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Abstract

As part of a major health care reform starting in 2005, the Netherlands introduced a Diagnosis-Related Group (DRG) system of hospital care reimbursement and performance measurement. The DRG system was applied to all hospital care, meaning that it affected the overwhelming majority of Dutch specialist medical professionals. To better understand the consequences of this new system, and the responses of medical professionals to its implementation, we conducted and analysed an original set of sixty-six semi-structured interviews focused on medical specialists' perception and utilization of the system. Our findings indicate that these professionals' behaviours can seldom be ascribed to financial motives alone. Many responses of medical professionals to the new system were attributed to value-based motivations, related to upholding professional ethos and accommodating the dynamics of the professional process. Even responses that might be characterized at first as financially driven could not be entirely understood as perverse effects of the performance management system, as they too usually had an ancillary aim of safeguarding the professional tenets of the medical establishment.

Key words

Case-mix reimbursement system, Diagnosis-Related Groups, health care reform, performance management, perverse effects, professionalism, unintended responses

UNINTENDED RESPONSES TO PERFORMANCE MANAGEMENT IN DUTCH HOSPITAL CARE

Bringing together the managerial and professional perspectives

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INTRODUCTION

As part of a major health care reform starting in 2005, the Netherlands introduced a Diagnosis-Related Group (DRG) system of hospital care reimbursement and performance measurement. The new Dutch system, based on DRGs, was similar to case-mix systems introduced earlier in various other countries (Busse et al. 2013). The essence of a DRG system is the classification of patients into clinically and cost homogeneous groups (Sutherland and Botz 2006). This enables managers to condense the activities of medical specialists into a series of health care 'products' that can be measured, providing an instrument for monitoring professional performance (Abernethy and Stoelwinder 1995).

Compared to typical DRG systems, the design of the Dutch system had two rather unique features (Oostenbrink and Rutten 2006; Hasaart 2011). First, the system was structured in such a way as to introduce market processes into the Dutch health care sector (Steinbusch et al. 2007). Second, the Dutch system had both wider and more detailed coverage, being not only used for reimbursement of hospitals, but also as the basis for remuneration of medical specialists who treated patients on an inpatient or outpatient basis. DRGs were billed to health insurers, which in turn paid hospitals and medical specialists for the services they provided.

The effects of performance management systems, such as the Dutch DRG system, on public and semi-public organizations are a subject of growing academic interest. Yet, research on this topic has typically adopted either a managerial or a professional perspective. Studies based on one of these viewpoints find that performance management systems, and case-mix systems in particular, lead to 'perverse effects', defined as detrimental outcomes associated with the way professionals utilize the performance management system, that is, in unintended ways. 'Upcoding' and 'cherry picking' are examples of unintended responses that are assumed to lead to perverse effects of introduction of DRG-based performance management systems (Simborg 1981; Hsia et al. 1992; Steinbusch et al. 2007; Busse et al. 2013).

Studies that analyse DRG systems from the managerial point of view focus on financial incentives to explain unintended responses (Silverman and Skinner 2004; Hasaart 2011). However, from the few studies that analyse DRG systems from a professional point of view, we also know that, beyond financial rewards, medical professionals place considerable emphasis on making a contribution to their patients and society. Such intrinsically motivated professionals are expected to resist reforms, such as the introduction of a DRG system, if they consider them to be meaningless or not in the best interests of their clients or the general public (Tummers, Bekkers, and Steijn 2009). In such cases, medical professionals' unintended responses may be characterized as driven by 'professional' or value-based motivations (Thibadoux, Scheidt, and Luckey 2007; Le Grand 2010; Moynihan, Pandey, and Wright 2012; Tummers and Bekkers 2014). Because both financial and value-based motivations often come into play, it is particularly problematic that, until now, most research on

unintended responses to performance measurement systems has employed a one-dimensional focus, based on either the managerial or the professional perspective, each in isolation of the other.

The current research uses both perspectives together to analyse unintended responses to the introduction of the DRG system in the Dutch health care sector. Our aim is to provide an even-handed, empirically grounded assessment of the behaviour of medical professionals, leading to a more comprehensive understanding of the phenomenon of unintended responses – beyond normative expectations. Two related research questions are posed: *How have medical professionals responded to the introduction of the DRG system, and how can their behaviour in response to the system be understood?*

To answer these questions, we first present the theoretical notions and methodological considerations guiding our research. We then briefly review the emergence of DRG performance management systems internationally, and the origins and design of the Dutch DRG system. From an understanding of the DRG system in place in the Netherlands, we go on to examine the unintended responses of medical professionals to the Dutch system, alongside the motivations and justifications professionals offer for their behaviour. This is followed by a discussion of our findings, which are linked to existing knowledge about management of professional behaviour. Finally, we conclude with a brief outline of the implications of our study for system managers.

THEORY: PERFORMANCE MANAGEMENT SYSTEMS IN PROFESSIONAL ORGANIZATIONS

Functions of performance management systems

Rooted in traditional agency theory, performance management systems are often presented as tools for system managers (i.e., 'principals') to hold opportunistic public or semi-public organizations or employees (i.e., 'agents') accountable for their performance (Heinrich and Marschke 2010; Moynihan, Pandey, and Wright 2012). In line with the New Public Management approach to public-sector reform, systems of performance management are designed to facilitate transparency in professional organizations by translating the complex activities of specialists into measurable or, at least, easy-to-communicate figures (e.g., waiting times may be used as an indicator to assess the performance of a hospital). Greater transparency is thought to make it easier for external system managers to intervene in an effective and efficient way (De Bruijn 2007). This is the rationale for introduction of DRG systems in the health care sector: they are thought to be an effective way to hold health care providers (e.g., hospitals and doctors) accountable for their performance in terms of efficiency, effectiveness and overall care expenditures (Covaleski, Dirsmith, and Michelman 1993; Noordegraaf, Meurs, and Montijn-Stoopendaal 2005; Abernethy et al. 2006; Lehtonen 2007).

Beyond the 'external control' function for which performance management systems are typically used, these systems may also serve an 'internal development' function. That is, they may provide valuable information on performance for the organization itself and for its employees. This increases internal transparency, enabling the organization to learn, innovate and improve its processes (De Bruijn 2007; Pen 2009). As such, performance management systems, including those in health care, may be used by managers to monitor progress towards commonly agreed objectives, providing metrics for assessing whether a specialist, department or organization is on track towards achieving certain aims (such as reduced waiting times) (Osborne and Gaebler 1992; Johnsen 2005; Bevan and Hood 2006; Drucker 2007).

Unintended responses of professionals

Besides beneficial effects, the literature also reports a variety of unintended responses to the introduction and implementation of performance management systems (Johnsen 2005; De Bruijn 2007; Noordegraaf and van der Meulen 2008). Two types of unintended responses are particularly relevant in relation to the introduction of DRG systems in health care. The first, 'upcoding' or 'gaming the numbers', is the purposeful misrepresentation of performance measurement figures, thereby leading to misperception of performance and suboptimal allocation of resources (Goddard, Mannion, and Smith 2000; De Bruijn 2007). The practice of inflating production 'on paper' – and not in the real world – is also referred to as 'DRG-creep' (Hsia et al. 1992; Silverman and Skinner 2004; Steinbusch et al. 2007). The second phenomenon is 'cherry picking' or strategic selection of expedient cases. In health care, for example, organizations may select only those cases where high performance can be achieved relatively easily, while patients who are difficult to treat may be referred elsewhere (Hasaart 2011).

Conditions triggering unintended responses

The literature, furthermore, identifies certain conditions associated with increased likelihood of unintended responses. Two such conditions are especially pertinent for the purposes of the current study: the impact of performance management systems on the organization and the level of professionalism of the organization. In 'high impact' systems, the measured performance is directly linked to rewards or sanctions. Especially when 'bad performance' implies budget cuts, organizations and their employees have a clear – financial – incentive to behave in unintended ways (De Bruijn 2007; Jacob and Lefgren 2005).

In addition, when an organization's level of professionalism is high, as indicated by the degree of specialized knowledge and competences of its members, the likelihood of

unintended responses is more pronounced. This is because the managerial rationale underlying performance management systems conflicts with the very nature of the professional process in at least two interrelated ways (De Bruijn 2007; Propper and Wilson 2003). First, performance management systems are relatively static, meaning that it often takes a long time to make changes to their formal design. This tends to create friction with the highly dynamic nature of professional occupations (De Bruijn 2010; Piening 2013; Teelken 2008). Second, performance management systems are driven primarily by management objectives (e.g., transparency, efficiency and cost containment), while professional processes are propelled more by shared normative standards and cognitive beliefs, based on which professional autonomy is claimed (Evans and Harris 2004; Freidson 2001).

In line with cognitive evaluation theory, the introduction of a performance management system may undermine intrinsic professional motivation (Deci, Koestner, and Ryan 1999; Fehr and Falk 2002), particularly when such a system financially rewards 'intended' behaviour (i.e., that which obeys the rules of the system) and punishes 'unintended' behaviour. From the perspective of the professional, such a system interferes with his or her specialized knowledge and recognized competence regarding the task to be completed, and hence encroaches on his or her autonomy. This is especially so if the professionals concerned do not perceive the intended behaviour as beneficial or the unintended behaviour as having perverse effects. Indeed, when professionals consider reforms, such as performance management systems, to be meaningless (or even harmful) for their clients or the general public, they are especially likely to resist their functioning (Deci and Ryan 1985; Tummers and Bekkers 2014).

Unintended responses and perverse effects

Traditional agency theory, which considers the behaviour of professionals from the perspective of managers, has a strong tendency to equate unintended responses with perverse effects. Professionals are characterized as agents who, because of asymmetries in expertise, may succeed in evading the control of their principals (Jensen and Meckling 1976; Brehm and Gates 1997). When the opportunity arises, so the assumption goes, professionals will resort to 'shirking', 'subversion' and even 'stealing' in pursuit of their own objectives, to the detriment of their principals. Such behaviour, supposedly a result of incentive incongruity, is considered unintended and assumed to have perverse effects. It is therefore deemed prudent for managers to curb it through monitoring.

While agency theory remains the dominant theoretical framework associated with performance management (Heinrich and Marschke 2010), it has been criticized for its inability to include 'pro-social' motivations for unintended responses (Moynihan, Pandey, and Wright 2012). Indeed, exponents of the professional perspective point

out that agents in the public or semi-public sector are often motivated by the perceived social good of their work, and this is thought to help shape their behaviour, including behaviour in relation to performance management systems. Furthermore, while unintended behaviour may have perverse effects, this is not necessarily so. Unintended behaviour might be considered beneficial as well, depending on the perspective from which it is examined. Some might view an agent's action as good for society or for a particular community, though it might lead to 'agency costs' incurred by the principal (Jacobides and Croson 2001).

In line with adaptations of traditional agency theory and emergence of the professional perspective on unintended responses, a growing body of literature considers the pro-social motivations for agent behaviour, while also pointing out principals' limitations in information gathering and performance measurement (Dilulio 1994; Davis, Schoorman, and Donaldson 1997; Cuevas-Rodríguez, Gomez-Mejia, and Wiseman 2012). The current research expands on this body of work. In assessing unintended responses of medical professionals in the context of the Dutch DRG system, we distinguish behaviours from their motivations and from their outcomes. This enables us to address unintended responses as essentially distinct from undesirable outcomes and to go beyond the simple assumption that all incentives are pecuniary and tangible.

By combining the managerial and professional perspectives, we provide a more complete picture of unintended responses to performance management systems, in particular, in relation to the DRG-based performance management system introduced for hospital care in the Netherlands. While system-level managers may categorize some effects of unintended responses as perverse, we demonstrate that agents often see things differently. Unintended responses of 'principled' agents may be driven by ideals, values, norms and standards, especially those stemming from professional ethos (Dilulio 1994; Dahler-Larsen 2014). We include these non-pecuniary and intangible incentives in our investigation, alongside their outcomes at the patient level.

DATA AND METHOD: IN-DEPTH QUALITATIVE CASE STUDY

Apart from examining documents on the Dutch DRG system, we conducted and analysed sixty-six semi-structured, in-depth interviews, each lasting between one and one-and-a-half hours, in the period between 2007 and 2012. Interview subjects were medical professionals from thirteen surgical and internal medicine specialties at one university medical centre, one general hospital and four independent treatment centres in the Netherlands. We also conducted interviews with administrative staff involved in DRG registration.

Hospitals and medical specialities were selected for study based on purposive, maximum variation sampling. Individual interviewees were selected using snowball sampling. To avoid socially desirable answers, interview subjects were assured of anonymity for themselves and for the hospitals where they worked. As our study

focuses on unintended responses, we asked interviewees questions about how they used the DRG system on a day-to-day basis. To avoid a hindsight rationalization bias, we tried insofar as possible to simulate a real-time setting, talking about actual behaviours in particular situations and cases. In addition, we cross-checked the unintended responses mentioned from one interview to the next, to determine whether the scenarios described were recognizable and to validate our findings. The interviews were recorded and transcribed.

Distinct behavioural responses to the DRG system were extracted from the data using a two-step coding procedure. First, in vivo coding was applied, assigning labels that were as close as possible to the interviewees' own words (Glaser and Strauss 1967). Second, using interpretive coding, the in vivo codes were clustered, producing categories of unintended responses transcending their specific contexts and anecdotal nature (Dreher 2003; Fereday and Muir-Cochrane 2008; Myers 2008; Kim and Berard 2009). The resulting groupings offered insight into the behaviours of the interviewees, as well as the meanings they attached to these behaviours (Smith, Larkin, and Flowers 2009).

The qualitative design of this research prevents us from making specific claims about the magnitude of the studied behaviours (i.e., their frequency and prevalence). Nonetheless, the interview findings clearly suggest that unintended responses cannot be dismissed as rare phenomena (Bevan and Hood 2006; Pollitt 2013). Given the design of our study (allowing for maximum variation and collecting a substantial amount of interview data), our findings are considered more likely to point to structural behavioural patterns than to represent a collection of isolated occurrences. Moreover, although key elements of the structure of the DRG system under study have changed since 2012 (and will probably keep changing), we expect the findings of our study regarding unintended responses to remain relevant, as the key elements of the system have stayed essentially the same.

PERFORMANCE MANAGEMENT IN THE DUTCH HEALTH CARE SECTOR

Development of DRG-based performance management internationally

Faced with aging populations, technical advances in medicine, and consequentially, increasing health care expenditures, many OECD countries have implemented DRG systems for hospital care payments (Oxley and MacFarlan 1995). In Europe, countries as diverse as the United Kingdom, France, Germany, Sweden, Estonia, Poland, Spain and the Netherlands all make use of some form of DRG system (Busse et al. 2013). By providing measurable information about the medical process, DRG systems have become instrumental for monitoring and managing the performance of hospitals, medical departments and complete health care systems (Covaleski, Dirsmith, and Michelman 1993; Lehtonen 2007). Ministries of health, public regulators and health

insurance companies use DRG systems to tweak financial incentives for health care providers, ultimately to influence their behaviour in a way that advances health care efficiency and cost containment (Preston 1992; Abernethy et al. 2006).

Many of the more recent DRG systems have been accompanied by pay-for-performance programmes, which aim to improve efficiency through provision of payments based on care outcomes (Lindenauer et al. 2007; Rosenthal and Dudley 2007). Performance management through a DRG system and additional instruments became a core part of the 'accountable care organizations' under development in the USA with the 2010 introduction of the Affordable Care Act (McClellan et al. 2010; Berwick 2011; Ayanian and van der Wees 2012).

Origins and design of the Dutch DRG system

The Netherlands introduced its DRG system in 2005 as part of a major health care sector reform. The aim was to make the process of health care provision more efficient and transparent and ultimately to moderate care expenditures (NZa 2006). Introduction of the system was initiated by the Ministry of Health. Its implementation was delegated to three different organizations: the Dutch Healthcare Authority (NZa), which as the public regulator, was made responsible for setting DRG categories and their tariffs; the Health Care Insurance Board (CVZ); and DBC-Onderhoud, a system maintenance organization. Together, these organizations can be considered the public-sector managers of the DRG system (Stolk et al. 2009). As the parties directly involved in the functioning of the DRG system, CVZ and DBC-Onderhoud are in direct contact with the professional associations of medical specialities on issues concerning DRG registration, as well as on adjustments to be made to the system.

In addition to these public system managers, a group of private-sector system managers can be identified. They include the health insurance companies in the Dutch market and their umbrella organization, the Netherlands Association for Health Insurers (ZN). Indeed, as the main purchasers of hospital care, individual health insurers have considerable involvement in the functioning of the DRG system. They negotiate with hospitals to contract DRG products on behalf of those whom they insure. These contracting negotiations concern production volumes, quality aspects and DRG tariffs. Moreover, health insurers have been involved from the start in interpreting the rules and guidelines for DRG registration, as well as in verification of the accuracy of DRG invoices from the medical institutions.

The Dutch system, as noted earlier, is somewhat different from the DRG systems in other countries. First of all, it incorporates elements designed to facilitate the introduction of market processes (Van de Ven and Schut 2008). Thus, at the time of the system's introduction, tariffs were variable for a small portion of DRGs (the so-called 'List B'). Tariffs for these were to be set through negotiations between individual health

insurers, as purchasers of care, and health care providers, as suppliers of care (Tan et al. 2011). The relative size of List B was increased over time, and it made up 70 per cent of DRG products in 2012. For the remaining 30 per cent of DRGs (the so-called 'List A'), tariffs were set by NZa (Stolk et al. 2009). Tariffs were calculated (or estimated) based on the *average* of all medical activities and time expected to be spent on a patient with a specific condition from the beginning to the end of the treatment trajectory, which may include several admissions or contacts.

A second unique feature of the Dutch DRG system is its breadth of coverage and level of detail. Not only is it used for reimbursement of hospitals, since 2008, remuneration of medical specialists has been wholly determined by their DRG production, regardless of whether their activities concern List A or List B DRGs. The DRG system thus covers some 85 per cent of the hospital care provided in the Netherlands, including inpatient care, outpatient care and specialist remuneration (NVZ 2012). With more than 30,000 DRGs, however, the Dutch system is also much more detailed than typical DRG systems, which usually incorporate fewer than 3,000 care 'products' (Tan et al. 2011). In 2012, a revised version of the DRG system was introduced, reducing the number of care products available for registration to some 4,000. This change will certainly impact medical professionals' coding practices, though we expect the underlying motivations for their registration behaviour to remain largely the same.

DRG registration and reimbursement

To give an impression of how DRG care products are built up in the Dutch system, we make use of the example of a patient with hip osteoarthritis (Figure 1). Upon first contact with the patient, the medical specialist registers a DRG based on the preliminary diagnosis and the chosen course of treatment.

In this case, code '5' is registered for the medical specialty orthopaedics. Code '11' is registered for regular care, in contrast to, for example, an inter-colleague consultation, which would be code '13', or follow-up care for a patient in treatment for longer than a year (code '51'). Subsequently, the medical specialist chooses a diagnosis and treatment category. Here code '1701' is entered for 'osteoarthritis', which is one of the 218 diagnoses included in the system for the medical specialty of orthopaedics. The

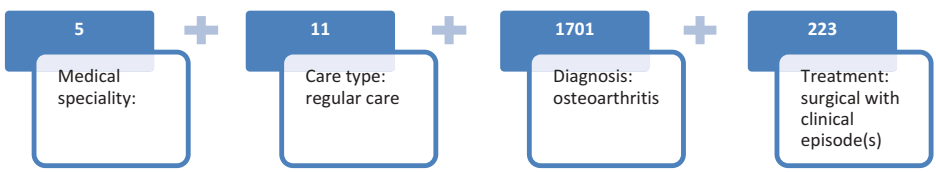

Figure 1: Example of the DRC coding for hip osteoarthritis

medical specialist, finally, chooses a treatment to be registered. The diagnosis osteoarthritis can be registered in combination with several of the in total thirteen treatment categories. Code '223' reflects surgery as the chosen treatment with clinical episodes. Both the diagnosis and the treatment category registered can be modified in the course of the treatment.

UNINTENDED RESPONSES TO THE INTRODUCTION OF THE DRG SYSTEM: MEDICAL SPECIALISTS' BEHAVIOUR, AND THEIR MOTIVATIONS AND JUSTIFICATIONS FOR IT

Our research uncovered a wide variety of behaviours of medical professionals in response to introduction of the DRG system – as well as diverse motivations and justifications for these behaviours. In the descriptions below, we classify unintended responses into one of our two earlier-described categories, 'upcoding' or 'cherry picking'. Each type is illustrated with corresponding examples or interview quotes.

Unintended responses in DRG registration: 'Upcoding'

Medical professionals upcoded DRGs in several ways. We grouped responses, as well as justifications and motivations, into three empirical categories: 'volume upcoding', 'diagnosis upcoding' and 'treatment upcoding'.

Volume upcoding

The DRG system, in principle, allows only one DRG to be registered for each patient per medical specialty. However, we found that medical specialists sometimes registered *multiple* DRGs for a patient. Apart from pecuniary motivations, they did so for at least three reasons. The first was for patients with multiple ailments. An example here is patients with both haemophilia and HIV. Internists at the university medical centre justified their decision to register two DRGs for these patients by their desire to preserve the accuracy and completeness of registration: 'We feel that it is important to make clear that we're dealing with two completely different clinical pictures for these patients'.

Second, multiple DRGs were registered for patients requiring repeated treatment. Patients with bladder cancer, for example, often required repeated scrapings. To get around the rule excluding sequential registration of the same treatment, urologists sometimes registered the second procedure 'after opening a DRG for a bladder flushing, which these patients also need'. An interviewed urologist defended this choice: '[I]t's all legitimate. It is just altering the order that treatments are performed'. A single

DRG would cover the cost of only one procedure, the urologists argued, although a second treatment is inevitable for some patients.

Third, multiple DRGs were sometimes opened for patients in particularly poor condition. For example, gastroenterologists might open a second DRG for patients needing to undergo a gastroscopy under sedation. The reason, according to the specialists interviewed, is that gastroscopy under sedation is much more demanding and time-consuming than without.

Diagnosis upcoding

The design of the DRG system requires that only medical considerations determine what diagnosis is registered. But we found that medical specialists sometimes registered diagnoses for other reasons. Eye surgeons and rheumatologists, for example, referred to medically small, but financially significant distinctions between diagnoses: 'The diagnoses macular degeneration and macular pathology are closely related, but differ significantly in the reimbursement they yield'. The choice of which to register, the specialists acknowledged, might be partially driven by financial motives.

Furthermore, for some patients a 'suspected diagnosis' has to be ruled out. Various paediatricians registered the diagnosis meningitis and retained that registration even after tests had determined that meningitis was not the medical problem at hand. The reason, they explained, was to cover the costly diagnostics (a lumbar puncture) needed to rule out meningitis. Those tests were covered by the DRG for meningitis but not by the DRG for influenza, which was often these patients' actual condition.

In some cases, the choice of which diagnosis to register was influenced by the medication a doctor preferred to use for treatment. For example, all of the rheumatologists interviewed said they might register the diagnosis rheumatoid arthritis for a patient actually suffering from polyarthritis or another type of rheumatism. They did this because such patients often benefited from treatment with costly biological medications, which were eligible for reimbursement only for patients with rheumatoid arthritis. A rheumatologist at a general hospital said:

> I see young men whose families are being destroyed by the other type of rheumatism, while I know I have an effective medication at my disposal to treat them. What do you think happens then? I change the diagnosis, and so do all of my colleagues.

Finally, medical professionals might register a diagnosis they know enables their patients to avoid out-of-pocket payments. This was relatively frequent for care that could be construed as cosmetic, such as blepharoplasty (upper eyelid surgery). In many such cases, medical specialists felt that health insurers wrongfully classified all such procedures as cosmetic care.

Treatment upcoding

Medical specialists indicated that they occasionally felt compelled to register a different treatment than actually provided to a patient. For example, it might not be immediately clear how extensive a treatment will be needed. In such cases, various medical professionals from different specialties indicated a tendency to register the treatment category for the more extensive treatment for all patients, because it corresponded with a higher tariff than the alternative, more limited treatment category. A manager of the radiotherapy department in the university medical centre explained:

> Radiotherapy is scaled from 1, which is uncomplicated treatment, to 7, which is the highest level of complexity. It is the medical specialist who decides which of these scales best reflects the treatment they provided. Only recently, health insurers discovered that some hospitals were registering way too many level 3 and 4 treatments.

Treatment of exceptional patients might similarly prompt registration of a slightly different therapy than actually provided. For example, for patients who might be particularly difficult to treat, such as obese patients, a more severe treatment category might be registered that covers, for instance, more surgery time (e.g., in case of an appendectomy). Doctors said they did this when an intervention takes more time than the average intervention.

A final situation in which medical specialists registered a different treatment than provided was for patients with unusual or complex conditions, such as epilepsy requiring surgical treatment or an artificial heart transplantation. A different treatment might also be registered when a patient receives an innovative, often less-invasive therapy, for which no DRG had yet been created.

Unintended responses in patient selection: Cherry picking

Medical professionals further indicate selecting patients with more expedient risk or care profiles. This 'cherry picking' was practised in three main ways. First, hospitals might select patients with a low risk of complications. A plastic surgeon explained that patients who look frail or have complicating factors, like pressure sores, were not typically treated at the general hospital, but referred instead to the nearest university medical centre: 'Those patients are just not suitable for our practice here'.

Patients were also selected to reduce the need for high-cost diagnostics. One gynaecologist at a general hospital said that costly fertility testing was now administered to only 10–20 per cent of the patients who would have received it 5 years ago. Today, only women age thirty five or younger and with a partner who has been tested and declared free of fertility issues are considered eligible. 'So you see, it is possible to be cost efficient and maintain treatment quality at the same time', the gynaecologist said.

Cherry picking was also done to balance the production volumes of profitable and unprofitable DRGs. This was illustrated by a urologist who claimed that once a certain DRG has been identified as a loss maker, only two options are left: either reduce the production volume of that DRG or increase the production of other, profitable DRGs to make up for the losses. Various medical specialists and hospital managers argued that this was a legitimate way to ensure continuity of loss-making care. Indeed, according to a urologist in the general hospital, 'this is how many hospitals pay for their innovation and complex care'.

UNDERSTANDING UNINTENDED RESPONSES TO THE DRG SYSTEM: BEYOND PECUNIARY AND TANGIBLE INCENTIVES

We uncovered a wide variety of responses of medical professionals to the DRG system, as well as diverse motivations and justifications for them. These suggest a number of ways we might explain unintended responses, in light of what we know about the effects of performance management and professional behaviour.

Unintended responses are financially driven

In conformance with expectations based on the performance management literature and traditional agency theory, a first explanation for the occurrence of unintended responses to the DRG system is the high financial impact of the system (Jacobides and Croson 2001; Jacob and Lefgren 2005; Smith 1993; De Bruijn 2007). Reimbursement via the DRG system is a direct consequence of the diagnosis and treatment registered. Upcoding and cherry picking may thus be understood as extrinsically motivated to serve financial interests, though personal financial gain may not always be involved. Indeed, unintended responses in some cases were explained as serving the financial interests of the department or the medical institution where the respondent worked.

Closer examination, however, reveals a slightly more complex picture. Medical professionals often registered more or different DRGs out of concern for underpayment, which they thought might threaten the availability of complex or innovative treatment methods for needy patients. They selected patients with favourable risk profiles, in part for personal financial gain, but also to accommodate loss-making patient groups. Such unintended responses, therefore, cannot automatically be classified as perverse. From a managerial perspective, they might be interpreted as opportunistic behaviour. Yet, from a professional viewpoint, upcoding and cherry picking may be reasonable, value-motivated behaviours to prevent outcomes that are considered professionally unacceptable. Extrinsic, financial incentives and intrinsic, value-based motivations may thus be so intertwined as to be difficult to disentangle (Le Grand 2010).

Unintended responses are derived from professional values

In accordance with the literature on professionalism and cognitive evaluation theory, a second explanation for unintended responses is the underlying values that drive medical professionals, including competence and autonomy (Deci, Koestner, and Ryan 1999; Hill and Hupe 2009; Tummers and Bekkers 2014).

Underfunding poses a threat to economically unviable groups of patients. For these groups of patients, upcoding or cherry picking appear to be reasonable ways for medical professionals to amend discrepancies between the managerial objectives of the DRG system and its potentially detrimental outcomes at the patient level. Similarly, medical professionals – especially those in the independent treatment centres – resorted to unintended responses (in the form of 'incorrect' DRG registrations) to accommodate use of innovative treatment methods that were less invasive and more patient friendly. As autonomous professionals, their responses were also aimed at keeping health insurers from dominating the debate about the boundaries between medical and cosmetic care (particularly in eye surgery, dermatology and plastic surgery) and to prevent patients from having to pay out-of-pocket for care that was – in their view – 'wrongfully' labelled cosmetic. Finally, 'faulty' registrations in some cases offered specialists a way to gain reimbursement for off-label use of high-cost medications, which they, based on their unique competence, considered most effective for the diagnosis at hand (such as biologicals, in case of urology, oncology and rheumatology).

Unintended responses follow from dynamics of the professional process

A third and closely related explanation is that the Dutch DRG system, though undergoing continuous refinement since its introduction in 2005, inevitably lags behind the dynamics of the professional process. Medical specialists regularly start using new methods of treatment that are not (yet) included in the DRG system. Performance measurement systems are inherently static, as continuous changes would complicate interpretation of the information they provide over time (Goddard, Mannion, and Smith 2000; De Bruijn 2007). System managers are apt to resist adjustments, at least in formal system design. Although changes can be made to the DRG system, these require a collective effort and take considerable time (see, e.g., the 'life-cycle approach' to performance management in Van Helden, Johnsen, and Vakkuri 2012). As a result, individual medical professionals often choose to 'work around' the system.

CONCLUSIONS

Our research examined the unintended responses of medical professionals to the Dutch DRG system. Though this DRG system has some unique features compared to the

DRG systems of other countries, the underlying principles are the same. Hence, we expect that the conclusions drawn will also, by and large, be applicable to similar performance management systems in other OECD and European countries.

Our empirical findings demonstrate that the introduction of the DRG system in the Netherlands triggered a wide variety of unintended responses as well as diverse motivations and justifications for these responses. We also found that the phenomenon of unintended responses is more intricate than is often assumed. The effects of the unintended behaviours of medical professionals in response to the DRG system were not necessarily perverse. While they, in accordance with the managerial perspective, could be explained in part by financial incentives, unintended responses, in line with the professional perspective, could also be explained by professional motives, at least to some extent. Even financially driven unintended responses cannot be understood as entirely perverse, especially when they also served to safeguard professional values – such as when continuity of care for loss-making patient groups was at stake.

We conclude that unintended responses cannot adequately be understood by narrowly focusing on managerial-type explanations, centred on opportunistic and self-serving agents. Consideration of both financial and professional motives in interpreting unintended responses does more justice to the complex nature of this phenomenon. Bringing the managerial and professional perspectives together, unintended responses can no longer be qualified simply either as unacceptable professional 'game playing' – let alone 'fraud' – or as legitimate professional coping. Which of these normative labels applies depends on the specific unintended response and is subject to professional considerations and to trade-offs between professional values and system-manager requirements.

Notwithstanding the outcomes of such considerations and trade-offs, and given that the interests of system managers and professionals will never be entirely aligned, the policy-relevant question is what in the meantime can be done to realize the system's objectives, while taking into account the incentives for professionals to behave in unintended ways. How can system managers minimize, insofar as possible, the areas of conflict with medical professionals? Simple attempts to restrict unintended responses via stricter rules for system use may be dysfunctional from a managerial perspective, while also undermining the joint value created by the system. Two possible 'ways out' follow from our research, though requiring further empirical investigation.

First, it seems sensible to reduce the financial impact of the system, so as to decrease its negative consequences for professionals' intrinsic motivation. A redesign of the Dutch DRG system in 2012 intended to loosen the direct link between DRG registration and income. From 2015 onwards, the remuneration of self-employed medical specialists will be an integral part of hospital budgets. The diminished impact of the system that is thus achieved might reduce incentives for unintended responses. Furthermore, recent developments in accountable care and pay-for-performance management programmes aim to link financial rewards to outcome indicators for care

quality. These might lessen the negative consequences of performance management systems on professionals' intrinsic motivation. Indeed, the consequences may even be positive, thus reconciling financial incentives and professional motivations.

Second, it may well be beneficial to organize a process of interaction between system managers and medical professionals. In some cases, health care providers have entered into negotiations with health insurers to accommodate the use of new types of treatments or prosthetics that initially were not 'allowed' by the DRG system. Such interactions at the local level are appealing because they enable managerial solutions to be derived for problems experienced in professional practice, which makes the system – while still static on paper – more dynamic in practice. Moreover, processes of interaction may be beneficial because they give medical professionals a role in shaping management objectives in relation to effectiveness, efficiency and cost containment. Both managers and professionals may thus contribute to reducing undesirable outcomes at the patient level as well as to tapering perverse system-level effects. This, ultimately, increases the joint value created within the health care system.

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