Relating Diagnosis-Related Groups: What Germany and the United States Can Learn from Each Other About Acute-Care Payment Systems

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RELATING DIAGNOSIS-RELATED GROUPS: WHAT GERMANY AND THE UNITED STATES CAN LEARN FROM EACH OTHER ABOUT ACUTE-CARE PAYMENT SYSTEMS

Timothy D. Martin*

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I. INTRODUCTION

[The mania for giving the Government power to meddle with the private affairs of cities or citizens is likely to cause endless trouble . . . and there is great danger that our people will lose that independence of thought and action which is the cause of much of our greatness, and sink into the helplessness of the Frenchman or German who expects his government to feed him when hungry, clothe him when naked, to prescribe when his child may be born and when he may die, and, in fine, to regulate every act of humanity from the cradle to the tomb, including the manner in which he may seek future admission to paradise.]¹

Samuel Clements could not possibly have envisaged the upheavals the world has experienced since he wrote those words almost 150 years ago. Advancement in health sciences and healthcare delivery depend on interconnected systems that that employ complex standards and require detailed coordination between private entities and government. Healthcare payment systems are a key influence on treatment patterns, quality of care, patient access, and cost. Much of what worked in the nineteenth century could no longer work today, and each country can learn lessons from the others. That is especially true in the area of healthcare finance: Each country’s struggle to reduce costs and improve access and quality is a source of valuable information other countries can put to good use. This is evident in various countries’ adoption of certain public payment systems for acute-inpatient medical care.² In the last two decades, at least nine European countries, including Germany, have instituted payment systems for inpatient hospital care that are very similar to the U.S. Medicare inpatient prospective-payment system (IPPS).³ These developments follow a substantial history of using other payment models.

The most common methods that both the United States and Germany have tried in the past include (1) salaries for healthcare professionals, (2) fee-for-service payments, (3) capitated payments, (4) per-diem payments for hospitalization, and (5) hard budgets in combination with another payment method.⁴

But each of these models has significant drawbacks. The World Health Organization (WHO) asserts that providers generally associate salaries with low motivation, low productivity,

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¹ Mark Twain, Official Physic, N.Y. SUNDAY MERCURY, Apr. 21, 1867.
³ Id. at 215-16.
and low quality service.\textsuperscript{5} Fee-for-service payments—individual payments for each service a provider renders—tend to create a strong incentive to provide more and higher-cost services than are necessary.\textsuperscript{6} Capitation pays a provider a fixed amount per patient for each patient in a closed service group and tends to motivate providers to provide too little care.\textsuperscript{7} Per-diem payment reimburses providers a fixed amount for each day a patient is in the hospital and represents payment in full for all services rendered for a given day.\textsuperscript{8} Per-diem payment models create incentives to keep patients in a hospital for as long as possible, which increases costs.\textsuperscript{9} Hard budgets create incentives to control costs, but also suffer similar disadvantages to capitation systems in that they may cause providers to give too little treatment.\textsuperscript{10} In the past, both Germany and the United States used one or more of these payment models, and because of a desire to better control costs and utilization, both countries searched for a different way to pay providers that would be cost effective and yet support high-quality care.\textsuperscript{11}

Before 1983, the U.S. Medicare system paid hospitals for inpatient care on a fee-for-service model.\textsuperscript{12} And before 2004, Germany paid hospitals based per-diem rates negotiated with insurance bodies and hospitals.\textsuperscript{13} In the intervening time, both countries have moved to a system that pays hospitals a prospective amount for an entire hospital visit based on the type of visit and

\textsuperscript{5} \textit{Id.} at 3.
\textsuperscript{9} \textit{Technical Briefs for Policy-Makers, supra note 4, at 3;} Nowicki, \textit{supra} note 8, at 77.
\textsuperscript{10} \textit{Technical Briefs for Policy-Makers, supra} note 4, at 3-4.
the intensity of resources that visit requires.\(^{14}\) Under this type of payment system, a provider or payer classifies each episode of care into a group, called a diagnosis-related group (DRG), which depends largely on a patient’s major diagnosis.\(^{15}\) Part II explains how the Medicare DRG and German DRG (G-DRG) systems operate and Part III compares the two payment schemes.\(^{16}\)

No payment system perfectly balances the competing goals of high-quality and low-cost healthcare delivery, and DRG payment systems are no exception. Because DRG payment systems pay a fixed without regard to how much treatment a patient receives, some experts criticize it as being a “dumb” system that encourages early discharge—derisively called “quicker but sicker” discharge.\(^{17}\) But many experts laud the Medicare DRG system has having at least slowed rising healthcare costs and they attribute other countries’ widespread adoption of DRG variants to the system’s success in the United States.\(^{18}\)

To alleviate some of these problems, both the U.S. and German DRG payment systems make additional payments for complex cases (so-called outliers), new technologies they have not yet factored into their DRG systems, and medical-professional education.\(^{19}\) Although substantial problems remain in both DRG systems, the results each system has produced (and the variations between them) provide an opportunity to explore what is good and bad about each system and how each system can benefit from the experience of the other.

Part IV explores these potential benefits. First, in its quest to reduce the length of patients’ hospital visits, Germany should proceed with caution. Some studies attribute a significant part of the rise in private health insurance premiums in the United States to low reimbursements from public payers.\(^{20}\) Because Germany mandates the same payment system for

\(^{14}\) Jonathan Cylus & Rachel Irwin, The Challenges of Hospital Payment Systems, 12 EURO OBSERVER 1, 1 (2010); Wilm Quentin et al., DRG-Type Hospital Payment in Germany: The G-DRG System, 12 EURO OBSERVER 4, 4 (2010).


\(^{16}\) Infra Parts II-III.


\(^{18}\) Reinhardt, supra note 17.

\(^{19}\) Id.; Quentin et al., supra note 14, at 5; Dunn & Tracey, supra note 13, at 5.

both public and private payers, it cannot rely on cost shifting, so inadequate payment could lead to inadequate delivery and lower-quality care. Second, both systems struggle with incorporating new treatments and technologies into their payment systems. The German system requires case-by-case negotiation for a new technology or service while Medicare at least provides a more global approach through notice-and-comment rulemaking.\textsuperscript{21} Third, both systems have some mechanisms for public quality reporting, but they both have weaknesses that each country could address using readily available technology—and there are lessons Germany could learn from the U.S. system about how to incentivize higher quality care.\textsuperscript{22} Fourth, both countries could enjoy long-term benefits by increasing their payment systems’ sensitivity to high-value services and treatments instead of focusing only on resource usage and complexity.\textsuperscript{23} Medicare is attempting to address this with shared-savings initiatives, which are part of recent U.S. health-reform measures.\textsuperscript{24} Fifth, the G-DRG system gives German providers an opportunity to implement revenue-cycle management techniques to better control costs, reduce waste, and improve care. This would require German providers to increase their financial-management sophistication, but it is unlikely they would need to embrace the overly complicated U.S. systems.\textsuperscript{25} And sixth, Medicare uses a methodology to pay for unusually high-cost cases that has many of the same problems fee-for-service payment systems have.\textsuperscript{26} Medicare could take an example from Germany and adopt a system that is less prone to escalating charges.

Any sort of comparison between Medicare’s DRG system and the G-DRG system must account for structural differences. Medicare pays only for services providers render to Medicare beneficiaries—the elderly, the disabled, and those with end-stage renal disease.\textsuperscript{27} But the German system applies to all patients—even if they have private insurance—with the exception

\textsuperscript{22} See infra, Part IV (discussing public quality data reporting).
\textsuperscript{23} See id. (discussing value-based insurance design).
\textsuperscript{25} See id. (discussing coding, cost accounting, denial management, and retrospective auditing).
\textsuperscript{26} See infra, Parts III-IV (discussing Medicare outlier payments).
\textsuperscript{27} RICHARD F. AVERILL ET AL., REIMBURSEMENT METHODOLOGIES FOR HEALTHCARE SERVICES, at xxiii (Lolita M. Jones ed., 2001).
of psychiatric services.\textsuperscript{28} Further, Medicare is not the only payment system in the United States.\textsuperscript{29} But the Centers for Medicare & Medicaid Services (CMS) expects U.S. public healthcare spending to overtake private spending in 2011 and private payers in the United States generally follow the government’s lead.\textsuperscript{30} Most German doctors work as full-time employees in German hospitals, so any German hospital reimbursement mechanism must necessarily include payment for physician services.\textsuperscript{31} The Medicare DRG system pays only for hospital inpatient services—it pays for physician and outpatient services using other methods.\textsuperscript{32} But the health reform bill Congress passed in 2010 creates new incentives for American providers to become more vertically integrated and therefore more organizationally similar to German providers.\textsuperscript{33}

Despite these difficulties, it is still possible to make useful comparisons and find areas where each system may be able to instruct the other. Medicare has a much longer history of dealing with issues related to provider and patient satisfaction, administration, fraud and abuse, and using the payment system to improve quality. But Germany had the advantage of observing DRG implementation and results in other countries before it embarked on its journey.\textsuperscript{34}

\section*{II. Diagnosis-Related Groups Demystified}

Researchers at Yale University developed DRGs in the 1960s to relate a hospital’s workload to its costs—both on an individual case-by-case basis and at a global hospital level.\textsuperscript{35} DRGs, which are represented by a coding scheme, generally comprise hundreds of patient-treatment classifications for an entire inpatient episode of care.\textsuperscript{36} Each DRG code maps to a relative weight based on the average cost of services.\textsuperscript{37} For example, a DRG representing a treatment having the same cost as the average cost of all services within a system’s coverage

\begin{thebibliography}{99}
\bibitem{28} SOZIALGESETZBUCH V [SGB V] [SOCIAL CODE V], Dec. 20, 1988, REICHSGESETZBLATT [RGBL. I] 2477 (Ger.).
\bibitem{29} Id.; Reinhardt, supra note 11.
\bibitem{31} Norbert Roeder, \textit{Building a Star Alliance Australian & German DRGs}, 24 AUST. HEALTH R. 29, 30 (2001).
\bibitem{34} See generally Roeder, supra note 31 (describing Germany’s selection of the Australian DRG system as the basis for its DRG system).
\bibitem{35} Averill et al., supra note 15, at 1; Schreyögg et al., supra note 2, at 216.
\bibitem{36} Averill et al., supra note 15, at 1; Quentin et al., supra note 14, at 4-5.
\bibitem{37} Reinhardt, supra note 11; Quentin et al., supra note 14, at 6.
\end{thebibliography}
area has a weight of 1.0. DRGs for more costly treatments have higher relative weights and DRGs for lower-cost treatments have lower relative weights. For example, for 2010, the highest G-DRG relative weight was 74.0 for a liver transplant and the lowest was 0.13 for uterine contractions without a delivery.

Using relative weights, it is possible to gauge the overall amount of work a provider does simply by totaling the relative weights for all patient discharges in a given period. This is called a “case-mix” value. It is then possible to determine the average resources a provider expends per case—a “case-mix index”—simply by dividing the case-mix value by the number of discharges in the sample set. Case-mix values and indexes allow policymakers to allocate resources and monitor resource usage among providers more effectively and efficiently—a distinct advantage that DRGs bring to the table.

The basic theory underlying fixed-payment prospective-payment systems (PPSs) like DRG payment is that providers will have an incentive to control costs because they stand to make more money if a service winds up costing less than the fixed payment. Policymakers also expect a number of other positives in using a DRG-based payment system. These include (1) increased transparency of hospital performance through a data driven approach, improved cost accounting, and external benchmarking; (2) decreases in average length of stay and reductions in the number of hospital beds required to treat a given population; (3) identification and use of potential efficiencies—the transfer of risk from patients to hospitals, increases in competition between hospitals, and decreases in hospital expenditures.

But there could also be negative effects including (1) a decrease in quality of care; (2) shifting expenditures to other healthcare sectors (e.g., outpatient and rehabilitation services); (3) “upcoding” cases (manipulating case reporting to get a higher reimbursements); and (4) case-

38 Schreyögg et al., supra note 2, at 219; Quentin et al., supra note 14, at 5.
39 Quentin et al., supra note 14, at 5.
40 Id.
41 Id. at 6.
42 Id.
43 Id.
44 Id.
45 Anne B. Casto & Elizabeth Layman, Principles of Healthcare Reimbursement 102 (2d ed. 2009).
splitting (early discharge and readmission).\textsuperscript{47} After weighing the positives and the negatives, the United States and Germany both decided to press forward with DRG payment systems.

A. The United States Adopts DRG Payment for Medicare Part A Inpatient Coverage

In 1965, Congress enacted legislation that provided health insurance to the elderly and the poor.\textsuperscript{48} The Medicare program was part of that legislation and created health coverage for Americans over the age of sixty-five—but Congress has since expanded it to cover those on Social Security disability and patients with end-stage renal disease.\textsuperscript{49} Medicare Part A covers hospital inpatient services and was originally based on a fee-for-service payment system.\textsuperscript{50} Since 1977, CMS (formerly the Health Care Financing Administration) has administered Medicare.\textsuperscript{51}

In the early 1970s, motivated by rising costs in Medicare’s retrospective fee-for-service payment system, Congress asked the Department of Health, Education, and Welfare (now the Department of Health and Human Services, or HHS) to devise a PPS for Medicare.\textsuperscript{52} In 1983, after observing promising results in a statewide test of a DRG-based payment system in New Jersey, Congress adopted a DRG-based scheme as the PPS for Medicare inpatient treatment.\textsuperscript{53}

In the mid-1980s, The National Association of Children’s Hospital and Related Institutions created Pediatric Modified Diagnosis-Related Groups to classify pediatric and neonatal patients.\textsuperscript{54} In 1987, the New York Department of Health added classifications for patients with HIV infections and other conditions to that system and created another DRG

\textsuperscript{47} Id.
\textsuperscript{49} AVERILL ET AL., supra note 27, at 1.
\textsuperscript{50} Id.
\textsuperscript{51} Id.
variation called All Patient Diagnosis-Related Groups (AP-DRGs). A number of Medicaid program and private payers have used AP-DRGs in their payment systems.

But the healthcare sector needed a classification system that went beyond classifying patients merely according to hospital resource usage. So the 3M Health Information Systems Group researched and developed All Patient Refined Diagnosis-Related Groups (APR-DRGs) to account for severity of illness and risk of mortality in addition to resource intensity. Many hospitals, payers, and state agencies use APR-DRGs for analysis, reporting, and payment.

In 2007, because the existing DRG system failed to “adequately reimburse a facility for the more complex and resource intensive cases,” and based on the work done with APR-DRGs, CMS enhanced its DRG payment system to account for complications and comorbidities (additional medical conditions that exist when a hospital admits a patient). CMS calls the new system the Medicare-Severity DRG (MS-DRG) system. Ultimately, Germany also opted to use a DRG system that accounts for severity of illness.

B. Germany Adopts DRG Payment for its Universal Healthcare System

Although Germany’s commitment to universal healthcare dates to the nineteenth century, the foundation for the current system began with the German Parliament’s enactment of Title V of the Social Code (SGB V) in 1988. SGB V created a statutory health insurance (SHI) program comprising sickness funds, provided comprehensive medical care to all members, established premiums as a percentage of income, and required that citizens earning an amount

56 Muldoon, supra note 54, at 303.
57 APR DRG Classification System, supra note 55, at 23.
58 Id.
59 Muldoon, supra note 54, at 304; AGENCY FOR HEALTHCARE RESEARCH & QUALITY, AHRQ QUALITY INDICATORS—UNDERSTANDING THE 3M™ ALL PATIENT REFINED DRGs (APR DRGs) 1, http://www.qualityindicators.ahrq.gov/%5Cdownloads%5Clistserv%5CUnderstanding%20the%203M%20APR-DRG.pdf (last visited Dec. 22, 2010).
60 CASTO & LAYMAN, supra note 45, at 105; MARIANNE F. FAZEN, MANAGED CARE DESK REFERENCE 54 (1994).
62 SOZIALGESETZBUCH V [SGB V] [SOCIAL CODE V], Dec. 20, 1988, REICHSGESETZBLATT [RGBl. I] 2477 (Ger.).
below a specific threshold join the sickness funds.63 Around 90% of the population participates in the universal system and roughly 10% have private insurance.64 Regional and national sickness funds, as well as physician associations, govern the German universal healthcare system.65 The SHI program directly involves both public and private actors, which include the federal sickness funds, various provider associations, and independent quality committees.66

The higher growth rate of healthcare costs when compared to aggregate income motivated Organization for Economic Cooperation Development member countries, including Germany, to search for alternative payment systems.67 These countries have tried approaches that include patient cost-sharing (copayments and coinsurance), clinical guidelines, clinical-pathway management, and evidence-based treatments—but most efforts have focused on monetary incentives for providers.68 Some of these experiments have not gone well.69 In 2007, German doctors went on strike against hospitals because of low wages.70 And Germans have expressed unhappiness with rising premiums and the quality of care in recent years.71

Before 2004, Germany reimbursed hospitals according to per-diem payments.72 Because that payment system tended to motivate providers to keep patients in the hospital for as long as possible, causing costs to rise, Germany searched for another reimbursement system.73

In May 2000, Germany passed the Statutory Health Insurance Reform Act of 2000, which instituted a DRG-based reimbursement system for acute-care hospital treatment.74 Early on, the actors involved decided to base the G-DRG system on the Australian DRG system.75

63 Id.
65 Id. at 1148.
66 Reinhard Busse, Ulrike Nimptsch & Thomas Mansky, Measuring, Monitoring, and Managing Quality in Germany’s Hospitals, 27 HEALTH AFFAIRS w294, w295 (2009).
67 TECHNICAL BRIEFS FOR POLICY-MAKERS, supra note 4, at 1.
68 Id. at 2.
69 Anne Marije van Essen, New Hospital Payment Systems—Comparing Medical Strategies in The Netherlands, Germany and England, 23 J. HEALTH ORG. & MGMT. 304, 310 (2009).
70 Id.
71 Weide, supra note 64, at 1162.
72 TECHNICAL BRIEFS FOR POLICY-MAKERS, supra note 4, at 3.
73 Id.; Roeder, supra note 31, at 29.
75 Roeder, Rochell & Hindle, supra note 74, at 233; Quentin et al., supra note 14, at 4.
Australia first adopted a DRG system in 1992 based on the AP-DRG and APR-DRG systems developed in the United States.\textsuperscript{76} Initially, the German government tasked a consortium of self-governing bodies, including the federal associations of sickness funds, the Association of Private Health Insurance, and the German Hospital Federation, with developing the G-DRG system.\textsuperscript{77}

In 2002, Germany passed the DRG Law, which specified timetables and rules for converting to the G-DRG system.\textsuperscript{78} But early negotiations regarding code sets, rules for assigning DRGs to treatment episodes, and calculation of relative weights proved to be difficult and the government postponed implementation.\textsuperscript{79} After fits and starts, the German government turned to the German Institute for the Hospital Remuneration System (InEK), an organization comprising various industry and government players, to define the G-DRG system.\textsuperscript{80} InEK’s responsibilities include (1) the G-DRG grouping definition, maintenance, and adjustment for severity; (2) researching coding standards; and (3) determining relative weights.\textsuperscript{81} The Hospital Financing Act (KHG) mandates a performance-based flat-rate reimbursement system based on the G-DRG system for hospitals and authorizes InEK to administer that system.\textsuperscript{82} German law requires InEK to take complexities and comorbidities into account in the G-DRG system.\textsuperscript{83}

One of the great difficulties in adapting the Australian system was mapping procedure and diagnosis codes to German procedure and diagnosis codes.\textsuperscript{84} And coming up with the proper weight for a given G-DRG code was also problematic—Germany could not directly adopt the Australian weights because of significant differences in the two countries’ patient populations, economies, and healthcare-delivery practices.\textsuperscript{85} To come up with the initial set of relative weights for G-DRGs, InEK relied on a sampling of German hospitals combined with research

\textsuperscript{76} Australian Refined Diagnosis Related Groups (AR-DRGs), DEPARTMENT OF HEALTH AND AGEING (July 1, 2010), available at http://www.health.gov.au/internet/main/publishing.nsf/content/health-casemix-ardrg1.htm [hereinafter AR-DRGs]; Kyberg, supra note 46, at 32; Schreyögg et al., supra note 2, at 216.
\textsuperscript{77} Quentin et al., supra note 14, at 4.
\textsuperscript{78} Fallpauschalengesetz 2002 [FPG 2002] [DRG Law of 2002], Apr. 23, 2002, REICHSGESETZBLATT I [RGBL. I] at 27, 1412 (Ger.).
\textsuperscript{79} Roeder, Rochell & Hindle, supra note 74, at 234.
\textsuperscript{80} Id. at 235.
\textsuperscript{82} Krankenhausfinanzierungs gesetz [KHG] [Hospital Financing Act], Mar. 17, 2009, REICHSGESETZBLATT I [RGBL. I] as amended, at § 17b, 534 (Ger.).
\textsuperscript{83} KHG, at § 17b, 534, para. 1.
\textsuperscript{84} Roeder, Rochell & Hindle, supra note 74, at 235; see also infra Part III (describing procedure and diagnosis codes).
\textsuperscript{85} Id.
data from other sources, rather than compiling cost data for all hospitals in the German healthcare system. This was not a popular move with German hospitals and created even more difficulties in getting the G-DRG system off the ground. But finally, after a year of optional hospital participation in 2003, the G-DRG system began a four-year transition period, from 2005 to 2009, that required all German hospitals and payers to participate.

III. DRG PAYMENT UNDER THE MEDICARE AND G-DRG SYSTEMS

DRG payment, in any country’s system, involves a number of complex pieces that have to fit together snugly. First, providers must communicate to payers the reasons for and nature of the services they deliver. That involves turning narratives of medical diagnoses and procedures into coded information, which “[i]n its simplest form, . . . is the transformation of verbal descriptions into numbers.” Both German and American providers must adhere to strict coding rules or risk underpayment or penalties. Second, providers and payers must assign an appropriate DRG code to episodes of care based on that coded information and patient demographic data. And third, they must calculate a payment, along with additional amounts for such things as high-cost cases, education expenses, and use of new technologies and services.

A. Diagnosis and Procedure Codes

The most recognizable code set for cataloguing medical diagnoses is the International Classification of Diseases (ICD). The WHO took on the primary responsibility for revising and

86 Id.
87 Id.
88 Quentin et al., supra note 14, at 4.
89 CASTO & LAYMAN, supra note 45, at 21; DEBORAH L. WALKER, SARA M. LARCH & ELIZABETH W. WOODSTOCK, THE PHYSICIAN BILLING PROCESS—AVOIDING POTHOLES IN THE ROAD TO GETTING PAID 4 (2004); BONNEY & SMITH, supra note 8, at 34.
93 World Health Org., International Classification of Diseases (ICD),

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Different countries that have adopted the ICD code set have applied their own modifications to it through the years. When Germany adopted and adapted the Australian DRG system as its own, Australia had just moved from ICD version 9 (ICD-9) to ICD version 10 (ICD-10). Before 1986, coded data about diagnoses and procedures were generally not available in Germany. In 1986, German hospitals began to use ICD-9 codes for diagnoses, and in 2000, they began to use ICD-10 codes. The German Institute of Medical Documentation and Information (Deutsche Institut für Medizinische Dokumentation und Information, or DIMDI) is in charge of publishing official code sets German providers use to get reimbursed. It maintains the German modification to the ICD-10 code set, the ICD-10-GM. Currently, U.S. law requires providers to use the clinical modification to the ICD-9 code set, the ICD-9-CM. The Centers for Disease Control and Prevention National Center for Health Statistics together with CMS comprise the ICD-9-CM Coordination and Maintenance Committee, which maintains the ICD-9-CM code set. The American Hospital Association publishes the official guidelines for ICD-9-CM—the Coding Clinic for ICD-9-CM. ICD-9-CM diagnosis codes employ three, four, or five digits—the fourth and fifth digits, if present, generally represent a subclassification. For instance, code 410 represents acute myocardial infarction and code 410.2 denotes an infarction of the inferolateral wall.


94 Id.
96 AR-DRGs, supra note 76; Roeder, Rochell & Hindle, supra note 74, at 233.
97 Busse, Nimptsch & Mansky, supra note 66, at w297.
98 Id.
100 SGB V, at § 301, para. 2; DIMDI Homepage, supra note 99.
103 Coding Clinic, supra note 91.
105 Id. at 9.
German providers have a distinct advantage over the U.S. providers when it comes to the ICD diagnosis code set because they have use a version of ICD-10 for over a decade. Currently, U.S. providers are scrambling to convert their internal processes and systems from the ICD-9-CM code set to the ICD-10 clinical modification (ICD-10-CM) code set and must complete the conversion by October 1, 2013. The new code set is substantially different, and although it will require few changes to the way practitioners document medical services, it will require professional medical-coding staff to undergo significant reeducation. CMS has created General Equivalence Mappings (GEMs) to aid in conversion and “ensure consistency.” But there is not always a direct correlation between an ICD-9-CM code and a similar ICD-10-CM code, so hospitals must plan carefully, budget accordingly, pay special attention to accuracy and quality, provide for additional staff training, and engage in conversion of internal processes and information technology systems. Because Germany already converted from ICD-9 to ICD-10, it may be helpful for U.S. providers to examine Germany’s experience.

To document procedures, German providers must use a Germany-specific code set, the German Procedure Classification (Operationen und Prozeduenschlüssel, or OPS). German law charges DIMDI with maintaining and publishing the OPS procedure code set in addition to the ICD-10-GM diagnosis code set. DIMDI divides OPS codes into six chapters that document procedures for (1) diagnostic measures, (2) diagnostic imaging, (3) operations, (4) medication, (5) therapeutic non-operating activities, and (6) complementary measures. The OPS code format comprises the chapter number with a three-digit general procedure classification optionally followed by a two-digit subclassification: For example, code 5-010.02 represents a bifrontal craniotomy and code 5-010.03 represents a temporal craniotomy.

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111 SOZIALGESETZBUCH V [SGB V] [SOCIAL CODE V], July 21, 2004, REICHSGESETZBLATT [RGBl. I] 1791, as amended, § 301, para. 2 (Ger.).
113 German Inst. of Med. Documentation & Info., Chapter 5 Operations, http://www.dimdi.de/static/de/
American providers and payers are, once again, at a disadvantage compared to their German counterparts when coding procedures because they must use several different code sets for this task. U.S. providers must use ICD-9-CM procedure codes for inpatient visits. ICD-9-CM procedure codes are three or four digits, with a decimal point after the second digit that allows for subclassification. ICD-9-CM procedure codes are divided into seventeen clinical categories that include operations on the nervous system, operations on the endocrine system, operations on the eye, and other categories. For outpatient hospital claims, American providers must use the Healthcare Common Procedural Coding System (HCPCS—often pronounced “hick-picks”) code set to identify medical services, procedures, supplies, and other articles physicians and other practitioners use in treatment. The United States might be able to reduce its coding complexity by standardizing on a single code set as Germany has done.

Because medical coding is so complex in the United States, providers universally employ specially trained coding professionals. The American Health Information Management Association offers various certifications for medical-coding professionals. But in Germany, doctors do the coding. Some authorities acknowledge that it has become increasingly difficult for doctors to learn all the ins and outs of diagnosis and procedure coding. And it becomes even more difficult when doctors of one specialty must handle coding for cases that require multidisciplinary treatment. Correct coding is essential to proper payment because assigning the right DRG code to an admission utterly depends on it. German providers should consider using specially trained professionals to increase coding accuracy.

B. DRG Code Assignment (Grouping)

Assignment of G-DRG codes to a hospital visit under the German system and assignment of MS-DRG codes to a hospital visit under the Medicare system employ very similar methods. Determining the proper DRG for a visit is typically referred to as “grouping” or “pricing” and is
usually accomplished by software called a “grouper” or a “pricer.”\textsuperscript{122}

InEK publishes a Definition Guide that defines procedures for determining a G-DRG code for a particular hospital visit.\textsuperscript{123} InEK divides G-DRG codes into twenty-five Major Diagnostic Categories (MDCs). Initially, the G-DRG system employed close to 650 G-DRG codes, but now it uses more than 1,200.\textsuperscript{124} Unusually high-cost cases such as transplants or extended intensive-care episodes map directly to a particular G-DRG though a process called pre-MDC assignment.\textsuperscript{125} Other cases map to a G-DRG, after assignment to an MDC, based on major diagnosis, primary and secondary procedures, secondary diagnoses, age, sex, and, in some cases, other factors such as newborn weight.\textsuperscript{126} G-DRGs are four-character alpha-numeric codes where the first letter identifies the MDC.\textsuperscript{127} For example, G-DRG code B02A represents a craniotomy or complex spine surgery with radiation therapy—the “B” indicating that the code belongs to MDC 01, diseases and disorders of the nervous system.\textsuperscript{128} Note that G-DRG codes that begin with “A” belong to the pre-MDC assignment category.\textsuperscript{129}

The MS-DRG system also divides DRGs into twenty-five MDCs and also assigns high-cost or complex cases, such as transplants, to a particular MS-DRG code using pre-MDC assignment.\textsuperscript{130} It then takes complications and comorbidities into account along with a patient’s age, sex, medical or surgical status, and discharge status to make a final MS-DRG assignment.\textsuperscript{131} Medicare originally used 467 DRGs, but has since expanded the system to use 738.\textsuperscript{132}

Unfortunately, neither the G-DRG system nor the MS-DRG system factor value into the

\begin{thebibliography}{10}
\bibitem{124} Quentin et al., \textit{supra} note 14, at 4.
\bibitem{125} \textit{Id.} at 7; Quentin et al., \textit{supra} note 14, at 4-5.
\bibitem{126} G-DRG Definition Guide, \textit{supra} note 123, at 6; Quentin et al., \textit{supra} note 14, at 5.
\bibitem{127} G-DRG Definition Guide, \textit{supra} note 123, at 3.
\bibitem{128} \textit{Id.} at 17.
\bibitem{129} \textit{Id.}
\bibitem{130} CASTO & LAYMAN, \textit{supra} note 45, at 108-09.
\bibitem{131} \textit{Id.}
\end{thebibliography}
DRG assignment equation—both systems look only to resource consumption and complexity. This is a common problem with bundled-payment systems, such as DRG payment systems, that “make a single payment for all services related to a treatment or condition.”\textsuperscript{133} Both countries could address it by adding weight for additional diagnostics or procedures that have a likelihood of preventing future illness and hospitalization.

C. Determining Relative DRG Weights

One of the most difficult and complex aspects of operating a DRG payment system is determining the relative weights for each DRG code. In general, DRG systems base weights on the relative average cost of each service.\textsuperscript{134} It is in gathering and analyzing cost information that the difficulties arise. Initially, the German government used a variety of sources to determine relative costs—a measure that was not popular with German hospitals.\textsuperscript{135} But later, the KHG authorized InEK to pay small bonuses to approximately 250 hospitals that supplied detailed cost reports.\textsuperscript{136} InEK, in conjunction with independent data-processing contractors, uses that data to calculate individual G-DRG relative weights.\textsuperscript{137} There is generally a two-year time lag between the time InEK receives cost data and the time it factors the data into the relative weights.\textsuperscript{138} InEK publishes, annually, a table of all G-DRGs, their relative weights, mean lengths of stay, and other information needed to calculate a payment amount.\textsuperscript{139} For instance, the B02A code for craniotomy or complex spine surgery with radiation therapy has a relative weight of 9.007.\textsuperscript{140}

Unlike the German sampling approach, Medicare requires every participating hospital (which includes almost every hospital in the United States) to file annual cost reports that include the hospital’s financial data.\textsuperscript{141} Medicare uses this cost data not only for determining relative weights, but also for determining what it calls “market-basket updates” to the overall MS-DRG

\textsuperscript{134} Reinhardt, supra note 11.
\textsuperscript{135} Roeder, Rochell & Hindle, supra note 74, at 233.
\textsuperscript{136} Krankenhausfinanzierungsgesetz [KHG] [Hospital Financing Act], Mar. 17, 2009, REICHSGESETZBLATT I [RGBl. I] as amended, at § 17a, 534, para. 5 (Ger.); Quentin et al., supra note 14, at 5.
\textsuperscript{137} See generally INST. FOR THE HOSP. REMUNERATION SYS. (INEK), CALCULATION OF COSTS (2007) (describing the procedure for calculating G-DRG relative weights).
\textsuperscript{138} Quentin et al., supra note 14, at 5.
\textsuperscript{139} INST. FOR THE HOSP. REMUNERATION SYS. (INEK), DRG CATALOG (2010).
\textsuperscript{140} Id. at 6.
\textsuperscript{141} 42 U.S.C. § 1395g (2010); Financial Data and Reports, 42 C.F.R. § 413.20(b) (2010).
pricing system and cost-to-charge ratios for individual hospitals.\textsuperscript{142} Similar to the German system, there is generally a two-year lag between the time Medicare receives costs data from hospitals and the time it factors that data into various parts of its payment system.\textsuperscript{143}

\textbf{D. Basic DRG Payment Methodologies}

In its basic form, a DRG-payment system simply multiplies a relative weight by a \textit{base rate} or \textit{base price} to arrive at a payment amount for a particular hospital visit.\textsuperscript{144} This would seem to make negotiating payment rates very simple because providers need negotiate only the price for relative weight 1.0.\textsuperscript{145} But the U.S. system is much more complex than that, and, during the current transition period, the German system is not quite so simple either.

As defined on the surface, the G-DRG system does indeed employ the simple method of multiplying a G-DRG’s relative weight by a base price to get a payment amount.\textsuperscript{146} But during the transition period from 2005 to 2009, each hospital started with an individually negotiated base rate incrementally adjusted toward a \textit{statewide} base rate (negotiated for each of Germany’s seventeen states) each year until it converged to the statewide rate in the final transition year.\textsuperscript{147} Hospitals that had base rates lower than the applicable state rate benefitted by seeing their reimbursements increase each year and hospitals with base rates higher than the state base rate saw reimbursements drop each year during the transition.\textsuperscript{148} The Hospital Benefits Act of 2010 provides for a similar transition between 2010 and 2014.\textsuperscript{149} During that period, the various statewide base rates will incrementally transition to a \textit{national} base rate.\textsuperscript{150} Global budgets also confine G-DRG reimbursement: If a hospital exceeds its yearly budget, insurers will pay only 35\% of the excess and hospitals must repay 60\% of any under-budget amount.\textsuperscript{151}

\textsuperscript{144} Reinhardt, \textit{supra} note 11.
\textsuperscript{145} Schreyögg et al., \textit{supra} note 2, at 216.
\textsuperscript{146} See Verordnung zum DRG-System [KFPV] [Ordinance to the DRG System], Oct. 13, 2004, REICHSGESETZBLATT I [RGBL. I] at 1995 (Ger.), (describing hospital payment as the appropriately weighted base rate); Quentin et al., \textit{supra} note 14, at 5.
\textsuperscript{147} Quentin et al., \textit{supra} note 14, at 5-6.
\textsuperscript{148} \textit{Id}.
\textsuperscript{149} Krankenhausentgeltgesetz 2010 [KHEntG 2010] [Hospital Benefits Act], Dec. 22, 2010 REICHSGESETZBLATT I [RGBL. I] as amended, at § 9, para. 8, 2309 (Ger.).
\textsuperscript{150} \textit{Id}.
\textsuperscript{151} Dunn & Tracey, supra note 13, at 5; TECHNICAL BRIEFS FOR POLICY-MAKERS, \textit{supra} note 4.
Recent health-reform initiatives in the United States have created a similar mechanism, through Accountable Care Organizations, that requires participating providers to take on some risk but allows them to capture part of any savings as measured against an expenditure benchmark.\textsuperscript{152}

Calculating reimbursement under the MS-DRG system for Medicare is a far more complicated affair than it is in the G-DRG system. First, Medicare separates its base rate into two components—an \textit{operating base-payment rate} and a \textit{capital base-payment rate}.\textsuperscript{153} It then further divides the operating base-payment rate into a \textit{labor-related portion} and a \textit{nonlabor-related portion}.\textsuperscript{154} Medicare then adjusts these amounts depending on a hospital’s wage index and whether the hospital complies with quality-data reporting requirements.\textsuperscript{155} Medicare adds the adjusted labor-related portion to the adjusted nonlabor-related portion to arrive at the adjusted operating base-payment rate.\textsuperscript{156} Medicare also adjusts the capital base-payment rate according to a hospital’s \textit{capital geographic adjustment factor}.\textsuperscript{157} Finally, Medicare adds the adjusted operating base-payment rate to the adjusted capital base-payment rate and multiplies the result by the appropriate MS-DRG weight to arrive at the MS-DRG payment for an episode of care.\textsuperscript{158}

But this is not the end of the DRG-payment labyrinth in either Germany or the United States.

\textbf{E. Outlier Payments for Complex or High-Cost Cases}

Critics of DRG payment systems have charged that DRGs fail to take into account all the variation in costs for comparable hospital stays.\textsuperscript{159} To mitigate these effects, both the G-DRG and MS-DRG systems provide \textit{outlier} payments for complex or high-cost cases, but the two systems use very different methods to arrive at the payment amounts.\textsuperscript{160} The G-DRG system recognizes outliers for cases when patients remain in the hospital for a period longer than a standard length of time calculated for the patient’s G-DRG or when a hospital discharges patients


\textsuperscript{154} Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long Term Care Hospital Prospective Payment System Changes and FY2011 Rates; Final Rule, 75 Fed. Reg. 50,041, 50,451 (Aug. 16, 2010).

\textsuperscript{155} Id.

\textsuperscript{156} Id. at 50,433.

\textsuperscript{157} Payment Based on the Federal Rate, 42 C.F.R. § 412.312 (2009).

\textsuperscript{158} § 412.312(a); 75 Fed. Reg. at 50,433.

\textsuperscript{159} Scanlon, supra note 52, at 76.

\textsuperscript{160} Reinhardt, supra note 11.
before a lower standard length of time. These two points are called high- and low-trim points, respectively. The high-trim point is the smaller of the average length of stay plus seventeen days or the average length of stay plus two standard deviations. A hospital receives a G-DRG-specific add-on payment for every additional day a patient stays in the hospital above the high trim point. And if a hospital discharges a patient before the patient’s length of stay reaches the low-trim point, payment is reduced by a per-diem-based amount.

Under Medicare, CMS makes an outlier payment when the hospital’s cost for a patient visit exceeds a fixed-loss cost threshold—which is the MS-DRG payment, including any additional payments for medical education and new technologies, plus an outlier threshold amount. CMS estimates the cost of a hospital visit by multiplying the amount the hospital charges for the visit by the hospital’s operating cost-to-charge ratio (operating CCR) plus the hospital’s capital cost-to-charge ratio (capital CCR). A hospital’s CCRs either come directly from cost reports the hospital filed with CMS for previous years or, under certain circumstances, from applicable statewide average CCRs. The final outlier payment is the estimated cost less the fixed-loss cost threshold multiplied by a marginal cost factor (80% since 1995).

The Medicare outlier-payment methodology creates many of the same problems fee-for-service payment systems create. Because it is based on a ratio between outdated costs and current charges, providers have incentives to continually increase charges to garner more outlier payments. Medicare should reexamine its outlier payment methodology and implement one that has fewer tendencies to create these perverse incentives. The German outlier-payment methodology may well be the right formula.

**F. Other Additional Payments**

161 Schreyögg et al., supra note 2, at 218-19; Quentin et al., supra note 14, at 4.
162 Schreyögg et al., supra note 2, at 218-19; Quentin et al., supra note 14, at 4.
163 Schreyögg et al., supra note 2, at 219.
164 Quentin et al., supra note 14, at 5.
165 Id.
167 §§ 412.80(a)(1)(ii), (3).
169 § 412.84(k).
Both the German and Medicare payment systems make additional payments for certain activities and circumstances that include variations in patient demographics, use of new technologies, and provision of medical education. The German system makes payment adjustments for hospitals in densely-populated urban areas and may make payment adjustments based on local wage indexes.\textsuperscript{170} It may also make additional payments for new technologies or procedures that have proved beneficial.\textsuperscript{171} But these new-technology add-on payments may be difficult for hospitals to obtain because hospitals must negotiate them individually on a case-by-case basis.\textsuperscript{172} The G-DRG system typically makes these new-technology payments using a fee-for-service methodology.\textsuperscript{173} Further, the KHG authorizes additional payment to hospitals for professional training and medical education at teaching hospitals.\textsuperscript{174} But hospitals supply quality-reporting data and adopt quality-control measures or suffer payment reductions.\textsuperscript{175} Hospitals must submit quality data for at least 80% of cases to avoid payment cuts of 150 euro per case.\textsuperscript{176}

In 2000, Congress authorized Medicare to make additional payments for the use of new medical services or technology.\textsuperscript{177} The service or technology must be (1) new— not “substantially similar” to any current service or technology; (2) paid inadequately by Medicare; (3) something that “substantially improves” treatment or diagnosis; and (4) one that causes a case’s cost to exceed normal payment.\textsuperscript{178} Unlike the German system, where each hospital must

\begin{itemize}
\item \textsuperscript{171} Krankenhausentgeltgesetz 2010 [KHEntgG 2010] [Hospital Benefits Act], Dec. 22, 2010 REICHSGESETZBLATT I [RGBL. I] as amended, at § 6, 2309 (Ger.).
\item \textsuperscript{172} KHEntgG, at § 11.
\item \textsuperscript{173} P. Schreyögg et al., supra note 2, at 222.
\item \textsuperscript{174} Krankenhausfinanzierungsrecht [KHG] [Hospital Financing Act], Mar. 17, 2009, REICHSGESETZBLATT I [RGBL. I] as amended, at § 17a, 534 (Ger.).
\item \textsuperscript{175} KHG, at § 17b.
\item \textsuperscript{176} Busse, Nimptsch & Mansky, supra note 66, at w296.
\item \textsuperscript{178} Additional Payment for New Medical Services and Technologies: General Provisions, 42 C.F.R. § 412.87(b) (2009); Additional Payment for New Medical Service or Technology, 42 C.F.R. § 412.88(b)(2) (2009); Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long Term Care Hospital Prospective Payment System Changes and FY2011 Rates; Final Rule, 75 Fed. Reg. 50,041, 50,137 (Aug. 16, 2010).
\end{itemize}
negotiate new-technology payments, Medicare employs notice-and-comment rulemaking.\(^{179}\) While this approach may be more thorough and creates smaller burdens for individual providers, it is also time consuming and pays less heed to costs that vary from across providers. Both countries could benefit from a middle-ground approach where hospitals can negotiate an interim payment while the system pursues more thorough regulatory procedures.

Medicare also makes additional payments, according to a complex formula, when a hospital engages in direct-graduate-medical education and indirect-medical education.\(^{180}\) Calculating indirect-medical education payments involves making further adjustments to a hospital’s base-payment and capital-payment rates based on exponential formulas—one of which uses the transcendental number \(e\).\(^{181}\)

Finally, Medicare makes additional payments, according to yet another complex formula, to hospitals that treat a disproportionately large number of indigent patients.\(^{182}\) This complex calculation also involves an exponential formula involving the transcendental number \(e\).\(^{183}\) The complexity of Medicare add-on payment calculations often prevents providers from being able to anticipate and book expected payments and creates an impediment to financial management.\(^{184}\) Medicare could, perhaps, learn from Germany that such complexity is unnecessary.

**IV. Lessons and Opportunities for Improvement**

The experience of both countries with DRG payment systems sheds light on important issues. Patient and provider satisfaction with the systems gets mixed reviews on both sides of the pond. Quality issues loom large, and both systems could do more to improve the quality of care and, therefore, the satisfaction levels of both patients and providers. Both systems need to address fraud and abuse more comprehensively. Finally, both systems have issues with

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\(^{180}\) Special Treatment: Hospitals the Incur Indirect Costs for Graduate Medical Education Programs, 42 C.F.R. § 412.105(e)(1) (2009); Indirect Medical Education Adjustment Factor, 42 C.F.R. § 412.322 (2009); CMS IPPS, supra note 153.

\(^{181}\) Hospitals that Incur Indirect Costs for Graduate Medical Education Programs, 42 C.F.R. § 412.105(e)(1) (2009); Payment Based on the Federal Rate, 42 C.F.R. § 412.312(a) (2009).


\(^{183}\) Disproportionate Share Adjustment Factor, 42 C.F.R. § 412.320 (2009).

administration—Germany has administration issues because it fails to adequately address the implicit complexities of DRG systems, and the American system has administration issues because it has created far too much complexity.

If the G-DRG system’s goal, by reducing the aggregate number of days patients stayed in hospitals, was to reduce the number of hospitals and beds in Germany, it seems to have succeeded. In 1991, Germany had 2,411 acute-care hospitals and 665,565 beds. By 2009, it had 2,083 hospitals (a reduction of 13.6%) and 503,341 beds (a reduction of 24.4%).

To an American, whose country has 5,795 acute-care hospitals and a population of 310 million, 2,083 hospitals serving a population of 82 million would seem like a high saturation level (Germany has 36% as many hospitals serving 26% of the U.S. population). This indicates that Germany still may have some distance to go before it reaches an optimal per capita bed count.

Even though the number of hospitals dropped during InEK’s first survey period, patient satisfaction seems to have improved slightly and the lower number of hospitals does not seem to have affected access to treatment. But Germany should proceed with caution because this reduction in bed count could be a contributing factor to German physicians, nurses, and hospital employees overwhelmingly reporting a negative effect from the G-DRG system on motivation and job satisfaction. Still, hospitals and stakeholders viewed the introduction of G-DRGs “positively in terms of further advancement of the system.”

Both the U.S. and German systems suffer from difficulty in recognizing, adopting, and paying adequately for new treatments—and this could have a negative effect on provider

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185 Kyberg, supra note 46, at 35.


189 Id. at 5.

190 Id. at 11.
satisfaction, quality of care, and innovation. “DRGs are really risk-adjusted per diems and therefore safer but not more popular among hospitals, for they are often accused of adjusting too slowly to new technologies.” German hospitals must negotiate payments for new technologies or services on a case-by-case basis. But Medicare requires providers to go through a lengthy notice-and-comment rulemaking procedure. Both countries should reexamine their procedures for handling payment for new services and technologies and streamline those procedures while leaving adequate safeguards in place. A hybrid approach where hospitals may seek individually negotiated interim payments in lieu of a more permanent solution might work.

Quality has long been a concern of both countries. After Germany implemented the G-DRG system, quality, according to some measures, remained stable or slightly improved. But that is no cause for celebration. Some estimates claim that between 5.7% and 6.7% of German hospital patients acquire hospital infections. Those estimates put the total number of hospital infections in Germany at between 600,000 and 700,000 per year. Further, it may be that 1% of those infections actually cause death and between 3% and 4% contribute significantly to it. Other estimates report a somewhat lower figure of 500,000 annual hospital infections in Germany, but that is still far too high. The United States has not done much better: Some estimates claim that 4.5% of U.S. patients (1.7 million people) get hospital infections.

Germany currently makes standardized quality reports on all German hospitals available

193 Krankenhausentgeltes gesetz 2010 [KHEntgG 2010] [Hospital Benefits Act], Dec. 22, 2010 REICHSGESETZBLATT I [RGBL. I] as amended, at § 6, 2309 (Ger.).
197 Id.
198 Id.
to consumers online, but some have criticized those reports because they lack outcome data.\textsuperscript{201} Germany should take measures to correct this issue because the nature of its universal health system and the new data available under G-DRG allows Germany to do almost complete follow-up on every patient.\textsuperscript{202} The United States is at a disadvantage when it comes to online quality reporting because its healthcare system is so fractured. While some online reporting systems are available to consumers, they lack standardization or do not track the entire spectrum of patient demographics (e.g., the HHS Hospital Compare site has data only for Medicare patients).\textsuperscript{203}

In 2005, Congress got more aggressive about discouraging hospital infections, other hospital-acquired conditions, and “never events.” Hospitals must now report a present-on-admission indicator for each diagnosis.\textsuperscript{204} CMS will not use certain medical conditions to select higher-paying MS-DRGs unless providers diagnose those conditions upon admission.\textsuperscript{205} These conditions include foreign objects retained after surgery, air embolisms, blood incompatibilities, falls and trauma, certain urinary-tract and surgical-site infections, among others.\textsuperscript{206} Germany could use similar incentives to reduce the occurrence of preventable infections and conditions.

Further, both countries could benefit from applying value-based insurance design principles to their respective DRG systems. Value-based insurance design encourages use of high-value services and effective preventive services.\textsuperscript{207} Recent U.S. health reform has started to move things in this direction, but it fails to address the issue at the DRG level and, instead, wraps value-based initiatives around the MS-DRG reimbursement system.\textsuperscript{208}

\textsuperscript{201}Busse, Nimptsch & Mansky, \textit{supra} note 66, at w302.
\textsuperscript{202}\textit{Id.} at w301-02.
\textsuperscript{205}TRANSMITTAL 1240, \textit{supra} note 204, at 2.
could be adjusted to reward providers who frequently use high-value services and treatments and thereby reduce costs over the long term.

Finally, both the United States and Germany struggle with fraud and abuse. According to Transparency International, between 3% and 10% of healthcare dollars in Europe are lost to fraud.\textsuperscript{209} And “Medicare and Medicaid lose an estimated $60 billion or more annually to fraud” (roughly 6.8% of expenditures) according to stories published in 2008.\textsuperscript{210} The U.S. Congress recently passed new legislation to strengthen enforcement against fraud and abuse.\textsuperscript{211} But Germany could do more about fraud and abuse without passing any new laws. Important steps could include adopting certain American revenue-cycle management principles including (1) use of trained coders instead of doctors to record diagnosis and procedure codes, (2) detailed cost accounting—now enabled in Germany because of the improved data gathering and recording that goes with implementing a DRG system, (3) denial management, and (4) retrospective auditing.

One main source of fraud in the Medicare system is abuse of outlier payments. CMS should take a serious look at the German outlier payment model and consider moving away from an easily-manipulated charge-based outlier system.

\textbf{V. CONCLUSION}

Americans could learn something from the German system about reducing the complexity of their own healthcare administration by simplifying the inner workings of the Medicare payment system instead of continuing to pile complexity upon complexity. It is hard to fathom why payments to hospitals for indirect-medical education need to involve the transcendental number $e$ raised to a complex quotient.\textsuperscript{212} And Germans could learn something from the American system about how to monitor and account for payments. German doctors should be left to treat patients—not fiddle with complex and ever-changing coding systems. And American administrators should be left to find innovative ways to create efficiencies in their healthcare operations—not burn the midnight oil over stacks of complicated documents.


\textsuperscript{212} Indirect Medical Education Adjustment Factor, 42 C.F.R. § 412.322 (2009).