

Health Information Technology and Financing's Next Frontier: The Potential of Medical Banking

A NEW BUSINESS MODEL OFFERS PROMISE

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centered technology designed to capture, not only the contacts with health care providers, but also personal information on insurance, diet, and personal preferences that a physician's health record will not capture. Medical banking, based on a new technology platform called the Integrated Health Card (IHC), is emerging as a solution to the problem of collecting and combining information from the electronic health record with personal health information. It may also be the only way for fledgling health savings accounts to enable the price and quality transparency of the medical market that has been called for repeatedly in this decade. In analyzing the political and patient applications of widespread adoption of this new innovation, the positive contributions to social welfare are very likely to outweigh the negative.

Calls to action for wide spread adoption of electronic health records have come from a broad spectrum of the private and public sectors. The problem, to date, is not that information does not exist, as much as that the data have not been organized around the patient. An integrated Personal Health Record (iPHR) is a patient or family

Robust information technology is considered an essential component of a high-performance health care system that will deliver the best treatment to improve, restore, or sustain health for a fair cost. Calls to action for wide

spread adoption of electronic health records have come from a broad spectrum of supporters, ranging from the Institute of Medicine to the U.S. president. (Institute of Medicine, 1999, 2001; Department of Health and Human Services, 2004, 2006). The problem is that the majority of the medical industry has not embraced information technology to improve performance, as have other industries where success has been greater. These include financial services, retail, transportation, and manufacturing (Brynjolfsson and Hitt, 2000). With expenditures over \$2 trillion per year and an ever-increasing share of the gross domestic product, health care is a full-blown industry in its own right.

One of the key frustrations with information technology investment in health care is the lack of connectivity between medical providers, patients, and payers. Specifically, the problem is not that information technology investments have not been made (Burke et al., 2002) and that the data do not exist, as much as that the data have not been organized around the patient. In 2004, the Bush administration made a commitment to accelerate the use of health information technology to improve quality of care and lower costs. David Brailer (2005) proposed a strategic plan as health information technology (IT) czar that would promote health IT interoperability between all key stakeholders. In particular, medical providers would be called upon to exchange medical data using a common set of standards. However, since 2004, interoperability has slowed because making health IT systems open and transparent has not brought about a shared sense of Pareto improvement among medical providers. Specifically, transparency initiatives are suspected of rewarding low-cost, high-quality providers and leaving others that have less affluent patients and/or less profitability to suffer financially. Without a federal law that compels interoperability, the implementation of Brailer's vision has been lagging.

A new business model, "medical banking," has emerged that could change this situation for the better, from both a patient and provider perspective. Medical banking uses a new technology platform called the Integrated Health Card (IHC), which could provide a solution, scalable from existing technologies, to address the problem of collecting information from the electronic health record together with personal health information. It would also reduce transactions costs relating to the provision of health care. As it grows, medical banking will provide a powerful innovation to help deliver a high performance health care system.

In this paper, a vision for medical banking is stated. A patient vignette is used to illustrate how medical banking card technologies can be a viable platform for efficient uti-

lization of personal health records (PHRs). And finally, a description of a set of factors is discussed to support the conclusion that some form of medical banking is highly likely but also quite disruptive to the status quo delivery system and to potential health reform initiatives.

1. Medical Banking Defined

The goal of medical banking is to enhance financial transactions associated with health care with information on the patient's condition, treatment outcome, and adherence to patients making their own human capital investments. If we consider Michael Grossman's (1972) landmark household production function specification, where medical care and other factors affect the production of health, medical banking explicitly makes it possible to collect the data necessary for a household production model to become a day-to-day reality and a part of the current financial transaction system in health care markets.

As an illustration of the capability of medical banking, consider the development of the personal finance risk score. Consumer banking transactions, whether through checking accounts or credit cards, have produced an externality that constitutes an entire secondary market of data to be used for risk score information. Imagine that the same thing is possible for medical care at the individual patient level. Health risk scoring already happens today, though fairly crudely, for risk prediction by insurers of their current or prospective patients. Enhancement would provide metrics for personal health production akin to what Grossman described theoretically. These metrics could also be aggregated by associating physicians (without suggesting causality) with their aggregate medical productivity, pharmacies, group practices, or hospitals to the health outcomes of the patients who visited them.

How could simple financial transactions of medical providers that are no more than debits and credits yield sufficient data for measuring medical care production? The simplest answer is that the financial transaction system itself becomes a conduit for the transfer of not only bank account transfer instructions, but also clinical data from new and existing health information technology platforms of the providers seeking payment. For example, if a laboratory testing company bills for blood work on a diabetes patient that produces numerical values describing the result of a specific test, a medical banking platform would require the attachment of the lab result as evidence of the service performed to receive the negotiated fee as reimbursement. The current practice is simply to pay for the test without additional information transmitted. This made sense in 1966, when all results were recorded on paper. But today, all results are digital and easy to transmit. This one innovation

would provide a line of demarcation between the fee-for-service health insurance financial transactions of the last 60 or more years and the new medical banking platform described in this paper.

To understand the potential for medical banking, it is important to understand the status quo. Today, the overwhelming majority of health care financial transactions occur through third-party insurers that are private (such as Aetna or Cigna) or public (such as Medicare and Medicaid). The third-party insurance primary business model is the facilitation of a fee-for-service transaction system between employers, governments, and insurers who hold risk contracts and the providers of medical care—such as physicians, hospitals, and pharmacies—on behalf of the patient. Take for example, an insured person who breaks his leg and goes to the emergency room of a local hospital. The hospital will seek reimbursement from the insurer of this injured patient by submitting a claim for reimbursement with specific line items for use of the facility, physician time, medical equipment used to set the bone, pain medications prescribed, and x-rays taken. A consulting orthopedic surgeon, retail pharmacy, anesthesiologist, and radiologist will all invoice separately. The insurer will receive these requests for payment and negotiate final payment over the course of 30 to 120 days following the emergency room event.

Where do banks enter the picture now? If this person works for a large firm where he has signed up for health insurance, the firm is likely to be self-insured through the Employee Retirement Income Security Act (ERISA); and this firm will instruct the insurer to pay the medical providers using the bank account of the employer following the negotiation of final payments to the providers. Thus, health insurance here is simply “negotiated” fee-for-service. If the injured patient worked for a small company that could not afford to be self-insured under ERISA, the payment would originate from the bank account used by the insurer associated with the patient. This would be the case if the injured bought health insurance in the individual insurance market as well. If the patient had no insurance and was not in a public insurance program such as Medicare or Medicaid, he or she would be responsible to pay the charges of the hospital, which are likely to be at least twice the negotiated rate between insurers and the providers mentioned above.

2. The Business Model for Medical Banking

The status quo of health insurance provision in the United States is under assault. Today, employers buy health insurance for workers, providers submit claims to the insurance companies for covered services, and the insurance

companies either pay or deny the claims. However, there are many flaws with this old and complex system, and it is possible that the lack of data to correctly price risk has led to nearly 50 million uninsured people at any escalating given time during the year. In addition, health care costs at roughly twice the rate of inflation have made offering health insurance unaffordable for a growing number of companies.

One of the major foundations of medical banking is the growth in health savings accounts (HSAs) as part of a patient-driven healthcare system.¹ This growth is attributed to the lower premium cost of high-deductible health plan options. But more importantly to medical banking, HSAs are on track to have \$10 billion in deposits held at banks. This puts banks at the center of a strategic crossroads in health insurance market development.

So why would banks care to enter this market at all? The easiest answer is simply to see how banks have developed enhanced consumer service products, outside of healthcare, that enhance profitability. Any major bank today relies upon the Internet to be the front door to consumers. Given that health care may represent 20 percent of the United States gross domestic product (GDP) by 2015, if not sooner, and that banks already move the money of the existing system, why not develop additional consumer products? Consider the health risk analogy to a financial risk score. If patients were to find that the use of such a health risk score would decrease their premiums by 15 percent at a cost of \$10 per year, a billion dollar market could be born. Clearly, a consumer's care and feeding of a financial risk score today can lead to better financial positions for consumer lending. In this example, the business of health insurance remains intact and may grow if better risk profiles can be developed to price insurance at a more affordable level to patients. How can that alchemy be possible? If a health risk score based on prior health insurance transactions is seen as a valid metric of risk by insurers, underwriting costs could be substantially less, with less unnecessary laboratory costs and reduced transaction costs.

One barrier to making the medical banking system functional is that it requires the engagement of patients to use the Internet for their medical financing and care solutions. Another barrier is getting medical providers on board. Both of these critical barriers to medical banking have started to be addressed in the last two years as personal electronic health records have advanced beyond simply document management systems for patients to robust Internet applications with primary backing from Microsoft

¹A health savings account is a tax-advantaged medical savings account owned by patients. The funds contributed to the account are not subject to federal income tax at the time of deposit. Health savings account funds roll over and accumulate year over year if not spent.

through its Health Vault platform (Microsoft, current) and from Google Health (Google, current). Only recently have medical providers and insurers embraced these two platforms as possible open-source data feeds for insurance transaction data combined with patient-enhanced personal health information.

3. Nuts and Bolts of Medical Banking

To be successful, medical banking must engage patients and providers, deal with critical issues of data entry and storage, and establish the role of banks, as opposed to insurers. Briefly, a medical banking system involves all of these key agents. It begins by a patient setting up an account on a secure website such as Google Health PHR that permits data transmission and receipt from providers, insurers, and financial intuitions. For example, a patient insured with Aetna can now use Google Health to view all of his or her claims records. The provider can also be given permission to see this data. If the patient has an HSA, the bank that holds the assets for medical care will have transmission, receipt, and viewing privileges as well. The patient could restrict some personal health data, but any financial transaction also defined as "personal health information" data is viewable to insurers, providers, and likely banks under the final rules resulting from the 1996 Health Insurance Portability and Accountability Act (HIPAA). Information will be accessible to all parties, with permission to see the data through secure Internet portals. Data will be added at the point of care or service by providers, adjudicated by insurers, and transacted by banks.

Where is the "banking" in medical banking? There are two key answers. The first is that all health insurance transactions are really bank transactions, where insurers act as the agents of employers and patients to complete a bank transaction to reimburse medical care. The second is that medical banking provides a mechanism through the HSAs where the account holder would be allowed to invest assets in a range of different financial products, including bonds and equities in addition to money market accounts. The difference from a regular commercial banking account would be that the dollars could only be used for medical services.

4. Vision and Significance

The vision of PHRs coupled with medical banking is that of a mobile resource that provides benefits to patients and their families for a lifetime. A PHR is a patient- or family-centered technology designed to capture not only the contacts with health care providers but also personal information on insurance, diet, and personal preferences (e.g.,

living wills, advance directives) that a physician's health record will not capture. PHR information is stored on a website and is password-protected. Specific transactions that involve PHRs coupled with medical banking might include:

- patient sets up a PHR, which is accessible from anywhere at any time by the patient, who authorizes a physician to access the website;
- services are billed to the PHR website, which are rolled on to the health insurance provider;
- cost-sharing is billed to the patient's checking or credit card account identified in the PHR;
- patient and physician receive notification that test results are available on the PHR;
- PHR serves as a basis for medical and financial information that can be used by insurers and others.

Patients using PHR technology would be equipped with a critical and immediate resource for health improvement, disease prevention, emergency care, and long-term medical care affordability. The PHR will give patients access to critical information and allow the record to be customized to clearly define their preferences for treatment. Likewise, patients who want their organs donated in the case of mortal injury could make their preferences known.

With respect to economics, the PHR will provide the data to reduce many of the medical industry information asymmetry problems between patients and health care providers, as discussed by Arrow (1963). Physicians would have better knowledge of patient preferences, and patients could have better knowledge of physician treatment preferences based on PHR access to physician summary information. In addition, treatment plans for patients could be customized—based on the PHR information—to provide a menu of personal health choices instead of the current status quo of little or no readily available medical advice without clinical consultation.

The most important innovation is a PHR built upon the IHC technology platform—the integrated personal health record (iPHR). This platform, recently deployed by UnitedHealth Group, BlueCross, BlueShield, Kaiser Permanente, and several infrastructure vendors, will provide the information needed to promptly administer benefits and facilitate health care transactions and payments, thus simplifying the process for patients and providing health care professionals with an efficient administrative resource. The iPHR will also convey essential health records that support care interventions. From a patient perspective, these services transcend benefit plan boundaries and traditional geographic limits, enabling people to have their information and financial resources follow them across products and

providers anywhere in the country.

The IHC technology is built upon one of the most common forms of technology available today—the bank card. In 2003, as part of its health benefits modernization program, UnitedHealth Group began issuing “health benefit cards” with bank card technology, namely the magnetic strip on the back of the card. Three years after the introduction of this technology, nearly 20 million UnitedHealth Group members have unique magnetic-strip ID cards in their wallets. The member can verify eligibility and cost-sharing amounts with a simple swipe of the card.

The IHC is not vital for patient adoption of iPHRs. Consumers can simply use an iPHR portal with account names and passwords. However, the card provides one critical asset that Brailer’s vision of interoperability among provider electronic health records may not: financial incentives for widespread provider adoption of information technology by facilitating transactions. The appeal of using a card technology is that the providers are being paid more quickly through the card technology in exchange for the patients exercising their right to own their data and then share it with other patients in order to measure the productivity of their physician.

The IHC also facilitates clinical data extraction from a patient record at the point of service. Point-of-service data extraction for tracking clinical care processes and outcomes is vital for the measurement of medical provider productivity. In effect, the card serves as a neutral medical information data collection and aggregation platform that enables examination of the health of the patient, as well as the care rendered by the provider(s) treating the patient.

Moreover, the iPHR technology provides an extraordinary opportunity to measure medical care productivity. Brailer (2005) has remarked on the potential for better productivity measurement from a successful health IT interoperability initiative. To successfully measure productivity, one must be able to measure the inputs and outputs of medical care. At the most crude level, one can measure hospital mortality as an output and hospital labor and capital components as inputs. What the iPHR permits is measurement of productivity at the patient level, which can then be aggregated to performance information at the physician or hospital level. At the patient level, an outcome could still be a binary indicator of inpatient mortality. However, inputs would now include details on the patients underlying health status. For example, such details could include information on whether the patient who just got a cardiac bypass procedure was healthy otherwise, or was he or she obese, diabetic, hypertensive, or suffered diminished lung capacity from smoking. The patient condition affects the marginal productivity of labor or capital. If a patient has

substantial prior health issues as reported by an iPHR, and yet a surgeon has a good outcome, the surgeon should have the opportunity to show a higher productivity for his or her labor input. Today, it is very difficult, if not impossible, for that type of productivity measure to be recorded.

5. What’s Innovative?

Applying the concept of a disruptive innovation introduced by Harvard professor Clayton Christensen and colleagues (2000, 2006), the implementation of medical banking could be a powerful industry-changing technology. Specifically, an IHC will facilitate payment and benefit transactions. This is not an e-commerce innovation in concept only. Several large employers have various levels of the core components of this technology already deployed. In addition, the IHC will facilitate access to essential health records that support care interventions contained in iPHRs.

The IHC technology can be an advantage for patients by making available limited, but important, clinical data. For example, it would provide patient prescription history to any prescribing provider. Moreover, a swipe of the card will give a physician access to the iPHR to automatically compile a comprehensive summary of critical information, including:

- medical conditions and diagnoses,
- medication history,
- significant medical interventions and laboratory results.

The technology would also support an online summary of patients’ medical histories built from the point of care. In addition, the iPHR can be augmented by patients who choose to provide details, such as allergies, immunizations, and family history.

6. An Example of Medical Banking in Action

How might medical banking operate in the real world? To illustrate the potential of both the medical banking technology and the interconnecting components required to provide genuine improvement in health care, consider the case of Anna, a patient with diabetes.

Anna has just moved to a new city and starts work on the first of the year. On January 1, 2008, she begins health coverage in a new health plan with an iPHR that is supported by a medical banking technology platform. Prior to her start date, she receives an IHC with a magnetic strip from her employer. The iPHR website provides a list of endocrinologists accepting patients in her area, quality scores for the providers, and an indicator for those that are iPHR enabled. She selects an endocrinologist from the list and schedules an appointment for an initial consultation.

Prior to her initial consultation, Anna logs onto a se-

cure iPHR website from the health plan to verify her eligibility, and she adds limited personal health data, such as emergency contacts and a “do not resuscitate” order. She also requests her previous pharmacy history from a different health plan to be added to the iPHR. When Anna visits the endocrinologist, the physician’s assistant swipes the IHC using a USB swipe card machine connected to the Internet. The swipe opens an iPHR page and requests Anna to authenticate her access with a password. She provides the required authentication, followed by approval for the physician to access the iPHR. The physician sees on the iPHR website that Anna has already authorized the provider to review her past history. The physician reviews all prior drug history and proceeds to conduct an initial evaluation with some sense of patient compliance regarding medications for a chronic illness, as well as prior dosing.

During the visit, the physician orders tests. Height, weight, and blood pressure are also recorded. At the end of the visit, the physician’s assistant bills for an initial evaluation on the iPHR website. This site links to the health plan’s transaction engine that requests standard claims processing information (e.g., diagnosis and procedure codes) as well as the Anna’s height, weight and blood pressure. Since this a standard part of an initial evaluation (signaled by the initial evaluation procedure code that is submitted) the website knows how to make the request.

Since Anna’s eligibility information is provided by the initial card swipe and the provider—who is iPHR-enabled—is known to the health plan, the allowed amount for the initial consultation is transferred directly to the physician’s business account. Any cost-sharing is deducted from the checking account or credit card line that Anna has already entered in her iPHR preferences.

One day later, Anna receives an e-mail that the lab work has been completed, and she can log onto the iPHR to see and comment on the results. The physician also receives the e-mail and is invited to comment on the lab results.

Anna sees the endocrinologist four more times during the year. At the end of year, the health plan invites Anna to comment on quality of care. The technology can also track whether her lab test scores have improved. If they have improved, she will receive a reduction either in her co-insurance rate or a credit to her health savings/reimbursement account (if she is enrolled in a patient-directed health plan).

Credits in health savings accounts for healthy behavior are become an increasing part of the landscape in health insurance benefit design. However, as these incentives grow in appeal, the technology to support them is limited because of the time delay and the challenges of making data accessible to patients in such a way that it provides health

incentives properly. What medical banking achieves is fusion between the health information technology collection of relevance to the patient and the data critical for an insurer to provide patients with incentives for healthy behavior. Without medical banking, the insurer does not have a good mechanism to directly provide incentives for better health status. To date, tracking clinical data for the insured is only done for a handful of very large employers as part of disease management programs. For the majority of U.S. citizens, medical banking offers a technology platform that allows Anna from General Electric as well as Anna from Ye Olde Time Curiosity Shoppe to get the same monetary advantage from monitoring and managing her diabetes.

This last piece is a critical innovation for the chronically ill with moderate to lower incomes. One of the concerns about health savings accounts is that more than half of them have zero balances. This would provide an opportunity to reward chronically ill persons for taking steps to maintain their health.

Continuing with Anna, suppose that she decides to shop for a new health plan, using her iPHR data with clinical information, preferences and comments, and lab values. She finds she can get a 15 percent discount from another plan because of her healthy habits and lifestyle as a diabetic patient. She decides to take the new plan and keeps her iPHR. The only changes are the designation of her health plan and eligibility criteria, as well as the plan’s provider panel, which are pre-loaded into her iPHR website.

7. Are Financial Services and Health Information Technologies Compatible?

The idea of fusing together electronic medical records and financial transaction systems may seem a bit of a stretch, adding layers of unnecessary complexity. Nevertheless, health insurance data is quite similar to medical banking data in three critical areas. First, patient privacy is paramount in both settings. Second, the structures of the databases are quite similar in that they both use a debit and credit system to tabulate cash flows and services rendered. Third, both health and financial services data are warehoused for quick storage and retrieval for a variety of different purposes.

The information technology architecture for the iPHR is health insurance claims data. This information systems architecture is as old as the banking technology, but not nearly as advanced. Banking information technology was upgraded in the early 1980s to accommodate the rapid national adoption of consumer-friendly automatic teller machines (ATMs). The next step for an iPHR technology would be the ability to accommodate IHCs.

One of the first issues to address is whether claims data

is the right architecture. While not perfect, it is more like a “cousin” to the efficiently operating financial transaction services. In particular, the date/time stamp is the most important feature of a transaction-based system because it provides a data ordering construct for the iPHR. Likewise, the best medical records systems use time as the central marker for disease progression and health improvement. If a transaction-based system had more clinically relevant and health outcomes data, it could in fact be a substitute for a computerized physician order entry (CPOE) system, and become a full fledged electronic medical record.

If health insurance/medical banking data were coupled with the capability for the patient to augment and add information to the record, perhaps even on a transaction-specific basis (e.g., a lab test, prescription order, or physician visit), the result would be a very powerful iPHR technology. There would have to be some fields that a patient could review but would not be able to change without review of an insurance company or a medical provider. For example, a patient could comment about a diagnosis code, but would not have it removed unless she or he appealed to the insurer for modification and approval.

Could this really work in a practical sense? The biggest weakness of a health record built from insurance transaction data is that the data provided for billing and payment purposes are not complete from a diagnostic perspective. Insurance transactions provide little to no information on health outcomes and could be biased due to financial incentives inherent in payment rules from public and private insurers. However, these shortcomings are the fault of limited data, not the transaction-based data structure. For example, the Institute of Medicine’s advocacy in 2001 of widespread adoption of computerized physician order entry systems (CPOE) indicates support for a more clinically relevant transaction (or order) based technology platform (Institute of Medicine, 2001).

8. The Perfect Storm Brewing

There is a “perfect storm” brewing that could radically accelerate the use of medical banking and make it the common mechanism of health information technology exchange and financing. This acceleration could happen concurrently in the private and public health insurance markets. In this case, the perfect storm consists of three powerful forces that appear to be on a collision course. First, there is the specter of health reform initiatives likely to appear between 2009 and 2012. The second factor is the desire of patients to have information on health providers and services customized to fit their needs. The third factor is that the health insurance “card” evolution may lead to financial institutions controlling the health benefit information flows through the use of

existing patient transaction platforms, such as credit card data transfer.

Health Reform Initiatives

As a political topic, health reform is not new. National health insurance was first put forth as a congressional proposal early in the twentieth century, but it is clearly on the contemporary agenda. One potential “storm warning” is a growing number of state health reform initiatives, such as the initiative in Massachusetts, and several others under discussion in California, Maryland, and Minnesota. Although they could easily be trumped by a federal health reform initiative, states could prove useful as laboratory experiments if their experiences can be sufficiently extrapolated.

Judging from the rhetoric of the 2008 presidential campaign, health reform at the federal level is also a real possibility. For many Americans, being uninsured has far greater consequences today than it did over 60 years ago, when the Truman administration perhaps came closest to enacting a national health insurance program. The largest lobby blocking national health insurance in the 1940s, 1960s, and 1970s was the American Medical Association. If physicians now see their incomes imperiled without national health insurance, perhaps the re-emergence of this issue will conclude with national health insurance for all. Generally, every cycle of renewed interest in health care reform has had some incremental improvement in coverage, with the largest being Medicare and Medicaid in 1966. Recently, the biggest difference experienced by patients since the last round of health reform in 1992 is Medicare insurance of prescription drugs to enhance quality of life, particularly for those patients with chronic diseases.

If health reform is possible in the next few years, the federal cost of the program will be weighed against the massive federal government infusion of resources to correct the macroeconomic weakness of 2008. Since wages have been largely flat since 2000, and health insurance premiums have increased well in excess of twice the rate of inflation, federal policymakers could use the IHC technology to issue direct financial stimulus to American patients as “debit cards for pharmaceuticals.” This would, of course, be a short-term stimulus effect, but it would institutionalize the use of the card and perhaps provide a federal infrastructure that banks and insurers could use after the stimulus. In the long run, health reform is likely to cost at least an additional \$100 billion per year to cover the uninsured. How it will be financed is not clear.

Medical banking could be the key to any of these health reform initiatives as an enabler of access to insurance coverage. For example, medical banking could be used to pro-

vide a data repository for health risk scores that could be used to immediately purchase an insurance policy. In addition, the application of tax credits, vouchers, employer-based coverage, or even Medicaid participation could all be accomplished as medical banking applications.

For example, assume that a state wants to enact an individual mandate for health insurance coverage. To do so, it works with one or several medical banking partners to issue IHCs through credit card services. Everyone in the state receives a card via his or her health plan, employer, Medicaid, Medicare, or social services. Eligibility for health insurance products would be coordinated by a contracted health benefits exchange service from a human resource service vendor. One of the key concerns of equity-minded state officials may be the charge per transaction, which varies by vendor.

The IHC would be used to authenticate and retrieve an actuarially validated risk score (referred to in this example as VitaRate) for an individual and/or family members to price a proposed insurance contract. In the case of the uninsured patient, providers will authenticate the need for care and qualify the patient for a state uncompensated care pool. For example, something like the Web-based Quicken Health portal opens and provides a reported risk score, as well as information on available, high quality providers—both in hospital and in outpatient (clinic) settings—that are customized to a person's condition.

Next, the portal links to some site like ehealthinsurance.com to take VitaRate quotes and allow patients to shop for guaranteed plans with premiums reviewed by a certified actuary. Employers receive notification of their employee risks and identify whether they want to exit the self-insured marketplace if sufficient risk pooling for all employees can be identified in the wider market. They will use their benefits consulting vendor to project their optimal strategy going forward.

At year-end, the state health department gets health care quality and efficiency reports by different population segments and identifies funding strategies to cover the non-Medicaid uninsured who cannot afford a commercial insurance product. This would enable the state to deliver on its promise for price and quality transparency that has been advocated by the Bush administration since 2004.

Desire for Customized Information

Like online retailing several years ago, early adopting patients are willing to trade some privacy for convenience as trust in health information networks grow. For example, Microsoft's Vault project as well as a prominent PHR initiative sponsored by AOL founder Steve Case, known as Revolution Health, may cause the cultural acceptance of

medical records available on a Web portal to be realized, as patients trade security concerns for treatment convenience (Revolution Health, current).

Control of Health Benefit Information Flows

Of course, medical banking would not be welcomed by all, even though it could lead to a net positive welfare improvement by removing the current information asymmetry hobbling the market between the provider, the insured, and the insurer. There are four substantial issues that would need to be overcome. The first is the "privacy sanctuary" claimed by the patient. The ultimate claim would be, "No one should have my information other than me, and I will not share it with anyone for any transaction." If taken to this extreme, the current system would seize up. Medical banking transactions would never be recorded because there would be no financial need for electronic financial transfer intermediation. This is likely to be an untenable position in the long run because of the existing data infrastructure in place to provide major public health insurance programs.

The key privacy question, however, is access to not only financial data but also to health data and how that access might be abused by insurers or others. If insurers and banks are to benefit from the new business model of medical banking, they must go to extraordinary lengths to certify the privacy practices of their firms. There are already safeguards today that were put in place seven years ago. For example, the consequences of leaking or abusing personal health information as outlined by HIPAA are quite severe and involve fines and jail time. The potential of abuse of medical banking information for underwriting are the same as for any personal health data. Medical banking will increase the velocity and detail of this data, but it would also have digital fingerprints that could make identification of inappropriate behavior easier to verify and prosecute.

The second issue is that medical risk rating as enabled by new and more current data from medical banking could place an unfair burden on the chronically ill. However, it should depend on how they became chronically ill. If behavior (smoking, over-eating, alcohol abuse, etc.) is the driver for illness, that person has become a moral hazard to the health insurance risk pool and should be priced appropriately. If, on the other hand, a major illness is the luck of the draw, then risk rating should create a new risk pool for unexpected circumstances—closer to the "pure" insurance models in other industries. This is precisely what happens in the Dutch health care system. Finally, premiums or out-of-pocket payments could be lowered for the chronically ill if they are taking steps to manage their illness(es).

A third issue is that a provider may argue that HIPAA

does not allow sharing information with another provider. Actually, this argument was recently weakened by the ruling that Medicare claims data for physician services would qualify for release under the Freedom of Information Act (Gerstein, 2007). While this is likely to be appealed, it highlights the sensitivity of the issue. HIPAA allows patients to own their data and convey it to whomever they want.

The fourth issue is that HIPAA may not permit insurers to release any health information regarding patients. Currently, firms such as Medstat resell de-identified claims data for analysis and for post-launch market surveillance programs of medical technology firms. If the data ultimately are owned by the patient, and a future court case or enacted legislation indicates that data cannot be commercially used without a patient's permission, there will be significant repercussions in the U.S. market. For example, the use of such data found the relationship between Vioxx and increased cardiac event risk. The recent ruling allowing access to Medicare data could easily be extended to other insurers as well, if they are providing insurance as part of a government-financed health insurance program tied to health reform initiatives.

9. Conclusion

Medical banking, if widespread, could break the control of health data by providers and insurers. In many major metropolitan communities and certainly all rural communities, there are fewer than a handful of hospitals and insurers in competition with each other and they do not, with very rare exception, exchange data. The data necessary to gauge the performance of these institutions is not shared comprehensively and not at the patient level, as described above. In effect, this data monopoly provides genuine information asymmetry between providers and insurers and their patient clients. Due to this organizational control, the lack of data-sharing arrangements for clinical data that is already in a digital format is an information bottleneck that can literally kill patients.

The significance of the new medical banking technology is that its development is based upon a currently accepted form of information technology, insurance payment transaction processing. It provides a platform that links data across all sites of care without a command-and-control integrated delivery system, thus creating the information flow necessary for a high performance medical industry. But, it will not be sufficient without widespread acceptance and wise use of the information by patients, providers, and financial intermediaries. Looking into the future, medical banking may be one of only a handful of disruptive innovations with the chance to seriously change the health care marketplace for a net societal welfare gain. ■

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