

chapter eight

DRGs and quality: For better or worse?

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8.1 Introduction

Initially, in most European countries, diagnosis-related groups (DRGs) were introduced to better describe hospital services and to improve the measurement and management of hospital production (services). Increasing the transparency of care procedures and hence facilitating comparisons of hospitals' activity was seen as a way of improving quality of care in hospitals. Over time, DRGs have increasingly become the basis for hospital payment. However, the impact of DRG-based hospital payment systems on quality of care is not straightforward. These systems may present an inherent risk to quality of care because they directly incentivize hospitals to reduce the cost per stay, irrespective of outcomes. Hospitals are expected to reduce costs by cutting down unnecessary services and by improving efficiency through organizational changes. On the one hand, these changes may improve quality, if they improve clinical process and care management. On the other hand, providers may also 'skimp' on quality as a way of cost-saving, potentially placing the patient's health at risk.

There are many different ways through which DRG-based hospital payment systems may create perverse incentives (Ellis & McGuire, 1996; Miraldo et al., 2006), which could negatively affect care quality. In particular, hospitals may discharge patients earlier than clinically appropriate, omit medically indicated tests and therapies, or over-provide certain services, pushing the patient into a higher paying DRG in order to optimize the payments they receive. Despite greater awareness of the need for better monitoring of care quality and patient outcomes, basic information relating to the quality of services provided is lacking in most countries in which DRGs are used for hospital payment.

This chapter explores the possible impact of DRG-based hospital payment on quality of care. We first provide a theoretical discussion of how the quality of care might be affected in DRG-based payment systems. Quality is defined as any

aspect of the service that benefits patients during the process of treatment, or improves health outcome after treatment (Chalkley & Malcomson, 1998). We do not focus here on issues related to patient selection and overspecialization (discussed further in Chapter 6 of this volume), but instead on care quality following hospital admission. We then review the available evidence concerning the impact of DRG-based payment on quality of care, including the experience of countries participating in the EuroDRG project. Finally, based on a review of the available literature on contracting and the results of a few experimental payment designs that explicitly take into account quality of care, we discuss how DRG-based payment systems can be adjusted for quality. We conclude with some recommendations for ensuring a DRG design which will not lead to deterioration in the quality of care.

8.2 What the theory suggests

In the health sector, the notion of quality is rather diffuse, since it is difficult to observe and quantify the quality of care provided. Quality of care is a multi-dimensional concept, covering effectiveness (appropriateness), safety, accessibility and responsiveness of care (Kelly & Hurst, 2006) but there is no agreement on how these should be measured. A useful and widely used approach is the one conceptualized by Donabedian (2003) that describes quality measures as being either structure-, process- or outcome-oriented in nature. Structural measures – such as qualification of medical staff or equipment levels – may represent conditions for the delivery of a given quality of health care, but they are not sufficient to ensure an appropriate care process. Process measures should be based on clinical evidence of the effectiveness of the process concerned and consistent with current professional knowledge (IOM, 2001). However, there is not always agreement on what is ‘appropriate’ in health care. Thus, process indicators may be more vulnerable to ‘gaming’ than outcome or structure measures. While outcome indicators are attractive, it is not always possible to assess the contribution of care to health outcomes which are influenced by other patient-level factors.

Information about quality – whether in terms of the care structure, process or medical outcomes – is particularly difficult to obtain. Moreover, in the hospital sector there are several sources of information asymmetries. Patients and purchasers may not be able to distinguish whether a bad medical outcome is attributable to the underlying disease or poor quality of care. Individual patients would have little experience with their specific problem to be able to compare different providers or care procedures. Finally, in some health systems, patients may not have a choice regarding which hospital to attend. The existence of information asymmetry implies that payers and patients will have to rely on the decisions made by the providers. In the ‘agency theory’ framework, the providers are ‘experts’ who act on behalf of their patients, but patients, providers and purchasers may have conflicting interests (Forgione et al., 2005). Providers are interested in recovering their costs, or maximizing profits, while achieving an acceptable level of quality in the market place. Public purchasers are interested in meeting the health care needs of the population, while

controlling costs. They become economically concerned only when the marginal cost of lower quality exceeds the marginal benefits from cost-saving policies.

Therefore, the type and quality of treatment provided (clinical discretion) is a choice variable of the provider and is determined by multiple incentives. While some incentives are non-financial and can be induced by organizational culture, leadership, information systems, quality regulations, and so on, the economic incentives provided by the payment policy would also influence how providers behave in different situations.

As discussed in Chapter 7, under the most basic DRG-based hospital payment system, hospital revenue (R^A) increases linearly with the quantity of patients treated,¹ as follows:

$$R^A = \sum_{j=1}^J [Q_j \times \hat{p}_j] \quad (1)$$

where j refers to each DRG category, (\hat{p}_j) refers to the fixed payment for each patient treated in each DRG and (Q_j) to the volume of patients. Thus, under this formulation, hospitals will seek to increase the volume of their activity and are not incentivized financially to improve the quality of care provided (Street et al., 2007). In systems where there is an 'excess demand' (or undersupply), stimulating higher production by itself may help to improve quality by reducing long waiting times (accessibility).

However, in conditions in which it is possible to manipulate treatment thresholds or in which clinical discretion is high, quality of care may be at risk. For example, it is difficult to ascertain the right amount of diagnostic tests to be carried out, or in which circumstances a surgical procedure (such as a caesarean section) is justified.

In the literature on contracting, it is widely recognized that when some dimensions of the product/service are not visible (not specified in the contract) providers will be incentivized to withhold or 'economize' on the dimensions that are not verifiable (Chalkley & Malcomson, 1998; Levaggi, 2005). Given that the treatments provided in a DRG (content) are not always known (badly defined) the providers could decrease resources devoted to the services covered by the fixed (DRG) payment and seek to transfer the cost related to other aspects of care to other providers (cost-shifting). Moreover, Siciliani (2006) shows that when the information on average severity of the patient is known only by the provider, they (the hospital) are incentivized to over-provide high-intensity (surgical) treatment to low-severity patients.

In several countries in which DRG-based hospital payment has been introduced, there has been a significant reduction in the average length of stay (ALOS) (see Chapter 7). As reducing the length of stay in hospitals has been a policy objective in many countries (with or without DRG-based hospital payment), this could be seen as desirable. Shorter hospital stays reduce the risk of morbidity and may be preferred by patients. However, providers can also discharge patients prematurely, in an unstable condition. Unfortunately, it is difficult to assess to what extent reductions in length of stay are 'legitimate' and to what extent they are the result of premature discharges.

The way prices are set will have a significant impact on the cost-efficiency effort of providers (see Chapter 6) and, consequently, on quality. For example,

moving from local prices to a national tariff would increase incentives to control costs. This may reduce incentives for improving quality if quality implies extra costs. Of course, quality would not be a concern in situations in which better quality induces costs savings. Moreover, if providers can increase their profits by treating more patients, they have an incentive to attract more patients – if multiple providers exist – by increasing quality (Farrar et al., 2007).

8.3 Evidence from the literature

The earliest and most comprehensive evidence on the impact of DRG-based hospital payment on quality comes from the United States, where a DRG-based hospital payment system known as the ‘prospective payment system’ was implemented in 1983, replacing a cost-based (or fee-for-service) reimbursement model. The following subsections first review evidence from the United States, before turning to experiences from Europe.

8.3.1 Evidence from United States studies

In one of the earliest and most significant studies, using a nationally representative sample of 14 012 patients hospitalized between 1981/1982 and 1985/1986, the RAND Corporation showed that a prospective payment system led to a 20 per cent rise in the likelihood that a patient was discharged from hospital in an unstable condition. However, mortality at 30 and 180 days following hospitalization was unaffected (Rogers et al., 1990). The study also looked at changes in a large number of variables defining the process of care, including cognitive skills of physicians and nurses, as well as technical diagnostic and therapeutic scales, and it suggested that while the process of care improved after the introduction of a prospective payment system (better nursing care, better physician cognitive performance), these improvements in hospital process began prior to the introduction of the prospective payment system and have continued after its implementation. Moreover, after the implementation of the prospective payment system, the ALOS decreased considerably, with no significant impact on readmission rates, and patients were diagnosed as having been more ill at the time of admission (Keeler et al., 1990; Kahn et al., 1991).

Other studies also suggested that since the introduction of the prospective payment system, hospitals have been treating a more severely ill inpatient population, since less severely ill patients were shifted to outpatient settings (Newhouse & Byrne, 1988), but it is not clear to what extent this reflects an improvement in care organization (better management of cases), and to what extent it is a selection effect or shift in coding practices. Some of the increase in severity of illness reflects hospitals’ efforts to input more co-morbidity codes, leading to better financial rewards (Feinglass & Holloway, 1991).

In general, the introduction of DRG-based payment has significantly decreased both the ALOS and the rate of hospital admissions in the United States (Feinglass & Holloway, 1991). Despite the evidence of some adverse effects, some of the decline in the number of admissions and the ALOS appears

to be related to improvements in organizational efficiency and quality (utilization of new technologies/procedures, development of home or ambulatory care, and so on).

For example, Schwartz & Tartter (1998) compared the experiences of patients who underwent colorectal cancer surgery before and after the implementation of DRG-based hospital payment, in order to identify changes in health care delivery. Studying a sample of 446 patients treated in a New York hospital they showed that the mean length of stay was 2.6 days shorter after the introduction of the DRG system, with a 1.1-day decrease in preoperative and 1.5-day decrease in postoperative length of stay. DRG patients had significantly less operative blood loss, fewer transfusions, shorter duration of surgery, and fewer post-operative complications than the patients treated before the DRG system was implemented. Measures of disease severity (admission hematocrit, tumour differentiation, and tumour size) and patient mix (age and gender) did not change. Schwartz and Tartter (1998) suggested that there have been improvements in operative techniques, but the surgeons may have modified certain aspects of treatment in order to reduce length of stay without adversely affecting the quality. The significant decrease in preoperative length of stay may be due to organizational changes, shifting preoperative assessment to out-patient settings.

Nevertheless, the prospective payment systems may have had contradictory effects for different patient groups, depending on the price incentives provided by the different DRGs. Gilman (2000) examined the effect of DRG refinement for HIV infection in 1994 in the United States, where the prices of non-procedural DRGs were generally lowered and those of procedural DRGs were raised. He demonstrated that in the New York State hospital length of stay for lower priced non-procedural DRGs declined by 3.3 days from 1992 to 1995, while length of stay for better paid procedural DRGs increased by 1.1 days on average over the same period.

However, the pressure for cost-containment created by the DRG-based payment system can also adversely affect care quality. Cutler (1995) demonstrated that the impact of prospective payment systems may depend on the hospitals' economic situation (efficiency) before the prospective payment system was implemented. Using a longitudinal dataset of about 40 000 hospital admissions (from 1981 to 1988) in New England, he showed that hospitals experiencing average price declines (historical costs higher than DRG prices) had a 'compression' of mortality rates, with more deaths occurring in hospital or within two months after discharge, while overall one-year death rates remained the same. Reductions in average prices (revenues) may force hospitals to cut back on treatment intensity and/or other inputs. Cutler also found that there was an increase in readmission rates caused by the introduction of the prospective payment system, without any apparent change in sickness levels.

In a similar (more recent) study, Shen (2003) showed that financial pressure from the prospective payment system adversely affected short-term health outcomes after treatment for acute myocardial infarction (AMI), but did not affect patient survival beyond one year after admission.

Some evidence from the United States suggests that the introduction of DRG-based payment in rehabilitation/nursing facilities had a similar impact on the quality of rehabilitative and post-acute care. After the implementation of the

new payment approach, patients appeared to have shorter lengths of stay, with lower functional levels at discharge and higher institutional discharge rates (Gillen et al., 2007; Buntin et al., 2009). Moreover, both emergency readmissions and deaths within 60 days of discharge increased significantly for patients with chronic obstructive pulmonary disease (COPD), although some other outcomes of post-acute care were not affected (McCall et al., 2003).

8.3.2 Evidence from Europe

The evidence from Europe is scarce and less clear cut. In Sweden and Finland, where the incentives of DRG-based hospital payment are moderated by locally adjusted monetary conversion rates and additional payment components (see Chapter 6), it is believed that DRGs have helped with homogenizing care procedures and have improved inpatient care organization. However, in both countries there are no direct indicators of care quality, treatment and access associated with the DRG system. In Sweden, most hospitals contribute to quality registers, but quality monitoring appears to be independent of the DRG-based payment system. A longitudinal study of patient-reported quality of care in two Swedish hospitals suggested that the quality of care as perceived by patients – especially with respect to treatment by staff – decreased after the introduction of DRG-based payment (Ljunggren & Sjöden, 2001) but had no effect on quality of life after surgery (Ljunggren & Sjöden, 2003). The evidence from Sweden also confirmed that the introduction of DRG-based payments contributed to an increase in re-coding diagnoses and increased the number of secondary diagnoses recorded per case (Serdén et al., 2003). In Finland, comparison of outcomes across hospitals is based on specific diseases or procedures, and this information is used only for benchmarking.

An early study of four Norwegian hospitals suggests that the DRG-based payment system did not have any impact on hospital-acquired infections (Pettersen, 1995), although there was some evidence of cream-skimming in the immediate period after DRG-based hospital payment was introduced in Norway in 1997 (Martinussen & Hagen, 2009).

Using data from one region (Friuli) and 32 hospitals over the period 1993–1996, Louis and colleagues (1999) found for Italy – where a DRG-based payment system was introduced at national level in 1995 – that the total number of hospital admissions decreased by 17 per cent, while day-case hospital use increased sevenfold. They also found that the mean length of stay decreased (resulting in a 21 per cent decrease in hospital bed days) for most conditions, while severity of illness increased without any significant change in mortality or readmission rates.

A formal evaluation of DRG-based hospital payment in England, locally referred to as Payment by Results (PbR), also showed that while the ALOS has decreased significantly in settings in which PbR was implemented, little measurable change has occurred in the quality of care in terms of inpatient (in-hospital) mortality, 30-day post-surgical mortality and emergency readmissions after treatment for hip fracture (Farrar et al., 2009). The Audit Commission (2008) concluded that PbR has not had a measurable impact on quality of care in England.

No other formal evaluation of the impact of DRG-based payment on quality of care is available from other European countries. It appears that in most countries in which a DRG-based hospital payment system is introduced, the monitoring and reporting of care quality remains inadequate. For example, both in Germany and France, there is still no systematic information system to monitor readmission rates, postoperative mortality and complication rates.

In Germany, a survey of 30 hospitals in Lower Saxony suggested that the introduction of DRG-based payment did not create cream-skimming or early discharge problems in these hospitals (Sens et al., 2009). Based on interviews with hospital managers, health professionals and patients, the study suggested that service quality appeared to be steady over the period 2007–2008, and may even have improved due to better care organization, especially in large hospitals. Nevertheless, this study did not analyse any concrete measures of patient outcomes or care quality.

In France, there is evidence that up-coding might be a concern. External control efforts by the health insurance fund(s) revealed quickly that a significant proportion of the increase in day cases was due to incorrect coding of outpatient consultations (CNAM, 2006). While this problem has been partly resolved with stricter coding rules for day cases, introduced in 2007, further attention was required to address the pertinence of some day-case procedures, which have been increasingly significantly (see Chapter 13 of this volume).

8.4 Integrating quality into payment

Unintended adverse effects of DRG-based hospital payment systems on care quality could potentially be avoided by modifying the incentives of the payment system. If the payer/purchaser wants to improve quality of care, payments need to be adjusted in a way that rewards hospitals for the additional costs/effort involved in raising quality. Chalkley & Malcomson (1998) suggest, furthermore, that the form of the payment contract should take into account the type of provider (public, profit-making, non-profit-making) and should be adjusted carefully by the purchasers, depending on the objectives pursued (maintaining a certain level of quality while reducing costs, improving quality, and so on).

Different options exist for adjusting DRG-based hospital payment systems on the basis of quality of care. Simplified, there are three options: (1) the hospital level, (2) the level of a DRG-or all DRGs for one condition, and (3) the individual patient level.

Under the first option, total hospital income could be adjusted on the basis of hospital-level quality indicators:

$$R^A = \sum_{j=1}^I [Q_j \times \hat{p}_j] + p^h q^h \quad (2)$$

where q^h is an index of quality measured at hospital level and p^h is payment (price) per unit change on this quality scale. Given the difficulties and cost of measuring treatment-specific outcomes at patient level, hospitals can be rewarded for quality improvements or progress in the care process, given a

national framework. This is appropriate if quality is independent of the volume of activity. Otherwise, contracts using a price which varies by volume of patients treated could be more efficient (Chalkley & Malcomson, 1998).

One example of hospital-level quality adjustment is the approach adopted in England according to the Commissioning for Quality and Innovation (CQUIN) framework, which came into effect in April 2009. Within this framework, all acute trust hospitals collect patient-related outcome measures and report on quality in order to publish 'quality accounts' alongside their financial accounts. Subsequently, Primary Care Trusts (PCTs) can link a specific modest proportion of providers' income (agreed nationally) to the achievement of realistic locally agreed goals. In 2009/2010 the CQUIN payment framework covered 0.5 per cent of a provider's annual contract income (Department of Health, 2008), and this proportion increased to 1.5 per cent in 2010/2011 (Department of Health, 2010). Along a similar line, the Centers for Medicare and Medicaid Services (CMS) in the United States will lower DRG payments for all patients in hospitals – initially by up to 1 per cent – with above-average readmission rates for congestive heart failure, pneumonia and AMI from October 2012. Two years later, COPD, coronary artery bypass graft, percutaneous coronary intervention and other vascular procedures will be included in the calculation – and penalties will increase to 2 per cent in 2014 and 3 per cent in 2015.

Under the second option, when patient-level data are available on outcomes and/or treatment process(es), payments can be adjusted for certain DRGs based on the quality of all patients treated within that DRG. The aim is to encourage medical practice that is considered to be 'good quality' by moving away from pricing simply based on average observed costs per episode. However, this requires reliable indicators of patient-level data and agreement on what constitutes 'good quality'. In this case, both quality measurement and payments are DRG specific, as follows:

$$R^A = \sum_{j=1}^J [Q_j \times \hat{p}_j] + \sum_{j=1}^J [(q_j^i Q_j) \times p'_j] \quad (3)$$

where p'_j corresponds to the price for the 'good quality' care practice for patients of a given DRG (j), and quality is measured at individual DRG level. The price paid for good quality (p'_j) could be higher or lower than the average cost of an episode, depending on what is considered 'good' or 'best' compared to average/common practice. In England, 'best practice tariffs' have recently been introduced for four areas (cholecystectomy, hip fractures, cataracts and stroke), whereby significant unexplained variation in quality of clinical practice is observed and clear evidence of what constitutes best practice is available (Department of Health, 2011). Best practice tariffs are set to incentivize day-case activity for cholecystectomy, while for cataract treatment the price covers the entire care pathway, so that commissioners only pay for events in the best practice (streamlined elective cataract) pathway, in which patients are treated in a 'joined-up' and efficient manner. For hip fracture and stroke, prices are adjusted upwards if key clinical characteristics of best practice care are met (with corresponding lower payment for non-compliance).

In practice, outcome-based adjustment can also be carried out for specific diseases, such as AMI, stroke (Ash et al., 2003; Iezzoni, 2003) or for procedures

deemed effective (Nashef et al., 1999) that are not related to specific DRGs. In Germany, one example of such a quality adjustment is the 'integrated care' contract between a large German sickness fund (*Techniker Krankenkasse*) and the Karlsruhe heart surgery hospital, which has been in place since 2005. Under the terms of the contract, the hospital receives higher payments for coronary bypass surgery patients if it scores above the national average on a set of heart surgery quality indicators, which are collected as part of the German external quality assurance system (see Busse et al., 2009). Similarly, in the Netherlands, the original purpose of introducing DBCs was to allow insurers to negotiate with hospitals regarding price, volume and quality of care (which purchasers are currently allowed to do for about 30 per cent of DBCs). However, it would appear that insurers and hospitals negotiate predominantly on price and volume, whereas quality plays only a minor role in the negotiation process.

However, it is challenging to integrate in the payment system an implicit set of clinical guidelines defining how to treat a homogeneous group of patients, approximating a contract that specifies what is 'good quality' for specific DRGs (Newhouse, 2003). Clearly, the condition for such contracts is a consensus on what constitutes 'good-quality' care in different clinical contingencies. The lack of clinical consensus on the guidelines to be used – even in cases of common problems, such as heart attacks – is well documented (Baker et al., 2008; Phelps, 2000) and remains a major obstacle to quality-based contracting. Whether or not best practice tariffs can contribute to improving quality remains to be seen.

The third option is to adjust payments for individual patients based on the quality of their treatment, independent of the DRG to which they are allocated. Hospital contracts could be simply modified to take into account the quality of care provided, as follows:

$$R^A = \sum_{j=1}^J [Q_j \times \hat{p}_j] + \sum_{j=1}^J [(q_j^i Q_j) \times p^i] \quad (4)$$

where q^i is the patient-level quality index (which could be simply 0, 1) and p^i is the price for individual-level quality (or non-quality). The revenue (R) of providers depends on the number of patients treated Q_j as well the quality of treatment and its price, irrespective of the DRG in which patients are placed. This requires reliable indicators of patient outcomes.

Developing such indicators is not always straightforward, as attributing a certain patient outcome to provider behaviour (rather than to patient health status) can be controversial. Indicators for bad (or good) quality, on which such penalties (or rewards) are based, will thus need to be very robust and subject to as little controversy as possible.

Patient-level quality adjustment policies so far have focused on disentangling complications (caused by the hospital) from co-morbidities (which the patient already has upon admission), as well as on readmissions.

The best-known example of this is the United States Medicare policy, whereby the CMS require hospitals to use 'present-on-admission' codes for both primary and secondary diagnoses when submitting claims for discharges. Since October 2008, diagnosis codes for ten selected conditions – such as pressure ulcers; 'dislocation of patella open' due to a fall; catheter-associated urinary tract infection – are excluded from consideration during the grouping process if they

were not coded as being present on admission (that is, they were contracted during the hospital stay) (Department of Health and Human Services, 2008). Consequently, these codes cannot lead to the classification of patients into higher-paying DRGs, and Medicare no longer has to pay for the extra costs of these avoidable hospital-acquired conditions. It is estimated that about 15 per cent of the claims had a 'non-present on admission' diagnosis (Zhan et al., 2007). While this approach to reducing adverse events is considered attractive by some (McNair et al., 2009), others highlight the difficulty of determining what are avoidable adverse events (Provonost et al., 2008). Furthermore, 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 (Iezzoni, 2009).

Another patient-based alternative for integrating quality into DRG-based hospital payment systems is to extend the treatment episode for which a DRG-based payment is granted; that is, by including outpatient visits, readmissions, and so on. In England and Germany, hospitals do not receive a second DRG payment if a patient is readmitted for the same condition within 30 days after discharge. Ideally, it is desirable to extend the 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. In the Netherlands, the DBC-based 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) and including inpatient days, outpatient visits, laboratory services, medical imaging services, medications, medical materials, (surgical) procedures, and so on. 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.

Of course, it is also possible to have a system which combines different approaches, for example: quality adjustments at the patient level with a global payment/adjustment for quality at the hospital level. However, an essential prerequisite for any quality-based payment adjustments to the hospital payment system is the availability of information on quality of care. Therefore, several countries have increased their efforts to collect quality information (for example, BQS/AQUA² in Germany (Busse et al., 2009), COMPAQH in France) but routinely available information on patient outcomes is still scarce. The importance of having better information regarding the quality of care is evidenced by the existence of specific financial incentives to hospitals for reporting quality information. For example, Medicare in the United States encourages hospitals to participate in public reporting of quality information. Those hospitals that do not report on 10 measures of quality (defined by the Hospital Quality Alliance) receive a 0.4 per cent reduction in their DRG prices. In Germany, hospitals are financially penalized if they report quality information for less than 80 per cent of treated cases (Busse et al., 2009). The pertinence of using the act of reporting quality data as a proxy for quality of care delivery is questionable, but – when data are available – hospitals can also be offered positive incentives for their effort or extra payments can be made for stimulating innovative

approaches to improving quality and patient safety. However, caution is called for before implementing any such schemes, as providers could be destabilized if their revenues fluctuate significantly from one year to another.

8.5 Conclusions

The effects of DRG-based hospital payment systems on patient outcomes and quality of care have long been debated. In many countries, health professionals have expressed concern that these systems may lead to a focus on cost-containment efforts at the expense of quality of care. Based on theoretical considerations and a review of the available literature, this chapter suggests that DRG-based payment systems may represent risks for quality of care, but may also provide opportunities for quality improvements. The introduction of DRGs has increased transparency and has facilitated comparison and standardization of care. The pressure for efficiency introduced by DRG-based payment systems might help to improve organization of care, accelerate the adoption of technology, and hence improve quality. Nevertheless, hospitals can also skimp on quality as a way of saving costs by manipulating the services/care provided to patients. Technology adoption rates may decelerate if new technologies do not induce cost-savings (see Chapter 9). At the same time, these potential adverse effects are not inevitable consequences of DRG-based hospital payment and can be addressed by carefully designing the payment scheme.

The evidence from the United States suggests that, on the one hand, the introduction of DRG-based payment has improved organizational efficiency and quality of care in some areas, in particular by stimulating better options for ambulatory and home care. On the other hand, there is evidence that the cost-containment pressure created by the introduction of DRG-based payment can have an adverse impact on patient outcomes in terms of readmission and mortality rates. Different patient groups can also experience various impacts, depending on the price incentives provided by different DRGs. Particular attention appears to be necessary to ensure that high-severity groups are adequately accounted for in the DRG system, in order to avoid quality of care being adversely affected for these patients.

In Europe, despite the widespread introduction of DRG-based hospital payment systems since the early 2000s, the available research evaluating the systems' impact on care quality and patient outcomes is too limited to draw any firm conclusions. The limited evidence so far does not suggest that the introduction of DRG-based hospital payment had a significant impact on patient outcomes (as measured by readmission and mortality rates). Thus, some of the adverse effects observed in the United States are not confirmed by evidence from Europe. Clearly, the impact of DRGs on quality would depend on the model adopted and the regulatory and health care context of each country. Because DRG-based hospital payment systems in Europe generally speaking did not replace fee-for-service systems, but rather replaced per diem-based payments or global budgets (see Chapter 2), the effect of DRG-based hospital payments on quality of care might also be different in Europe from that experienced

in the United States. In addition, the pressure to contain costs is possibly weaker in many European countries than in the United States, because of the stronger presence of both public providers and public regulator in the hospital sector. If this is true, any adverse impact on quality would also be weaker.

In basic DRG-based hospital payment systems, health care providers are not explicitly rewarded for improving quality. Therefore, these schemes need to be refined in order to integrate direct incentives for improving quality. This chapter provides some examples of how this could be carried out. Nevertheless, caution is called for when implementing any such schemes. A balance needs to be struck between the positive motivational effects and the potentially destabilizing effect of penalties for providers (Maynard & Bloor, 2010). Also, providers may focus too much on those areas in which payments are linked to measured quality improvements, to the detriment of some other (non-measured) aspect(s) of care. Therefore, careful piloting and evaluation of such schemes is essential.

DRG-based hospital payment provides an opportunity to better measure quality of care in hospitals. Thus, it becomes possible to improve quality by providing explicit incentives for higher quality procedures/treatments, penalizing 'poor-quality care' or granting funds for improving patient outcomes. This requires continuous refinement of data and indicators for monitoring quality of care. In many countries, information on patient outcomes and process quality is not routinely collected. However, if financing arrangements become more sophisticated, the demand for and supply of information regarding quality of health care will surely increase.

8.6 Notes

- 1 In practice, in all countries, hospitals receive some fixed payments independent of their activity to cover the fixed costs of providing certain services, such as education and research. For the sake of simplicity, these are not discussed here.
- 2 Federal Office for Quality Assurance/AQUA-Institute for Applied Quality Improvement and Research in Health Care.

8.7 References

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