rates should converge towards a target corridor of 2.5% above and 1.25% below this rate.

- The 2009 KHRG gave the state governments the opportunity to include the investment costs in the cost calculation of the DRGs. This would result in some states having a single payer approach to hospital reimbursement. Currently, however, it is not clear how the money paid by the states for hospital investment will be channelled into the system.
- Psychiatric services will also be reimbursed by a DRG-like system. This will probably differ from the rest of the system by being a combination of length of stay and resource intensity; that is, the case weights will be calculated on a per diem basis.

Table 14.2 summarizes the main characteristics of the G-DRG system and changes over time. Two developments stand out: (1) the sample for calculating cost weights was substantially increased. Since 2004, an increasing number of major and university hospitals with severe and rare cases have participated; (2) the number of DRGs and supplementary fees (mostly used for the reimbursement of high-cost drugs) increased dramatically as new DRGs were added and existing ones were split.

### ***14.2.3 Data used for the development and updates of the DRG system***

Three types of information are important for the development of the G-DRG system: (1) adequate coding of clinical data, both to further develop the grouping system and to facilitate precise reimbursement that takes account of individual patient characteristics (reimbursement of individual hospitals); (2) cost data to calculate cost weights; and (3) information on medical innovations that allows regular updates of fee catalogues.

To calculate cost weights, the InEK relies on retrospective cost and performance data collected in German hospitals (Table 14.2 and Figure 14.4). All German hospitals are obliged to provide hospital-related structural data (relating to type of hospital, ownership, number of beds, number of trainees, labour and total costs) and case-related performance data (regarding diagnoses, procedures, reason for admission, date of discharge) on an annual basis (§21 Hospital Remuneration Act (KHentG)) to the Data Centre.

Additionally, hospitals can participate voluntarily in the sample used to calculate cost weights (section 14.4). In order to do so, they must provide patient-level cost data, submitted to the InEK. To achieve uniform and comparable cost data, the InEK has developed a standardized cost-accounting system based on a 'Calculation Handbook' (InEK, 2007). Each year up to the end of March the hospitals must deliver all datasets of the previous year to the Data Centre (operated from 3M Medica). After data checks (see subsection 14.3.3), the InEK receives the data before 1 July in order to develop the Case Fee Catalogue for the following year. For example, the G-DRG system for 2010 is based on retrospective cost and structural data from the 2008 calendar year, while 2009 was used to check the data on plausibility and recalculate the cost weights.

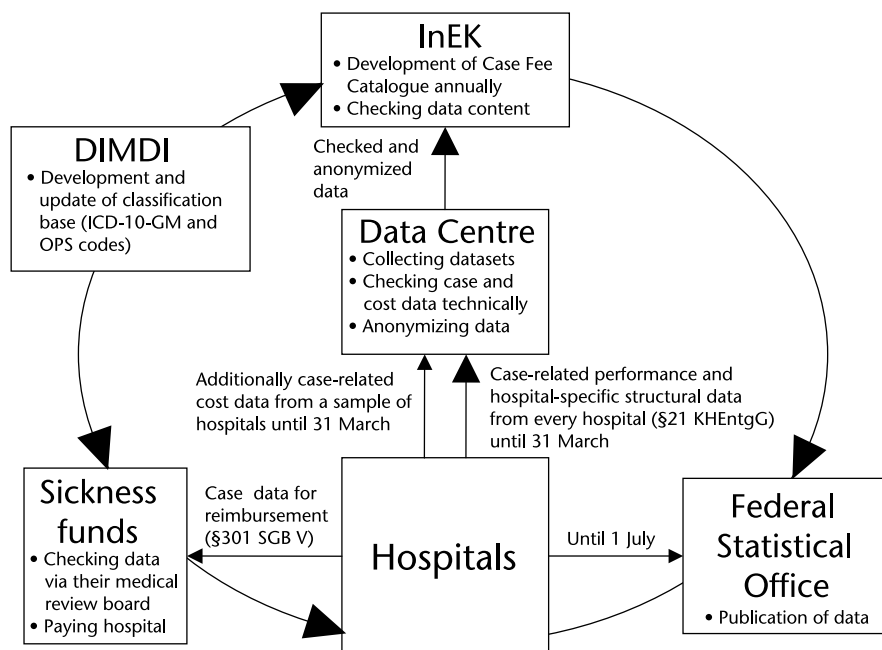
The third type of information is needed for the introduction of new diagnostic and treatment options within the OPS, maintained and developed by the DIMDI (subsection 14.2.2). The DIMDI has developed a process by which institutions such as the InEK, the Federal Office for Quality Assurance (BQS)

**Table 14.2** Main facts relating to the G-DRG system

<i>Year</i>	2003	2004	2005	2006	2007	2008	2009	2010
<b>DRGs total</b>	<b>664</b>	<b>824</b>	<b>878</b>	<b>954</b>	<b>1 082</b>	<b>1 137</b>	<b>1 192</b>	<b>1 200</b>
<b>Inpatient DRGs total</b>	<b>664</b>	<b>824</b>	<b>878</b>	<b>952</b>	<b>1 077</b>	<b>1 132</b>	<b>1 187</b>	<b>1 195</b>
-valuated (B2*)	642	806	845	912	1 035	1 089	1 146	1 154
- unvaluated (D1*)	22	18	33	40	42	43	41	41
Range of cost weights: min.-max.(rounded)	0.12-29.71	0.11-48.27	0.12-57.63	0.12-65.70	0.11-64.90	0.11-68.97	0.12-78.47	0.13-73.76
<b>Day care DRGs total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
-valuated (B2*)	0	0	0	1	1	1	1	1
- unvaluated (D3*)	0	0	0	1	4	4	4	4
<b>Supplementary fees</b>	<b>0</b>	<b>26</b>	<b>71</b>	<b>83</b>	<b>105</b>	<b>115</b>	<b>127</b>	<b>143</b>
-valuated (C1*)	0	1	35	41	59	64	74	81
- unvaluated (D2*)	0	25	36	42	46	51	53	62
<b>Hospitals participating in cost data collection</b>	<b>125</b>	<b>144</b>	<b>148</b>	<b>214</b>	<b>263</b>	<b>249</b>	<b>251</b>	<b>253</b>
- excluded for data quality	9	0	0	0	38	28	33	28
- actual	116	144	148	214	225	221	218	225
- included university hospitals	0	12	10	9	10	8	10	10
- number of cases available for calculation	633 577	2 825 650	2 909 784	3 531 760	4 239 365	3 900 098	4 377 021	4 539 763
- number of cases used for calculation after data checks	494 325	2 395 410	2 283 874	2 851 819	2 863 115	2 811 669	3 075 378	3 257 497
R <sup>2</sup> all cases	0.4556	0.5577	0.6388	0.6805	0.7072	0.7209	0.744	0.7443
R <sup>2</sup> inlier	0.6211	0.7022	0.7796	0.7884	0.8049	0.8166	0.8345	0.843

*Source:* Based on data from InEK annual reports.

\* Hospital reimbursement according to Figure 14.6



**Figure 14.4** Types of data used for reimbursement and further development of the G-DRG system

(see subsection 14.5.4) and other professional (medical) associations can submit suggestions to be considered for classification (both within the OPS as well as within the ICD-10-GM). All proposals are discussed and evaluated and further refined in different working groups. Successful proposals result in a new or modified code. Both the OPS and the ICD are updated annually. New technologies are incorporated sequentially and appended to existing medical coding catalogues (see section 14.6).

The InEK is obliged to take the latest medical knowledge into account when developing the DRG catalogue. Therefore, the InEK developed a proposal process (structured dialogue) whereby medical experts are asked to contribute their knowledge from clinical practice in order to refine certain DRGs. After collecting the suggestions from clinicians, the InEK carries out statistical analysis to prove the proposals empirically. About 37 per cent of the proposals that were able to be tested empirically (410 out of 700) were implemented to the G-DRG 2010 version (InEK, 2009a).

## 14.3 The current patient classification system

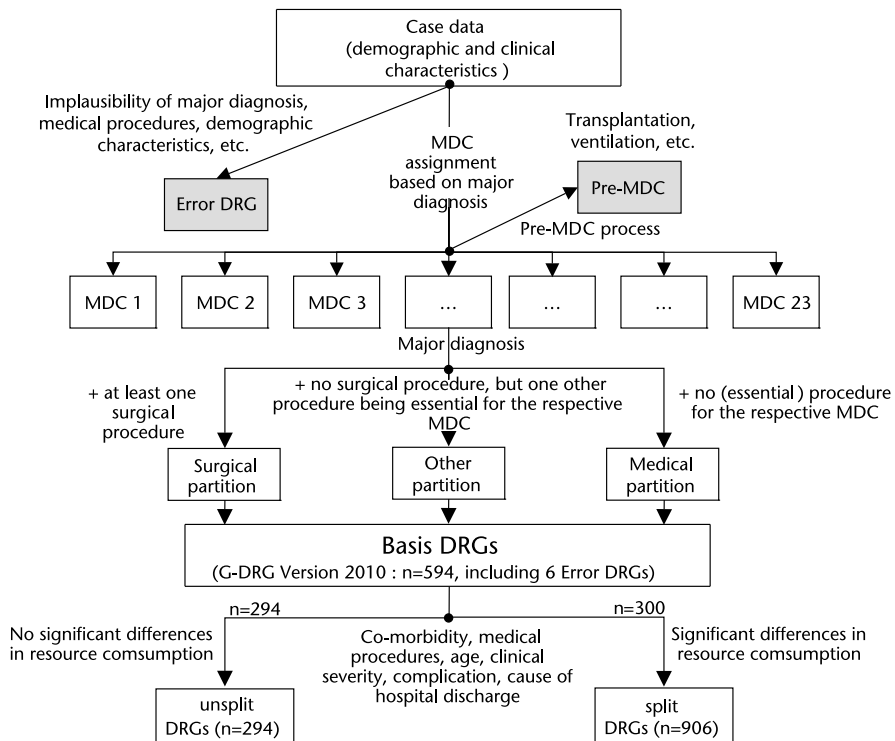
### 14.3.1 Information used to classify patients

Diagnoses and medical procedures are the most important information used to assign patients to a certain G-DRG. The ICD-10-GM is used to code diagnoses. To code procedures, the OPS is used to assign a specific code to most procedures.

Although the OPS originally contained procedure codes only for inpatient surgical interventions, it has been used to code both these and general inpatient medical procedures since 2004 and thus plays a key role in the implementation of DRGs. Since 2005, ambulatory surgical procedures have also been included in the OPS; it is thus also used in the ambulatory care sector, in which many such surgical procedures are carried out. In addition to its role in the G-DRG system, the OPS is designed to facilitate quality assurance (see subsection 14.5.4) and the uptake of new technologies (see section 14.6).

### 14.3.2 Classification algorithm

A simplified version of the grouping process is presented in Figure 14.5. In cases with extremely high resource consumption, certain procedure codes (for example, transplantation) determine the DRG directly. The DRGs in this category are referred to as ‘Pre-MDC’ DRGs. For all others, the major diagnosis determines the classification into one of 25 MDCs, numbered 1 to 23 (with 18 and 21 each split into A and B). Essentially, an MDC corresponds to diseases of the body system comparable to the classification in ICD. While all DRGs relating to the ‘Pre-MDC’ start with an A, the 25 MDCs use a starting letter between B and Z, for



**Figure 14.5** G-DRG grouping algorithm

Source: Updated and modified from Schreyögg et al., 2006.

example, MDC 1 (Nervous system) = B or MDC 14 (pregnancy, childbirth and puerperium) = P.

After this step, data on the type of procedure are used to assign a case to a 'base-DRG', which is a group of closely related diagnoses and procedures that have not been subdivided according to criteria such as co-morbidities or patient age. Within each MDC, base-DRGs have a two-digit number, which also shows the 'partition' of the DRG, with 01 to 39 for surgical DRGs (for example, B01–B39 for diseases of the nervous system with surgery), 40 to 59 for DRGs with other important procedures which are essential for the DRG, and 60 to 99 for other DRGs. Since the 2005 system, the strict partitioning has been relaxed in MDC 5 (Circulatory System) and MDC 8 (Musculoskeletal System and Connective Tissue) so that DRGs above 39 can also contain surgical procedures. Base-DRGs may be split into separate DRGs based on additional criteria, thus reflecting different degrees of resource consumption. A case is subsequently assigned to its final DRG (which is either a base-DRG that has not been split, or one of at least two – but usually more – as a result of splitting) using information such as co-morbidities, procedures and patient characteristics on the one hand, and cost data on the other. If a base-DRG is not split, the fourth digit (again a letter) is a Z, for example, B01Z, while split DRGs use A, B, C and so on in descending order of resource intensity, such as B02A > B02B > B02C.

### **14.3.3 Data quality and plausibility checks**

#### *Cost data*

Initially, the Data Centre (see Figure 14.4) checks the cost datasets for formal and technical errors. As part of this process the file compatibility and data encryption, as well as the existence of service and cost data in every dataset are validated. Cases without DRG relevance (such as psychiatry) are excluded. Next, the InEK conducts three further steps consisting of economic and medical plausibility checks. First, minimum and maximum costs per module (such as costs of the clinical staff per day, total cost of the hospital) and the ratios between modules (such as costs of the cost centre 'anaesthesia' < costs of the cost centre 'operating room') are given an economic check. Second, adherence to the German DRG classification codes (ICD-10-GM and OPS) is given a medical check, and third, coherence between economic and medical information is checked (for example, the costs per case of a hip replacement must reflect the material cost of implants; if radiology procedures are reported, the costs must be part of cost centre 9 'radiology', see Table 14.3). In 2009, after these data plausibility checks, 3 257 497 out of 4 539 763 records were available (~72 per cent) for the calculation (InEK, 2009a). The datasets that remain serve as the basis for determining the cost weights and trim-points.

#### *Clinical data*

For reimbursement purposes, every hospital must deliver case data (§301 SGB V) to the sickness funds, mainly comprising clinical data (diagnoses, procedures), demographic data (age, gender) and administrative data (dates of admission,

surgery and discharge). The coding quality of these data is regularly checked by the regional medical review boards of the sickness funds. They evaluate the assignment of cases to DRGs and their respective service utilization (§275 SGB V; §17 KHG). In order to do so, they send teams to randomly selected hospitals which have to disclose their medical and coding practices. In instances where unintended up-coding is revealed, the hospitals must reimburse the sickness funds for the respective revenues that they gained through up-coding. If it is demonstrated that hospitals intentionally used up-coding as a means to increase profits, then in addition to their reimbursement fee they are required to make a penalty payment equal to the sum of their reimbursement fee. In 2009, 12 percent of all hospital cases (~1.7 million cases) were audited by the sickness funds, resulting in average claw-back amounts of about €850 per audited case (MDS, 2011).

### ***14.3.4 Incentives for up- or wrong-coding***

#### *Up-coding, wrong-coding*

The revenues of a German hospital depend on the number and value of the services delivered. This may incentivize hospitals to encode more or higher reimbursed services than actually delivered. The medical review board of the sickness funds tries to detect this up- or wrong-coding by reviewing individual cases which are randomly selected, as already described.

#### *Cream-skimming or cherry-picking*

Adverse selection is contrary to the function and maintenance mission of hospitals, especially in rural areas. As the Case Fee Catalogue is updated annually to reflect current costs for inpatient treatments, it represents a systemic (inherent) method to prevent cherry-picking as cost weights differ from one year to the next. This approach makes it impossible to predict DRG contribution margins for certain treatments in the long run and reduces incentives to adjust capacities accordingly, especially as the delivery of specific hospital services often depends on special infrastructure and may require organizational change.

#### *Inappropriate early discharge*

The risks of early discharge in order to cut costs have been well documented ever since DRG systems were first introduced. The G-DRG system tries to avoid early discharge by the application of two major instruments. First, the annual update of the Case Fee Catalogue and the recalculation of cost weights and trim-points for the reimbursement of outliers (section 14.5) are designed to reduce incentives for early discharge by reimbursing adequately for expensive services, as well as deducting payments for short-stay outliers. Second, readmissions for the same cause within 30 days after discharge are reimbursed by the original DRG (§2 Case Fee Agreement (FPV) 2010) and receive no additional

funds. This approach financially penalizes inappropriate early discharge (at least if it leads to readmission).

## **14.4 Cost accounting within hospitals**

### ***14.4.1 Regulation***

Cost accounting within hospitals is neither obligatory nor directly regulated in Germany. However, the introduction of the G-DRG system required medical and cost-controlling systems to be implemented in order to control for their resource consumption and the level of services delivered. Medical accounting is a separate administrative unit in nearly every hospital in Germany. Medical controllers (mostly physicians with further education in coding) examine hospital cases in terms of correct coding to avoid a review by the sickness funds and to maximize revenue. In addition, patient-level cost accounting is increasingly applied to monitor cost structures and sources of resource waste. In order to calculate cost weights, the InEK established a sample of hospitals that voluntarily collect patient-level cost data (InEK, 2009a). Only hospitals that can deliver cost data to a standard defined by the InEK (in the Calculation Handbook) are eligible to participate. The extra effort is reimbursed via an additional fee, which consists of a lump sum and a variable amount related to the number of delivered cases and their data quality. In 2008 the InEK spent €9 million to compensate hospitals for their additional efforts.

### ***14.4.2 Main characteristics of the cost-accounting system***

In this section we focus on hospitals that follow the cost-accounting standards specified by the InEK, as the cost-accounting characteristics of other hospitals do not affect DRG calculation and differ widely. The participating hospitals must meet certain cost-accounting standards. They must calculate costs per case according to the full cost method, using actual costs. This means that all DRG-related costs must be taken into account when calculating the costs of DRG treatment cases. The actual costs are derived from the hospitals' audited annual accounts. Accordingly, the reference period for calculating costs per case is an entire calendar year. The intention is that participating hospitals use step-down cost accounting. However, if this is not feasible they are also allowed to use a mixed calculation (using step-down cost accounting, with gross- (or top-down) costing as a second option), or even make use of a kind of gross-costing when necessary. When calculating costs per case, the only costs to be taken into consideration are those that arise due to the performance of the DRG-related services. The following cost elements are excluded:

- extraordinary expenses and expenses relating to other periods;
- investment costs;
- core business expenses, insofar as these are not related to general inpatient services (for example, costs of scientific research/teaching and costs of psychiatric and outpatient services are excluded);



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- taxes, charges, insurance for operational sections of the hospital that do not provide general inpatient services, as well as tax on profits;
- specific and long-term allowance for bad debts;
- interest payable, insofar as this is not related to capital loans;
- imputed costs (for example, hospital building).

The process of calculating costs per case is based on a modular approach, which is detailed in Table 14.3 (InEK, 2007). It entails arranging each set of case-related data in the calculation according to cost-element groups and cost-centre groups. Aggregating costs across cost-element groups and cost-centre groups makes it possible to identify the costs per patient or per patient group (DRGs).

### 14.5 DRGs for reimbursement

#### ***14.5.1 Range of services and costs included in DRG-based hospital payments***

Figure 14.6 outlines the inpatient reimbursement components used in Germany. In the Case Fee Catalogue for 2010, there are 1155 DRGs with national uniform cost weights (B2), 45 DRGs without national cost weights (D1 & D3), and 143 supplementary fees (C1 & D2) (see Table 14.2). The DRGs without national cost weights (D1 & D3) are individually negotiated with each hospital as they were excluded from the DRG national cost weights because their sample size was insufficient for calculation, or their cost variance was too large. G-DRGs are intended to cover medical treatment, nursing care, the provision of pharmaceuticals and therapeutic appliances, as well as board and accommodation.

Supplementary fees cover certain complex or cost-intensive services, and/or very expensive drugs. The supplementary fees are used due to a lack of sufficient data for calculating costs for certain DRGs, and the limited appropriateness (in terms of reflecting actual costs incurred) of the current cost weights (InEK, 2009a). These supplementary fees are generally calculated in a uniform manner across Germany. Since the introduction of supplementary fees in 2004, their number has increased from 26 to a total of 143 individual fees in 2010. These include 81 supplementary fees, whereby the amounts were fixed at the national level in the 2010 DRG Case Fee Catalogue (C1). The other 62 treatment services were included in a sub-list of supplementary fees in the Case Fee Catalogue that are to be negotiated on a hospital-by-hospital basis (D2).

In addition, the contracting parties are authorized to negotiate additional reimbursement by means of case-based or per diem remuneration for highly specialized services if it can be proved that the service in question cannot yet be appropriately reimbursed through DRGs or supplementary fees. There are also a number of surcharges which are negotiated between the contracting parties and are especially relevant for hospitals that are using new and innovative treatment options. For instance, it is possible to negotiate surcharges for innovative diagnostic and treatment procedures (E1; see section 14.6) and even to exclude certain special facilities and hospital departments completely from the G-DRG system, financing them instead through individually negotiated fees (for further

**Table 14.3** G-DRG modular costing approach

	Cost-element groups									
	Labour*			Material†			Infrastructure‡			
Cost- Centre Groups	1	2	3	4a	4b	5	6a	6b	7	8
<b>Hospital units with beds</b>										
1: Normal ward	1.1	1.2	1.3	1.4a	1.4b	-	1.6a	1.6b	1.7	1.8
2: Intensive care unit	2.1	2.2	2.3	2.4a	2.4b	2.5	2.6a	2.6b	2.7	2.8
3: Dialysis unit	3.1	2.3	3.3	3.4a	3.4b	-	3.6a	3.6b	3.7	3.8
<b>Diagnostic and treatment areas</b>										
4: Operating room	4.1	-	4.3	4.4a	4.4b	4.5	4.6a	4.6b	4.7	4.8
5: Anaesthesia	5.1	-	5.3	5.4a	5.4b	-	5.6a	5.6b	5.7	5.8
6: Maternity room	6.1	-	6.3	6.4a	6.4b	-	6.6a	6.6b	6.7	6.8
7: Cardiac diagnostics/therapy	7.1	-	7.3	7.4a	7.4b	7.5	7.6a	7.6b	7.7	7.8
8: Endoscopic diagnostics/therapy	8.1	-	8.3	8.4a	8.4b	8.5	8.6a	8.6b	8.7	8.8
9: Radiology	9.1	-	9.3	9.4a	9.4b	9.5	9.6a	9.6b	9.7	9.8
10: Laboratories	10.1	-	10.3	10.4a	10.4b	10.5	10.6a	10.6b	10.7	10.8
11: Other diagnostic and therapeutic areas	11.1	11.2	11.3	11.4a	11.4b	11.5	11.6a	11.6b	11.7	11.8

Key: \*1 = Labour costs of the other medical staff; 2 = Labour costs of the nursing staff; 3 = Labour costs of the administrative and technical staff  
 †4a = Drug costs; 4b = Drug costs (individual costs/actual consumption); 5 = Costs of implants and grafts; 6a = Material costs (without drugs, implants and grafts); 6b = Material costs (individual costs/ actual consumption, without drugs, implants and grafts)  
 ‡ 7 = Medical infrastructure costs; 8: Non-medical infrastructure costs.

Source: InEK, 2007, with modifications.



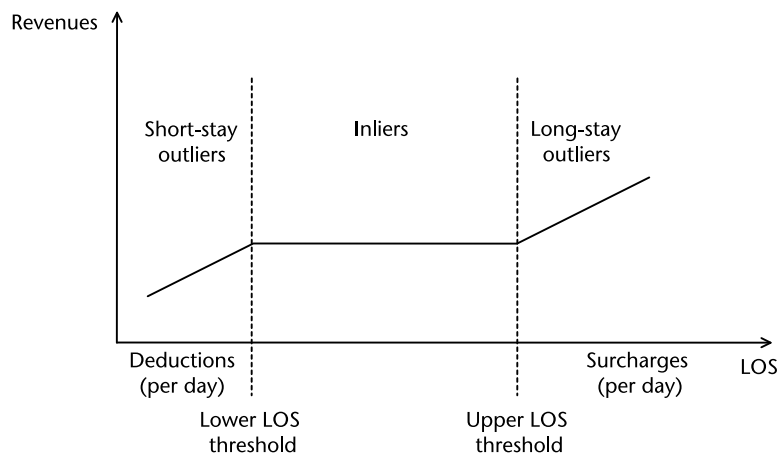
details, including the function of the revenue budget, see Busse and Riesberg, 2004). Including other reimbursement components, for example for individuals accompanying patients (A2) or quality assurance (A3), all reimbursement components besides the uniformly weighted DRGs (B1–B3) currently account for approximately 20 per cent of the total reimbursement for non-psychiatric inpatient care. This remains so even though the political aim is to reimburse hospitals solely through uniformly weighted DRGs.

### 14.5.2 Calculation of DRG prices/cost weights

In the G-DRG system cost weights are calculated, which define a relationship between the different DRG groups according to resource intensity. Using this framework, the price for the reference treatment group with cost weight 1.0 is equal to the base rate (average costs) and the prices for all other DRGs are calculated by multiplying the DRG cost weight attached to each DRG with the price set for the reference DRG cost weight of 1.0. The cost weight of each DRG group reflects the resource consumption relative to the reference DRG, which adjusts prices for resources.

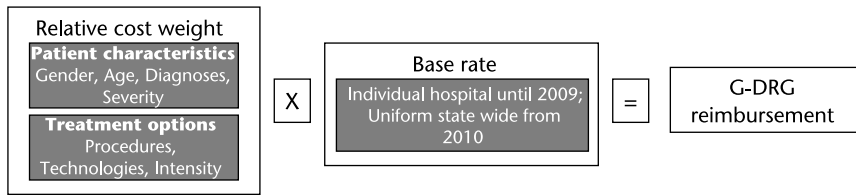
#### *Trimming methods*

The InEK applies a mathematical trimming method to account for extreme cases (InEK, 2004). Because DRG systems attempt to translate inpatient cases into medically coherent and cost-homogeneous groups, outliers are excluded for the calculation of cost weights. The term ‘inlier’ denotes cases that are treated within a length-of-stay interval. This is demarcated by a low trim-point and a high trim-point, between which the average treatment cases are located (Figure 14.7). Therefore, after data have been refined with plausibility checks, the average costs of inlier cases are determined for each DRG. To determine the



**Figure 14.7** Deductions and surcharges related to the length of stay

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**Figure 14.8** Components of G-DRG reimbursement and G-DRG implementation

cost weight for each DRG, the average costs of inlier cases for the DRG in question are divided by the reference value for the respective year. The reference value, defined as the arithmetic mean costs of all inlier cases, is calculated as the sum of DRG-relevant costs (section 14.4.2) divided by the sum of the effective casemix across Germany. The reference value used to develop the Case Fee Catalogue 2010 was €2619.10 (InEK, 2009a).

### 14.5.3 DRGs in actual hospital payment

The conversion from cost weights into actual reimbursement rates is given by multiplying the applicable base rate by the DRG specific cost weight (Figure 14.8). The calculation of cost weights is described in subsection 14.5.2.

### 14.5.4 Quality-related adjustments

The current G-DRG-system does not adjust reimbursement for quality. As reimbursement is based on average treatment costs, hospitals with a higher-than-average cost level are incentivized to cut expenditure. This can adversely affect quality as hospitals may reduce quality without incurring reimbursement penalties. To address incentives to increase profits without consideration of quality implications, the legislator introduced regulatory measures, such as mandatory quality reports, external quality assurance, quality management system(s) (QMS) and minimum volume thresholds (§137 SBG V).

#### *Quality reports*

In 2002, the Case Fees Act (FPG) introduced hospital quality reports to simplify comparisons between hospitals and to support physicians and sickness funds in advising patients regarding elective hospital treatments. Since 2005, hospitals have been obliged to submit quality reports every second year following a structure mandated by a directive of the Federal Joint Committee (G-BA). The reports are available publicly, online.

#### *External quality assurance*

Since the SHI Reform Act of 2000, hospitals have been obliged to participate in an external and comparative quality assurance programme developed by the

BQS. This programme surveys treatment-related quality indicators and compares them nationally. From 2001 to 2009, the BQS has published an annual quality report detailing the results of the hospitals, which are not named. The BQS methodology has been criticized because of the extra effort involved for hospitals to obtain data which are not part of routine datasets. From 2010 onwards, the AQUA-Institute for Applied Quality Improvement and Research in Health Care is charged with further developing and implementing the external quality assurance programme.

#### *Quality management systems*

In 1999 the legislator introduced §135a of the SGB V, obliging hospitals to launch and further develop a QMS. Hospitals have a free choice of which kind of QMS they set up. Therefore, a wide range of different QMS from simple (Cooperation for Transparency and Quality in Health Care) to more sophisticated (Joint Commission) systems were introduced across Germany. However, most patients are not able to distinguish between different quality certificates, which led to confusion instead of clarification on the part of patients.

#### *Minimum volume thresholds*

In addition to the quality reports, the FPG enacted an ordinance for defining minimum volumes as thresholds to deliver certain (particularly elective) services whereby the outcome is related to the volume of services delivered. In order to determine these services, the G-BA is charged with developing a catalogue that defines the minimum number of delivered services per physician or hospital (Velasco-Garrido & Busse, 2004). Hospitals which do not reach the required volume of services may not deliver the service. Since 2004, the catalogue has contained six elective services (with the annual minimum number per hospital shown in parentheses): liver transplantation (20), kidney transplantation (25), complex procedures on the oesophagus (10), complex procedures on the pancreas (10), stem cell transplantation (25) and knee replacement (50).

### **14.5.5 Main incentives for hospitals**

Under the G-DRG system, hospitals are generally not incentivized to improve their medical outcomes (see subsection 14.3.4). However, within the G-DRG framework, hospitals are incentivized to create and implement a system that controls costs in order to fulfill their budgetary obligations.

## **14.6 New/innovative technologies**

### **14.6.1 Steps required prior to introduction in hospitals**

In Germany, most medical innovations are first introduced in the inpatient sector, because inpatient facilities may employ any technology that has not

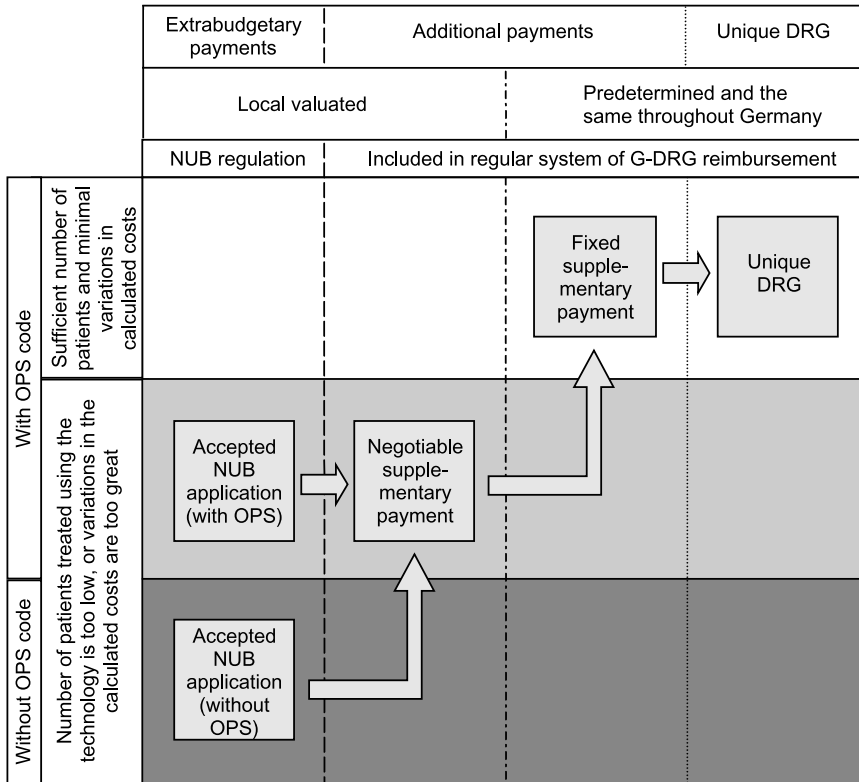
been excluded explicitly by the G-BA. The G-DRG system was designed, at least in theory, to be always current, and classification and reimbursement rates are updated each year. However, as already outlined, a certain time-lag – and thus a financing gap – is nonetheless inherent in the system, because both the G-DRG classification and the reimbursement rates are based on retrospective data. The time-lag may represent an important hurdle in the uptake of new technologies. To address this deficit, legislators introduced the so-called New Diagnostic and Treatment Methods Regulation (NUB) as part of the 2005 KHEntG. The NUB Regulation has two key objectives: first, to bridge the above-mentioned financing gap by providing for extrabudgetary, non-DRG payments for new technologies and, second, to use the data generated during this time-lag period to expedite the process for including these technologies in the regular system of G-DRG reimbursement. The NUB Regulation sets up three important regulatory hurdles that a new technology must clear before it can be included in the regular system of G-DRG reimbursement: (1) a hospital wishing to employ – and receive appropriate reimbursement for – a new medical technology must first apply to the InEK; (2) if the hospital's application is accepted, it must successfully negotiate with the sickness funds to receive NUB reimbursement for its use of the technology; and (3) the technology must ultimately be included in the regular system of G-DRG reimbursement (Henschke et al., 2010).

#### *Applying to the InEK*

A hospital wishing to employ and receive NUB reimbursement for a new medical technology must apply to the InEK for permission to enter into contractual negotiations with the sickness funds. The technology does not need to have an OPS code. The hospital's application is assessed based on the following criteria: (1) benefits to patients; (2) groups of patients who will be treated using the new technology; (3) any additional labour and material costs associated with the new technology; and (4) the reason why the costs of the new technology are not adequately covered by the current G-DRG system.

#### *Successfully negotiating NUB reimbursement with the sickness funds*

An accepted application does not guarantee that a hospital will be reimbursed for the use of a new technology. Before NUB reimbursement (E1 in Figure 14.6) can take place, the hospital must negotiate a contractual agreement with the sickness funds concerning the size of the payments to be made. If the technology in question does not have an OPS code, the hospital may negotiate contracts for two types of NUB reimbursement: additional payments, or full payments. NUB reimbursement for a technology without an OPS code represents a preliminary step towards inclusion in the regular system of G-DRG reimbursement and is represented in Figure 14.9 as the box labelled 'Accepted NUB application (without OPS)'. The arrows show prototypical pathways towards complete integration in the system.



**Figure 14.9** Prototypical regulatory pathways for introducing new technologies into the regular system of G-DRG reimbursement

Source: Henschke et al., 2010.

*Inclusion in the regular system of G-DRG reimbursement*

The lowest stage of integration within the regular system of G-DRG reimbursement is the so-called local valuated supplementary fee (D2 in Figure 14.6). These payments are made in addition to DRG payments if the use of a certain technology does not yet justify creating a unique DRG or a national valuated supplementary fee (C1 in Figure 14.6). The decision to include a technology in this category is made by the InEK. The local valuated supplementary fee has an important advantage over NUB reimbursement: once a technology has been included in the category of local valuated supplementary fees, any hospital in Germany may enter into negotiations with the sickness funds to determine the exact level of this payment. In contrast, when InEK accepts an application for NUB reimbursement, only the hospital that applied may enter into negotiations with the sickness funds; all other hospitals must apply with the InEK separately. Finally, the last stage of integration into the regular system of G-DRG reimbursement is the formation of a unique DRG.



### ***14.6.2 (Dis-)incentives for hospitals to use new technologies***

Hospitals will use new and innovative technologies if they are adequately reimbursed or are of major research interest. The NUB methodology enables hospitals to use, and be reimbursed for, new technologies that are generally more expensive than those included in the regular Case Fee Catalogue. As such, being accepted for NUB reimbursement represents a preliminary step towards the full inclusion of a new technology in the regular G-DRG system. However, a recent study found that most German hospitals do not receive any revenue via NUB payments, while those receiving NUB payments only generate 0.3 per cent of revenue through this short-term payment instrument (DKI, 2009). Moreover, the negotiation process between the hospitals and sickness funds is tedious and does not guarantee a minimum payment in the event of unsuccessful negotiations (Henschke et al., 2010).

## **14.7 Evaluation of the DRG system in Germany**

### ***14.7.1 Official evaluation***

The corporatist partners (Federal Association of Sickness Funds, Association of Private Health Insurance, German Hospital Federation) are obliged by law to ensure adequate research is undertaken to evaluate the impact of DRGs on the provision of, as well as the quality of care (§17 KHG, para. 8). The research also addresses DRGs' effects on other supply sectors, such as rehabilitation or long-term care (transfer of services out of the hospital). To introduce evaluation activities, the corporatist institutions invite tenders for research assignments. They also assign responsibility to the InEK for evaluating hospital-related structural and case-related performance data (§21 datasets, see subsection 14.2.3). The first results of the evaluation were intended to be published in 2005, but the corporatist partners have yet to meet their legal obligations. To date, only the InEK has reported its analysis of the §21 data annually. As a first step in December 2008, the corporatist partners appointed a private institute (IGES Institute) to conduct the mandatory evaluation. Preliminary results of this evaluation indicate that the intended aims of the G-DRG system introduction will be achieved and that most of the negative consequences of prospective payment systems have not occurred (IGES, 2010). In addition, to obtain a preliminary short-term evaluation, the Federal Ministry of Health developed a qualitative questionnaire for the corporatist institutions and other important stakeholders in 2007. Results indicate a broad acceptance of the G-DRG system. However, the increased documentation effort and the increased system complexity were criticized.

In addition, several research groups and institutions have examined the effects of the G-DRG system on hospital reimbursement and service quality. During the introduction, the adequacy of reimbursement for inpatient services was evaluated (in particular by the DRG Research Group, University Hospital Münster). Through this process, shortfalls were identified in reimbursement relative to the resource consumption of medical services (delivered in certain

departments, for example oncology, rheumatology or dermatology), which led to an increased number of DRGs and supplementary fees (see Table 14.2, subsection 14.2.2). Furthermore, the effects of DRGs on quality were examined in a study published in 2009 by the Centre for Quality and Management in Health Care, which is a facility of the physicians' chamber in Lower Saxony. The study found no evidence of adverse effects, such as cream-skimming or inappropriate early discharge. Other studies suggest that quality of care improved or was not substantially affected, due to better organized care since the introduction of DRGs (Sens et al., 2009).

### 14.7.2 Authors' assessment

As with every case payment system, the G-DRG system has strengths and weaknesses – the main ones are summarized in Table 14.4.

The increased transparency due to more precise documentation of hospital services is one of the main strengths that has been identified. Based on the annually summarized §21 datasets, a structured summary of services delivered and patient characteristics in German hospitals is undertaken.<sup>1</sup> Another advantage is the (increased) compliance of hospitals in supporting the G-DRG system, which involves an accurate mapping of resource consumption and a stepwise introduction process (see subsection 14.2.2). Indeed, hospitals have been obliged to use G-DRGs since 2004, but weak cooperation on the part of the hospitals is likely to have extended the introduction process. With the incorporation of cost data from universities and other large hospitals in 2005, even more complex services were available for consideration by the InEK for developing the Case Fee Catalogue. Because of larger proportions of hospitals delivering cost data, the system is now widely accepted. The use of G-DRGs for reimbursement must also be highlighted. As every coded case is equivalent to an invoice, the hospitals are strongly incentivized to code correctly in order to avoid a review of their invoices by the sickness funds (see section 14.3.3). This improves the coding quality and leads to a more accurate characterization of delivered hospital services in Germany.

Despite these strengths, there are also some weaknesses and areas in need of improvement. First, indicators of the quality of inpatient treatment are not incorporated. Therefore, the level of reimbursement is unrelated to the quality of service provision. Different approaches to incorporating quality of care

**Table 14.4** Strengths and weaknesses of the G-DRG system

<i>Strengths</i>	<i>Weaknesses</i>
Transparency and documentation	No quality adjustments for reimbursement
Compliance of hospitals	No reflection of different input prices
Reimbursement tool	Uniform accounting system but no full sample of hospitals
Precision	Increasing complexity with number of DRGs

aspects in reimbursement – such as pay for performance (P4P) – have been discussed in Germany, but due to a lack of evidence on effectiveness and cost-effectiveness from other countries that have introduced P4P systems in recent years, there is skepticism about its appropriateness in the German context (Lüngen et al., 2008). Moreover, the development of quality indicators that can easily be collected as part of routine data is still in progress (Busse et al., 2009). Therefore, the connection between quality and reimbursement will be one of the major topics for the further development of the G-DRG system.

Second, the InEK calculates the Case Fee Catalogue with the assumption that hospital input prices do not differ across Germany and all hospitals are working under the same conditions. All cases are summarized and handled as if they were treated in the same hospital. This ‘one hospital’ approach prevents the consideration of hospital-specific (structural) costs within the reimbursement system. Yet, current research shows that structural differences which are not controllable by the hospitals affect their costs (Busse et al., 2008). Hence, hospitals with higher costs due to structural differences are at risk of inadequate reimbursement.

Third, the sample size of the hospitals delivering cost data could be extended in order to increase the statistical power of the cost weight calculation. With the cost-accounting scheme of the InEK as a standard (see subsection 14.4.2), more hospitals and datasets can easily be incorporated. The resulting uniform accounting system across Germany would simplify efficiency comparisons and benchmarking projects.

A known threat of DRG systems is increasing complexity with an increasing number of DRGs. With the current G-DRG system incorporating 1200 groups and several additional payments, every hospital needs to employ specialized staff for coding purposes (see subsection 14.4.1). This additional effort must be weighed against the advantages for the individual hospital and the whole system.

## **14.8 Outlook: Future developments and reform**

### ***14.8.1 Trends in hospital service or general delivery***

There is a general trend towards concentration on selected specialties, which is an indirect result of the introduction of the G-DRGs. This has been associated with increasing hospital market penetration by (profit-making) hospital chains, and the reduction of overall capacities, which forced hospitals to specialize or to accept across-the-board cuts in resources (Leclerque & Robra, 2009). Moreover, regulatory reform of the SGB V (sections §115b, §116b, §140) provides hospitals with more freedom to offer outpatient services and to shift the boundaries between inpatient and outpatient care. A general trend is therefore the establishment of so-called ‘Medizinische Versorgungszentren’ (Care Centres), which try to achieve clinical as well as economic benefits through integrated care models and economies of scale (Neubauer & Minartz, 2009).

### **14.8.2 Trends in DRG application/coverage**

In recent years the G-DRG has been characterized by two trends with regard to patient classification:

1. refinement of the grouping algorithm inherited from the AR-DRG system, especially the development of a hierarchy of sub-groups below the level of the MDCs;
2. reflection of complex treatments and repetitive surgical procedures in DRG weights; this implied greater use of procedures for defining DRGs and weighting them (Roeder et al., 2008).

Another trend is preparation for the introduction of case payments for psychiatric services/care in Germany. The latter will build on the experiences of the G-DRG system, but will most likely be an independent system that will operate totally separately. We therefore do not discuss this in any further detail here.

### **14.8.3 Future developments and reform**

The main future development activity can be distinguished in two fields: financing and regulation, and the design implications of the G-DRG system.

#### *Financing and regulation*

There is a long-standing debate in Germany about hospital financing. Critics argue that the dualistic hospital financing structure leads to inefficient investment decisions (Felder et al., 2008). While this claim is controversial, it is widely accepted that the level of public investment in hospitals is no longer appropriate to meet infrastructural needs. Between 1993 and 2005, public investment in hospitals declined by 3 percent while adjusting for inflation (Augurzky et al., 2007). During the same period, economic pressures, documentation and performance requirements increased due to the introduction of the G-DRG system. Competitive pressures will further increase and hospitals will be even more dependent on adequate investment. Many policy-makers and researchers therefore argue that German hospital financing should follow the principle of monistic financing, that is, sickness funds should cover operating costs as well as investment in infrastructure (capital costs). Often this proposal is linked to demands to liberalize the regulation of prices and the benefits catalogue for the inpatient sector, which are currently strictly defined by collective decision-making. Large sickness funds argue that regulators should define benefits and prices only for acute and emergency services, while for elective procedures provision and prices should be negotiated between hospitals and payers (AOK BV, 2009).

#### *G-DRG system design implications*

As outlined in this case study, the G-DRG system is characterized by increasing differentiation, as the grouping of hospital services by diagnosis and procedures

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is constantly refined to ensure adequate resource allocation. This constant refinement nevertheless also has ambiguous consequences, such as the emergence of DRGs with a very low number of cases, decreasing stability of the payment regime as parameters constantly change, as well as increasing complexity (Roeder et al., 2008). In addition, DRGs are often no longer homogeneous in a medical sense. As a consequence, their use is increasingly limited to reimbursement purposes, as their application in quality monitoring, treatment pathways and so on is no longer appropriate (Roeder et al., 2008, p. 37). The G-DRG system may therefore need to find adequate solutions for financing specialized treatments that are as yet not adequately represented in specific DRGs. One way to achieve this may be to increase reliance on extrabudgetary, non-DRG payments for new technologies (namely, the 'NUB' approach).

### 14.9 Note

- 1 The summary for the latest available data year (currently 2008) is published on the InEK web site via an Access database and is publicly accessible (albeit in German only) ([www.g-drg.de](http://www.g-drg.de), accessed 10 July 2011).

### 14.10 References

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