The role of the radiologist in new payment systems

Jonathan W. Berlin,¹ Richard Duszak Jr.²,³

¹Department of Diagnostic Radiology, NorthShore University HealthSystem, Evanston, IL, USA
²Harvey L. Neiman Health Policy Institute, Reston, VA, USA
³Department of Radiology and Imaging Sciences, Emory University School of Medicine, Atlanta, GA, USA

Abstract

Many economists and policy makers believe that United States healthcare costs are rising at an unsustainable rate. In response, newer payment systems such as bundled payments, accountable care organizations, and population health management have been proposed. These new paradigms all aim to encourage collaboration between health care providers to conserve costs and increase quality. To succeed in this evolving environment, radiologists should consider embracing change by working to standardize radiology practice, participating in radiology utilization management, working with vendors to increase storage of radiology imaging data to improve access and interconnectivity, and exploring targeted screening in high risk populations.

Key words: Healthcare economics—Utilization management—New payment systems—Standardization of radiology practice—Value and radiology

The current economic environment

Historically, United States (US) healthcare payments have been predominantly “fee for service,” meaning that each professional healthcare service rendered by a healthcare provider is paid for separately. In this type of system, radiologists are paid whenever they interpret a study, so the more studies they interpret, the more they are compensated. In certain outpatient imaging centers, compensation per exam may be “global,” meaning that the imaging center bills the price of the imaging procedure itself (technical cost) and the price of the radiologist’s interpretive service (professional cost) in one combined bill. Whether these services are billed individually or globally, however, the overall common denominator in the fee for service setting is that as more healthcare services are rendered, overall payments to providers increase.

The fee for service environment mirrors most other economic transactions, and until the last few decades the system has functioned well, providing excellent healthcare and improved outcomes within a sustainable cost structure. Overall US life expectancy increased from an average of 68 years in 1950 to 78 years in 2010 [1]. However, such successes have come at a cost: US healthcare expenses have increased significantly over the last three decades. In 1980, annual healthcare expenses were approximately $1106 per person; by 2004, these rose to $6280. National total healthcare expenditures during that time rose from $255 billion to $1.5 trillion [2].

The percentage of US gross domestic product (GDP) devoted to healthcare has risen substantially as well. Gross domestic product can basically be defined as the total market value of all goods and services produced in a country in a particular time period. In the US, the percentage of GDP going to healthcare increased from 5% in 1960 to 18% in 2010 [3]. At first glance, if the quality of healthcare is improving, then those increased costs might seem justified and sustainable. However, it is important to realize that economic resources devoted toward healthcare must be diverted from other areas. In the US, most commercial insurance is provided to enrollees through their employer, and many economists postulate that the higher cost of US healthcare over time translates into higher healthcare premiums paid by employers, which ultimately means lower take home pay for workers [4].

At the same time healthcare insurance premiums are increasing, the percentage of healthcare costs paid directly by consumers is increasing as well through higher deductibles (yearly out of pocket expenses that must be met before healthcare insurance contributes) and higher co-pays (out of pocket contribution for healthcare ser-

Correspondence to: Jonathan W. Berlin; email: jberlin@northshore.org

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services covered by insurance). This means that total out of pocket healthcare expenses are increasing for consumers as well as their employers. Along with this trend it is important to note that actual healthcare expenses are rising faster than the average cost of goods and services. For instance, from 2005 to 2014, the percentage increase in the healthcare consumer price index (an index of a bundle of common goods and services purchased by a typical consumer) exceeded that of the overall consumer price index in 9 of 10 years [5].

Proposed new payment systems: bending the cost curve

The accelerating rise of healthcare costs has led various policy makers to call for a change to current payment systems. The National Commission for Physician Payment Reform, for example, has stated that “our nation cannot control runaway medical spending without fundamentally changing the way physicians are paid” [6]. More recently, the Center for Medicare and Medicaid Services announced its target of tying 85% of all Medicare fee for service payments to metrics of quality or value by the end of 2016 [7]. Such ambitious initiatives would ideally result in payment systems that preserve the high quality of the US healthcare system but decrease the rate of yearly healthcare spending increases, or potentially even decrease total healthcare spending from year to year. Since the current fee for service system has been criticized for not incentivizing cost control, newer alternative payment systems are being proposed and tested in select markets. These include accountable care organizations (ACOs), bundled payments, and population health management.

ACOs are defined as a group of healthcare providers (which may include doctors, hospitals, or other healthcare professionals) that coordinate their services to provide high quality care to their patients [8]. Bundled payments combine individual payments formerly made to multiple healthcare providers on a per service transactional basis into a single collective payment made to the group of providers caring for a patient for a particular episode of care over a defined period of time. Bundle prices are initially based on historical levels of payment for that particular diagnosis [9]. One common incentive for these payment systems is shared savings, which means that if the total healthcare expenses produced through increased coordination of providers results in lower than the corresponding historical spending for that care, the healthcare providers and the payer both share in those savings. Savings incentives may come in the form of a rebate, or in the case of a prospective bundled payment, costs of treatment that run less than the upfront payment itself.

Some economists believe that capitation may return as a tool to reign in healthcare costs. Capitation could become the dominant method of payment in the setting of population health management, a paradigm in which a group of healthcare providers assume responsibility for the health of an entire large group of patients (the “population”) rather than just a particular patient at a particular point in time when that patient presents with an acute illness [10].

Globally, the aim of such new payment models is to increase quality and decrease costs by encouraging more robust coordination between various previously fragmented healthcare providers. To facilitate collaboration, newer payment systems could compensate providers in a prospective manner (meaning that payment to providers is made before services are rendered) in the form of a fixed amount which covers multiple services (in contrast to individual payments for random individual services as currently occurs with fee for service). In theory, such a system should result in less duplication of services. Such systems would also ideally decrease costs by encouraging relatively lower cost preventive services in an effort to avoid higher expenses later for otherwise preventable illness.

Radiology’s uncertain role in new payment systems

With certain exceptions (e.g., screening mammography), radiology has historically been an acute care focused specialty. Patients typically undergo imaging only when they are sick. Until relatively recently, external controls to limit the volume of radiologic studies performed have been few. Radiologists have thrived in this environment, and in some cases incentivized volume-based performance metrics [11].

The reasons for this past success under fee-for-service are relatively obvious. Not surprisingly, CT and MRI are considered by physicians to be among the most important medical innovations in last quarter century [12, 13], and until recently their use has steadily grown in non-emergency settings and continues to grow in the emergency setting [14]. Because of its diagnostic efficacy, imaging has assumed an increasingly central role in patient care. Up to now, radiologists have in many cases assumed only roles of strictly supplying and interpreting imaging technology. With some exceptions, they have not played a large role guiding its use (or disuse). While this posture has historically served radiologists well, the status quo leaves the specialty with an uncertain role for the future.

One key stated goal of prospective payment systems is to provide high quality and cost containment through coordination of care. Cost containment could occur by several mechanisms. First, medically duplicative services could be minimized. In the near future, technological solutions may help decrease redundancy through real time alerts [15]. Second, medical services that do not contribute
to improved patient outcomes could be decreased. And finally, validated preventive services could be expanded to minimize costs associated with acute exacerbations of chronic illness. The strategies for radiology in such a system can be conceptualized as “the S’s”: (1) stifling medically unnecessary volumes, (2) standardization of radiology protocols and greater unity in radiology report verbiage to facilitate data mining for epidemiologic purposes, (3) storage of radiology data to minimize potentially duplicative studies from lack of access to prior exams, (4) screening in targeted high risk populations, and (5) support for change to facilitate these processes [16].

Curtailing medically unnecessary radiology volume

Reports in the popular press suggest that up to one third of medical imaging is unnecessary [17]. While this figure is subject to debate, it is true that the US has more CT and MRI scanners per capita than nearly all other industrialized countries [18]. Studies have also found that the number of imaging scanners does correlate with a greater number of performed scans [19]. In fact, although now in decline, the amount spent by Medicare Part B (physician services) on imaging more than doubled from 2000 to 2006 [20]. The greater availability of imaging in the US does elicit the question of how much imaging is truly warranted. While this question is difficult to answer, policy makers have pointed to high US geographic variability in the amount spent on health care in general [21] and imaging in particular [22] as evidence that not all imaging performed in the US may be warranted. This point flows from the reasoning that healthcare outcomes are not dramatically different from one part of the country compared to another, suggesting that some imaging may not be contributing to improved patient outcomes.

To address potential unnecessary imaging, commercial utilization management companies have worked with insurance companies to decrease the rate of imaging growth through techniques such as precertification and denial mechanisms [23]. Other newer strategies to reduce lower value imaging include computerized decision support at order entry, which supplies ordering providers with an appropriateness score and in some cases a recommendation for when and what type of imaging agents in the medical record and link these to standardized CT scan reports to correlate drug usage with changes in targeted reference lesions. From an epidemiological perspective, the spread and containment of diseases with characteristic imaging findings can be tracked with appropriate monitoring of imaging data as well. These contributions will likely be facilitated as radiologists continue their move toward more uniform verbiage and reporting styles.

Standardization

Standardization can be defined as a uniform process across different producers making the same product. Standardization can increase consistency and the ability to measure quality. It facilitates dynamic process improvement because errors and bottlenecks can be more easily identified using uniform methodology, permitting enhanced communication about the effectiveness (or lack thereof) regarding particular technology [26]. Currently, radiology is not as uniformly practiced as other service industries such as air transportation. Radiology protocols and report styles often differ across institutions and even within practices themselves. Such diversity makes measuring quality extremely difficult. For example, assessing the ability of chest CT to characterize small pulmonary nodules is problematic if slice thickness varies from exam to exam, or reformatted images are only variably performed. Standardization of radiology protocols thus expands opportunities to assess the capabilities of particular imaging strategies in certain scenarios. This would permit radiologists to best determine the optimal role of expensive imaging in a population health paradigm, facilitating the judicious use of high cost technology.

Standardization, however, does not reside strictly with protocols. Eventually, some type of standardized radiology reporting system will probably be needed for radiology in new payment systems, as standardized reports will likely facilitate data mining so radiology can play a greater role in public health [27]. Imaging is currently used to monitor the response to treatment of many infectious, inflammatory, and neoplastic diseases on an individualized level. In a population health system, however, research devoted to monitoring the effectiveness of treatments using imaging will likely increase. National language processing (NLP), or the ability of computers to interact with human language, will likely facilitate this type of research, and standardized radiology report verbiage enhances NLP. Outside of radiology, NLP has already been utilized to identify postoperative complications using electronic medical records [28]. Within radiology, one future potential example of NLP would be to search for particular chemotherapeutic agents in the medical record and link these to standardized CT scan reports to correlate drug usage with changes in targeted reference lesions. From an epidemiological perspective, the spread and containment of diseases with characteristic imaging findings can be tracked with appropriate monitoring of imaging data as well. These contributions will likely be facilitated as radiologists continue their move toward more uniform verbiage and reporting styles.
Storage of radiology data

Duplication of radiology services due to lack of access to prior relevant imaging studies is a common problem well known to most radiologists. In one study, up to 20% of patient testing was duplicative due to lack of prior test results [29]. Integrated information systems, such as health insurance exchanges, can greatly reduce such duplicative imaging [30]. Radiologists at the local level can facilitate the process of functionally archiving radiologic data by working with information technology vendors, health systems, and local exchanges to encourage the coordinated storage of radiology images and improved interoperability. Historically, radiologists have been early adopters of technology and thus have many leadership opportunities to add value in new payment systems by leveraging their technological experience as health care entities pursue widespread aggregation and integration of health care data.

Screening

Targeted imaging screening for particular conditions in high risk populations may add significant value in population-based delivery and payment systems. Such screening would not be a return to the whole-body CT screening directed toward walk-in consumers from a decade ago. That idea largely failed for several reasons, including lack of uniform scientific endorsement and eventual price wars [31]. For screening to be effective and cost effective, several criteria should be met. These include screening for a disease with significant consequence if not treated, a cost-effective and clinically efficacious methodology to detect subclinical disease with appropriate sensitivity and specificity, a high pretest probability of detecting subclinical disease in the target population, and readily available, clinically effective, and cost-effective treatment that is more effective with earlier disease stage [32]. While mammography is currently the most widely used screening test in imaging at this time, smaller more targeted screening efforts such as ultrasound screening for abdominal aortic aneurysm or low-dose chest CT screening for lung cancer in high risk populations will likely have greater roles as interest in population health management grows. Ideally, such efforts will allow integrated healthcare system providers to find and treat diseases at earlier and less costly stages. Future radiologic research will likely continue to focus on identifying high value screening techniques for at-risk populations.

Support for change

Physicians may resist change due to a variety of reasons: lack of understanding why change is necessary, fear of incompetence after change occurs, and fear that change will decrease productivity and disrupt previously familiar routines [33]. Overcoming physician resistance to change will be necessary for the specialty to succeed in new payment systems. While it is difficult to predict exactly what the healthcare system of the future will look like or how its fast evolution will occur, it is clear that most new paradigms will require a greater team approach to delivery as well as an increased emphasis on cost containment. Like other physicians and non-physician healthcare providers, radiologists will need to navigate their way in these new environments. Hopefully, the concepts and information presented in this paper will help readers acquire a greater understanding of why change in US healthcare payment systems is likely, and identify strategies to facilitate thinking about ways to succeed in new payment systems.

References

25. FDA white paper: Initiative to reduce unnecessary radiation exposure from medical imaging Available at: http://www.fda.gov/RadiationEmittingProducts/RadiationSafety/