



Healthcare Reimbursement and Quality Improvement: Integration Using the Electronic Medical Record

Comment on “Fee-for-Service Payment - an Evil Practice That Must Be Stamped Out?”

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Abstract

Reimbursement for healthcare has utilized a variety of payment mechanisms with varying degrees of effectiveness. Whether these mechanisms are used singly or in combination, it is imperative that the resulting systems remunerate on the basis of the quantity, complexity, and quality of care provided. Expanding the role of the electronic medical record (EMR) to monitor provider practice, patient responsiveness, and functioning of the healthcare organization has the potential to not only enhance the accuracy and efficiency of reimbursement mechanisms but also to improve the quality of medical care.

Keywords: Healthcare, Fee-for-service (FFS), Pay-for-performance (P4P), Quality Improvement, Diagnosis-Related Groups (DRGs), Capitation, Electronic Medical Record (EMR), Health Information Technology (HIT)

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Reimbursement mechanisms for healthcare have included salary, Fee-for-service (FFS), capitation, Pay-for-performance (P4P), and diagnosis-based payment (DRGs, diagnosis-related groups). Most countries have mixed systems that may include any or all of these mechanisms, but no system has emerged as universal, perhaps because of the strengths and weaknesses of each mechanism and their feasibility within a particular social, political, and economic setting. Although these mechanisms remunerate the quantity, complexity, and quality of healthcare to variable degrees, all could function more efficiently if integrated into emerging health information technology (HIT).

Current reimbursement mechanisms have both strengths and weaknesses (1). With salary systems, there is no incentive for the provision of any particular degree of care. In FFS, individual items of care are reimbursed retrospectively, but excessive services and unnecessary or inappropriate care may be encouraged. With prospective payment or capitation systems, such as health maintenance organizations in the United States or the British National Health Service, a predetermined amount is paid for each patient enrolled. Although these systems encourage cost containment and preventive care, they may also foster undertreatment, over referral of complex patients, and large patient numbers per provider to enhance income, increasing workload and reducing quality of care. In the DRG system, which has been used primarily to reimburse hospitals, payment is based upon classification of cases into groups defining the “products” of healthcare, with patients in each group assumed to have similar diagnoses that require the same amount of services. The DRG system, like FFS, attempts to link reimbursement to

the extent of care provided, but drawbacks include upcoding, overtreatment, and excessive readmissions. Finally, P4P systems, such as that used in the United States for Medicare reimbursement, attempt to link payment to quality, usually by comparing performance on defined outcomes to past performance or performance of other providers. However, linking reimbursement to quality requires substantial effort to assess performance on strict measures of the processes or outcomes of care.

Ikegami (2) has argued that given the shortcomings of salary, capitation, DRGs and P4P systems, FFS is simpler to administer since it requires less complex mechanisms to ensure appropriate function. He points out that “DRGs and P4P require well-designed patient identification, classification, recording, and monitoring systems.” Yet the process he describes, which characterizes the system of payment regulation by a fee schedule in Japan, still requires strict processes of documentation, billing, monitoring, physician auditing, and fee revision, processes that may also be required for capitation, DRGs, and P4P systems and implemented in those systems with no less efficiency. The challenge in designing a reimbursement system lies not only in the selection of appropriate mechanisms but also in efficiently obtaining, processing, and utilizing the information required to ensure their most optimal functioning.

Any reimbursement mechanism for healthcare should account for the quantity, complexity, and quality of care. Since providing care for a greater number of patients requires greater effort by the practitioner, it seems reasonable to reimburse at least partially on the basis of quantity. However, all cases are not alike, and a mechanism to adjust for case complexity is

required so that care for more complex patients may yield greater compensation. Finally, reimbursement for quality could provide an incentive for improvement of care that could benefit both patients and the entire healthcare system.

It would be difficult for any single reimbursement mechanism to reward performance for all three dimensions of care, but a combination of mechanisms might feasibly do so. Compensation for quantity could utilize a capitation mechanism whereby providers are paid either a predetermined amount per patient or a salary with expectations of seeing a prescribed number of patients. The amount of salary or capitated fee could be adjusted for complexity using the DRG system. To prevent shortcomings noted above, patient volume per provider so adjusted could be limited by established target ranges that allow reasonable time for the provision of quality care. The base income generated could be supplemented by an increment rewarding performance on established process or outcome measures of quality tied to major DRGs. Performance measures could be designed to limit potential overtreatment, undertreatment and upcoding based in part upon patient presentation and peer standards for treatment. In addition to impacting reimbursement, performance below community standards could prompt peer review and provider educational interventions.

Obtaining and processing information required to ensure the proper functioning of any reimbursement mechanism requires the investment of substantial time and effort, and limited human resources have likely contributed to the inefficiency and even failure of mechanism implementation in various settings. However, more optimal use of emerging HIT, especially the electronic medical record (EMR), could enhance the accuracy, efficiency and ultimate feasibility of any reimbursement system.

The EMR has been defined as a repository of patient data in digital format (3). Although it represents a major advance over paper charting, its use is currently limited to data entry for patient care documentation, a task of unproven value (4). With rare exception, little emphasis is placed upon other potential uses of the information entered. However, this information has great potential to provide for monitoring of all aspects of medical care, including its quantity, complexity, and quality and to link performance to reimbursement. Rather than simply using the EMR for documentation, it must be utilized to accumulate, synthesize, and analyze data, compare it to normative standards, and detect patterns and variances that may impact both reimbursement and improvement in care. The appropriateness and efficiency of provider workflow, evaluation, and treatments could be monitored and analyzed. Data accumulated on the quantity of patients and their complexity could direct base reimbursement, whether salary justification or capitated income. Performance on defined measures associated with individual DRGs could be tracked for each provider, compared to past performance and established benchmarks, and form the basis for incentive payments (P4P).

Currently the EMR is used primarily by healthcare providers, but it could be used by all stakeholders in the healthcare system. Integration of patient-generated data into the EMR has been advocated (5), and in some EMRs patients are able to view their own medical records, renew prescriptions, make

appointments and communicate with providers. Patient involvement could be expanded to incorporate complaints and symptoms, monitor disease course and response to therapy, and assess compliance and satisfaction with care. Modules for patient education and preventive care could be incorporated, and interactive visual presentations, personal electronic devices and voice recognition technology could facilitate ease of interaction with the record. The information entered could be tracked and analyzed to not only improve quality but also define complexity, increase accuracy of DRG assignment, prevent upcoding and ensure fairness of remuneration.

Using the EMR, healthcare organizations, such as hospitals, clinics or medical groups, could continuously monitor the care process to anticipate changing resource requirements and improve the efficiency of care. Data from the EMR could assist in the generation of real-time budgets that tabulate expenditures, reimbursement, and projected future resource allocation. Practice patterns of hospital providers, compliance with benchmarks, and patient satisfaction and outcomes may be monitored to assist in the quality improvement process and assure adherence to standards of certifying bodies.

Funding sources, such as insurance companies or government agencies, could obtain data directly from the EMR to guide reimbursement. Uniform requirements for information extraction and criteria upon which to base reimbursement would need to be established, and mechanisms would be needed to ensure patient privacy, but transparency for all stakeholders facilitated by a common computer system could foster fairness, efficiency, economy, and mutual trust. Establishment of fees is a complex and necessarily arbitrary process that must be accomplished by consensus as dictated by local economies, but the computer may facilitate periodic fee revision by revealing the complexity and appropriateness of care required for treatment of specific conditions or DRGs. From the standpoint of physicians, current EMRs are cumbersome, inefficient, and tedious to use (6). Their designs must be made more intuitive, less cluttered with extraneous information, and more user-friendly, attributes that have been associated with successful EMR implementation (3,7). Most EMRs are designed by programmers that do not provide healthcare, yet physician practice involves unique work flows that are not obvious to nonproviders. Detailed study of physician work flows should direct EMR design, or EMRs could be designed by practicing physicians with programming skills. Aspects of the EMR should be individualized with respect to each medical specialty or subspecialty to optimize documentation, data retrieval, analysis, and remuneration mechanisms specific to that specialty.

Ikegami states that since physicians are not trained to practice efficiently, the effectiveness of DRG, P4P, and prospective payment systems may be limited (2). However, such limitations may be overcome by increasing the efficiency of physician practice, a goal that could be fostered through use of the EMR in both formal physician training and continuing medical education. For each medical specialty, the vast majority of physician care falls within a very well-defined standard range, and the computer can detect practice variations outside that range, help monitor and guide practice, and provide feedback for continuing education. As part of

this process, the EMR could incorporate guidelines, reference materials, and rapid online access to major literature databases and original articles. Individual patient records could be automatically referenced to educational materials by linking key words in databases to DRGs within the EMR. Universal standardized order sets for common treatments could be adopted for each medical specialty and their use within the EMR (computerized provider order entry) could help guide practice. In this regard, it has been shown that the EMR may actually influence decisions made by providers (3).

Optimal reimbursement for healthcare must account for not only the quantity of care provided but also the complexity and quality of that care. Any mechanisms to do so will require the accumulation, synthesis, and interpretation of information to guide remuneration while simultaneously enhancing the efficiency and quality of care. The EMR is ideally suited to play a central role in accomplishing this goal, and investment of resources to expand this role is likely to benefit the entire healthcare system.

Ethical issues

Not applicable.

Competing interests

Author declares that he has no competing interests.

Author's contribution

JRB is the single author of the manuscript.

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