The Impact of Information Technology on Managed Care Pharmacy: Today and Tomorrow

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SUMMARY

Understanding the use of health information technology (HIT) and its implications is crucial for the future of managed care pharmacy. Information is the cornerstone of providing and managing care, and the ability to exchange data is easier and more complicated than ever before. In this commentary, a subset of the Academy of Managed Care Pharmacy Healthcare Information Technology Advisory Council addresses how HIT supports managed care today and its anticipated evolution, with a focus on quality, patient safety, communication, and efficiency. Among the tools and functions reviewed are electronic health records, electronic prescribing, health information exchange, electronic prior authorization, pharmacists as care team members, formularies, prescription drug abuse, and policy levers to address these issues.

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In health care, there is a silent and often unrecognized dependency on health information technology (HIT). It underlies every element of managed care pharmacy, from payers managing a pharmacy benefit through the provision of medication therapy management (MTM) and innovative programs that deliver quality pharmaceutical care to providers involved in direct patient care. It is also redefining how key stakeholders in medication management communicate with each other.

This commentary describes how managed care pharmacy uses HIT today and how that will evolve in the near future. It examines how information is shared among managed care programs, providers, sponsors, government, and members, facilitating more informed decision making and enhancing productivity and efficiency. It also presents challenges and opportunities for moving forward. These insights were identified by a subset of the Academy of Managed Care Pharmacy (AMCP) Healthcare Information Technology Advisory Council, whose role is to advise AMCP membership on the role of HIT in managed care pharmacy and who believes that for HIT to continue to serve managed care pharmacy, AMCP must be involved in its development.

📕 HIT in Managed Care Pharmacy Today

Managed care pharmacy currently employs many essential HIT tools including pharmacy claims processing, electronic prescribing (e-prescribing), computerized physician order entry (CPOE), and electronic health records (EHRs).¹

Pharmacy Claims Processing

Pharmacies began to make the technology leap from paper claims to real-time claims adjudication with the National

Council for Prescription Drug Programs' (NCPDP) creation of the pharmacy universal claim form in 1977 and rollout, 11 years later, of the NCPDP Telecommunication Standard Version 1.0. Prospective drug utilization review (PDUR)-regulated by Medicaid in January 1993-then enabled pharmacists to receive real-time adverse drug event alerts when a prescription claim violates a pre-established criterion for appropriate drug use. The current NCPDP Telecommunications Standard (vD.0) supports over 20 transaction functions and facilitates the exchange of over 4 billion real-time pharmacy claims with such speed and simplicity that most participants do not realize they are using sophisticated HIT.² Unlike medical claims that are still predominantly submitted in "batches" over the course of days or even weeks, the vast majority of pharmacy claims today are processed and adjudicated in a matter of few seconds through data centers that maintain high availability, such as those of Emdeon and RelayHealth-2 providers of health information exchange services.

E-prescribing and CPOE

The expanded influence of HIT is evident in many areas of managed care today, with the expanded adoption of e-prescribing and medication orders that are increasingly integrated in EHRs.³ Although the functionality to prescribe medications electronically has been available for decades, it was primarily in the acute care setting until 2006. While the ability to order medications has continued to expand in hospitals, the ability to electronically write and transmit prescriptions in the ambulatory setting is now mainstream and becoming the standard of care. At its core, this function eliminates misinterpretation of handwriting, reduces the need to rekey information and the corresponding possibility of error, and improves the transmission process. Most e-prescribing and CPOE solutions have incorporated formularies, providing complementary clinical and economic decision support, which provide additional quality and financial value. According to Surescripts, a leading network providing prescription transmission services, there were over 1 billion prescriptions sent electronically in 2013. Nearly three-quarters (73%) of office-based physicians are e-prescribing, and nearly all retail pharmacies are wired to receive e-prescriptions, providing meaningful value to managed care pharmacy.4 Over a 7-year period (2005-2012), a Michigan coalition of General Motors, Ford Motor Company, Chrysler, Blue Cross Blue Shield of Michigan, the Health Alliance Plan, Express Scripts, CVS Caremark, and Catamaran found that e-prescribing saved stakeholders \$119 million in drug costs and \$11 million from avoided hospitalizations.⁵

Electronic Health Records (EHRs)

An EHR is a systematic collection of electronic health information about an individual patient or population⁶ that is increasingly capable of being shared across different health care settings. EHRs may include a range of data, including demographics, medical history, medications and allergies, immunization status, laboratory test results, radiology images, vital signs, personal statistics such as age and weight, and billing information. Designed to represent data that accurately captures the state of the patient at all times, it allows an entire patient history to be viewed without the need to track down the patient's previous medical records and assists in ensuring that data are accessible, accurate, appropriate, and legible. In 2013, about three-quarters of physicians had adopted EHRs due in part to federal incentive programs.7 The effect of this level of adoption is promising for managed care. In a study conducted from 2004 to 2009, Kaiser found a statistically significant decrease in emergency department (ED) visits (28.8 per 1,000) and hospitalizations among diabetes patients whose physicians used its EHR.⁸ The next step in developing EHRs is to connect disparate EHRs into health information exchanges (HIEs).

Developing Areas for HIT in Managed Care Pharmacy

Advances in HIT are creating new opportunities for managed care pharmacy to improve the efficiency and quality of health care. HIT and HIEs are creating new roles and responsibilities for managed care pharmacists. HIT will facilitate critical functions, such as obtaining prior authorization to ensure that patients receive medications that are safe, appropriate, and cost-effective. Further progress will enable use of HIT to identify and reverse the rise in prescription drug abuse. New forms of HIT, such as telehealth and mobile health, will be adopted by managed care pharmacists and patients and will reduce costs, improve outcomes, and engage patients in their care.

Health Information Exchanges (HIEs)

HIEs will knit together unrelated information sources to provide health care professionals with a more comprehensive view of a patient's medical information. This is needed to connect hospitals, providers, payers, and pharmacies to effectively and efficiently collect and share clinical, pharmacy, and administrative data. HIE also provides the means to communicate interventions performed by pharmacists, such as medication counseling, to other providers and patients. There are nearly 300 HIEs in the United States that enable the electronic sharing of health-related information. One-half of the nation's hospitals are now participating in a regional, state, or private HIE, and 71% plan to invest in technology to ensure their connectivity to HIEs in the next 2 years.⁹ Furthermore, nearly one-half of the nation's physicians plan to join an HIE.

The benefits of managed care involvement in HIE are plentiful. They include preventing avoidable admissions; simplifying and streamlining drug and medical authorizations; improving quality of information and streamlined distribution of reporting for quality improvement programs; reducing avoidable service utilization and costs associated with ED visits; and simplifying and streamlining the flow and presentation of information in an EHR, thereby reducing the time spent interpreting data from a variety of sources.¹⁰ There are several examples of payer participation in HIEs. A noteworthy example is in Nebraska, where Coventry and Blue Cross Blue Shield of Nebraska (BCBSNE) are participating in the Nebraska Health Information Initiative (NEHII). NEHII's area of focus is to lower costs, improve timeliness and reliability, and mitigate security risks associated with the exchange of clinical data via facsimile and paper-based methods for medical and drug authorization and care management activities.¹¹ One of their programs provides external medication history to clinicians during the medication reconciliation process at transitions of care. BCBSNE provided the seed money and actively engaged in governance, business planning, and construction of infrastructure. Health plans currently pay a permember-per-year fee to the HIE.

HIT-Enabled Pharmacist Involvement in Team Care

The rise of new integrated approaches to the delivery of care such as accountable care organizations (ACOs) and patientcentered medical homes—will create new roles and responsibilities for managed care pharmacists. The result: increased care coordination facilitated by HIT and a robust HIE infrastructure.

For example, pharmacists will play key roles in the care team, which will be facilitated by HIT. According to an AMCP report, studies have demonstrated that pharmacists participating in team-based care models have made positive contributions to patient care and safe medication use with the help of HIT.12 Recently, California passed legislation that would expand this access to participation in care teams for pharmacists in an effort to help address shortages among other health care professions.¹³ As a clinical expert working as part of an interdisciplinary team, pharmacists can assess whether medication use is contributing to unwanted effects and can help achieve desired outcomes from medication use. Ideally, pharmacists will be considered "eligible providers" and thus entitled to additional compensation if meaningful use metrics are achieved.¹⁴ The pharmacist's role in patient-centered team-based care can be enhanced by integration of prescription information with other sources of clinical information.¹⁵ These sources include EHRs, disease registries, and patients themselves, who can access and provide data through Web portals, personal health records, and mobile health applications. Electronic exchange of these data through a robust HIE infrastructure will be essential.

The primary care team may be in the best position to coordinate a patient's care, but often it will need information from other providers, including ambulatory providers. This need for coordination and data sharing will lead to increased reliance on EHRs and HIEs in managed care organizations—for e-prescribing, patient care, and to prevent readmissions. These capabilities will put managed care pharmacists in a better position to work with their patients and care team to make informed decisions about medication therapy options.¹⁶

Pharmacists in managed care arrangements also will play a vital role in their organizations by leveraging HIT to provide patient care services and MTM. This includes comprehensive medication reviews, medication reconciliation, drug utilization review, ordering and reviewing lab tests, immunizations, drug-dosage adjustments, and identifying gaps in care.¹⁷ These programs are essential to care coordination by improving medication adherence, managing where and when care is delivered, and improving patient outcomes. Pharmacists have been providing MTM services for Medicare patients, and the model is being expanded to include similar services for non-Medicare patients. Some clinics are expanding the services to a commercial population, offering medication reconciliation postdischarge.

Electronic Prior Authorization

Prior authorization (PA) involves getting permission from the patient's health insurer before a medication therapy can begin. It is a complex, multistep process, which many view as a necessary part of the health care system to help ensure that patients receive medication therapies that are safe, appropriate, and cost-effective. Going forward, PA will become an even bigger part of managed care pharmacists' workflow, and newer tools, such as electronic prior authorization (ePA) submission, will be an essential workplace tool. Factors influencing the adoption of ePA include labor costs, workflow productivity and efficiency, and enhanced performance metrics and quality measurements. Plans are expected to require more PAs in general and for the specialty medications needed by increasing numbers of the elderly and chronically ill patients that will be in their panels. Growth in spending on specialty drugs is far outpacing spending on traditional drugs, and many new specialty pharmaceuticals are in the pipeline. The 2013 Express Scripts Drug Trend Report projects that specialty drug spending will jump by 67% by 2015, and nearly half of all prescription drug sales will be for specialty medications by 2016.18

In the future, managed care pharmacists increasingly will be moving away from yesterday's phone-fax-paper processes toward ePA. At the point of prescribing, ePA will create value for pharmacies by eliminating the responsibility of the pharmacist to facilitate the PA process. This will allow pharmacists to focus on patients and revenue-generating activities. In addition, ePA will help PAs get approved more quickly, thus helping to reduce abandoned prescriptions due to patient frustration with the process, the number of rejected claims, and increase patient satisfaction. HIT can also enhance the ability to comply with the U.S. Food and Drug Administration's (FDA) Risk Evaluation and Mitigation Strategies (REMS), which are needed for many specialty medications.¹⁹ REMS are structured plans to manage specific risks of drugs that are effective but associated with known or potential risks, such as death or injury. REMS help the FDA, drug manufacturers, and prescribers make sure that the benefits of such drugs outweigh their risks.

The changes in PA will be facilitated by the availability of ePA standard transactions. NCPDP has developed a new ePA standard transaction for products covered by patients' pharmacy benefits. Based on SCRIPT—named by the Medicare Drug Improvement and Modernization Act as the standard for e-prescribing—ePA is envisioned to occur during the e-prescribing process. The new transaction allows the provider to request a PA question set from the payer, return the answers, and receive a response, all electronically (potentially in near real time). Questions may be customized, depending on the patient and the medication involved, and clinical attachments, such as subsets of the medical record, also are supported. With the widespread adoption of EHR technology, much of the information to be exchanged can be system-driven, reducing the burden of manually entering and reviewing the data.

In addition, ePA will be required increasingly by states. They have recognized the value of an ePA process and are moving forward by statute and regulation. For example, Minnesota Laws, Chapter 336, Sec. 5, requires that "no later than January 1, 2016, drug prior authorization requests must be accessible and submitted by health care providers, and accepted by group purchasers, electronically through secure electronic transmissions. Facsimile shall not be considered electronic transmission."²⁰ In the short term, many states are considering use of a standardized PA form, which can be digitized later as standards and interoperability adoption increase.

Get Ready for e-Health

Telehealth and mobile health (m-health) are rapidly picking up traction in today's health care environment.^{21,22} Growth in these areas will be partially driven by the expansion of the number of insured individuals and the limited number of health care providers available to meet the need. The impact will increasingly be felt by managed care and managed care pharmacy as ways to enable patient visits, consultations, medication adherence, and remote monitoring. This is especially important for the elderly and chronically ill-key populations for many managed care organizations, such as Medicaid managed care and Medicare ACOs. Telehealth patients in the United States are expected to rise nearly 6-fold by 2017, and telehealth revenue is set to rise to \$707.9 million in 2017.23 The impact is already being felt through lower costs and fewer hospitalizations and readmissions.²⁴ A study conducted for California and its Medicaid program, Medi-Cal, concluded that telemedicine used for "home monitoring for chronic diseases [such as] heart failure and diabetes...has the potential to produce savings to the Medi-Cal program of as much as several hundred million dollars annually."25 It reported a 42% reduction in costs related to heart failure care and a 9% reduction in costs related to diabetes care.

At the same time, m-health applications (i.e., "apps") are skyrocketing—mostly because apps and mobile devices empower consumers to take charge of their own treatment and create more effective communications with providers and pharmacists, which will help bring down costs.²⁶ There are already 100,000 health applications available in app stores, and the top 10 m-health applications are expected to generate up to 4 million free and 300,000 paid daily downloads.²⁷

What does this mean for managed care pharmacy? Both telehealth and m-health hold opportunities to provide highquality pharmacy services and follow-up care as well as engage patients. For example, telehealth consultations may be carried out by managed care pharmacists through clinical software in the cloud.²⁸ This kind of interaction may be especially useful in rural areas and for homebound, chronically ill patients. These technologies can help lower costs by facilitating the delivery of care and connecting people to their health care providers.²⁹ As plans increase their membership among a younger demographic, they will also demand the same access to services via technology as they are accustomed to receiving from other industries.

M-health apps can also help patients order medication refills and inform the care process by electronically providing information on their regimens and clinical status. Patients can track their own medication administration activity, similar to the inpatient medication administration record, as well as tracking physical activity and nutrition information. M-health can provide tools to help patients manage their care and improve medication adherence.²⁸ Similarly, m-health can be a tool for managed care pharmacists to establish relationships with patients and educate them on the importance of medication adherence. Such technology-enabled interactions can make a positive impact on patient outcomes.³⁰ For example, alerts can be pushed out to patients to schedule visits and lab tests and to remind them to take particular medications or alert them to potential interactions.

Pharmacists will be able to use m-health in their day-to-day operations. Apps have been developed for drug references, clinical references, medical calculators, laboratory references, news and continuing medical education, and productivity. Having information at their fingertips can improve their relationships with patients and other members of the care team.

Addressing Prescription Drug Abuse

Despite progress during the last several years, prescription drug abuse and fraud remain significant problems for all health plans and providers. The Centers for Disease Control and Prevention has declared prescription drug abuse a national epidemic that costs 20,000 lives and \$72 billion dollars a year.³¹ More than 2.4 million people were considered opioid abusers in 2010. The number is growing, particularly among the elderly. Statistics show that seniors account for an increasing proportion of unintentional substance abusers, and they are a major population served by managed care pharmacists.³²

Increasingly, HIT is being used innovatively to address substance abuse and drug diversion. For example, e-prescribing can help clinicians recognize substance abuse through medication history checks, which show controlled and noncontrolled medications that were filled by the patient. E-prescribing systems, as well as pharmacy systems, can also flag potentially deadly prescription errors and drug interactions related to opioid use, thus, preventing accidental deaths and overdoses. Renewal request monitoring can help flag abuse and diversion.³³ In addition, as of June 2013, 47 states have implemented a prescription drug monitoring program (PDMP).³⁴ The typical PDMP program is voluntary for prescribers and consists of electronic databases that collect, monitor, and analyze prescribing and dispensing data sent electronically from pharmacies and dispensing practitioners. Massachusetts, New York, and Vermont, however, now require that prescribers check their PDMP state databases prior to prescribing controlled medications. New York was the first state to mandate that prescribers consult a PMDP prior to prescribing Schedule II, III, and IV controlled substances.

Data Analytics

One of today's biggest trends is "big data," that is, enhanced data analytics using new tools, more sophisticated analysis techniques, and the sharing of expanded datasets from multiple sources beyond traditional claims data. To be sure, pharmacy systems have been retrospectively mining their own claims data for years. While that will be important, pharmacies in the future will be looking to enhanced data analytics and data sharing in 3 areas: improved patient care; better benefit management; and fighting fraud, waste, and abuse.

One way to improve care and patient outcomes is to put the results of data analytics into the hands of pharmacists and other providers at the point of care. Data from EHRs-including those connected to an HIE with access to other EHRs and claims data-will provide the basis for new work flows and actionable information at the point of care. The result: better care coordination by "pulling" the patient into the system before conditions worsen, become even more costly, or potentially adverse events occur, such as an emergency room visit or deadly drug interactions. As an example, a pharmacy team associated with the University of Massachusetts' Medical School analyzed data elements from various sources-including pharmacy records and medical claims-to identify patterns that identify prescriber outliers, evaluate member outcomes, and quantify hospitalization rates.³⁵ Results of the analyses also are used to develop recommendations that improve patient outcomes and reduce short- and long-term health care costs, such as listing medication classes where generic usage can be increased, predicting the effect of formulary restrictions on cost savings, and assessing diagnosis data specific to the member population.³⁶

Analysis of data from multiple sources and platforms can provide more immediately actionable information beyond what can be determined from pharmacy claims analysis alone. In 1 mail order pharmacy, for example, hundreds of thousands of customer service logs were analyzed. Results detected a spike in calls between days 75 and 105 of some patients' medication regimens. Looking closer, analysts found that the calls correlated with refill dates, and they discovered that some customers were calling for refills because their medications were taken with variable dosages. To reduce the number of lengthy customer service calls and expensive "emergency" refills and rush orders, the pharmacy began asking patients how many pills they had remaining at day 30 and day 60, so that they could better predict when the medication would run out.³⁷ Express Scripts is taking a big data approach to identify consistent patterns and tailor the most effective interventions for those patients most at risk for medication nonadherence.³⁸

At the same time, electronic sharing of pharmacy claims data, coupled with real-time submission by pharmacies, creates an opportunity for analytics to become an effective tool for pharmacy benefit management. For example, utilization trends can be quickly identified, which can lead to the development of clinical strategies and follow-up services that create value for clients.³⁹ These might include formulary management, medication therapy management, and clinical decision support, all of which are enabled by HIT.

Pharmacies also are using large-scale data analytics to identify individual cases of blatant abuse. Sophisticated algorithms and other techniques can be employed to examine data from multiple sources and highlight suspect activity or patterns of abuse. Express Scripts' analytical models helped identify a husband-and-wife team that had obtained approximately 7,000 pills for controlled substances—a total worth of about \$150,000—by using 17 doctors and pharmacies in different cities. They had signed multiple exclusivity contracts with doctors, stating they would only get narcotics prescriptions from those doctors.⁴⁰

Challenges Presented by HIT in Managed Care

Despite the growing business imperative for the routine sharing of health information between multiple stakeholders in the managed care environment, gaps and challenges remain.

Interoperability

Interoperability describes the extent to which systems and devices can exchange data and interpret that shared data.⁴¹ In terms of connectivity, nursing homes, home health providers, and other postacute care and community-based providers lag behind other sites of care. Increased interoperability also will be challenging given the expected rise of Medicaid managed care organizations, since 85% of Medicaid enrollees will be in managed care organizations by 2020.⁴² Medicaid health IT systems tend to lag behind those in the private sector, which could potentially hinder the accessibility and sharing of necessary pharmacy and related clinical data as patients move in and out of Medicaid managed care plans.

Standards and certified vendor solutions are needed. A particular need is the development of standards and enhancements to manage specialty prescriptions electronically, which NCPDP has begun to address. While nearly all retail and institutional pharmacies can receive and process e-prescriptions, specialty pharmacies are behind because of the additional information needed to support dispensing the medication (and related supplies and services). The lack of e-prescription connectivity of specialty pharmacies has implications for costs, quality, and patient safety. In fact, specialty medications are a significant and growing part of care regimens and drug spend. These costs in turn impact the financial success and risk sharing for ACOs and other managed care systems. In addition, recent privacy violations have caused justifiable concerns about widespread sharing of protected health care information (PHI). While safeguards for PHI are covered under HIPAA, it will become increasingly important for covered entities to implement ongoing measures to help safeguard patient information as clinical information exchange becomes pervasive.

Formulary Data Quality and System Support

Although e-prescribing is becoming widespread, there appears to be limited use of its advanced features by physicians. These include identifying potential drug interactions and obtaining patient formulary information.43 Today, the availability and usefulness of medication history and formulary data is limited, which causes prescribers to question its reliability. Physicians in 1 study reviewed the formulary data only occasionally. Respondents observed that formulary information was inconsistently available, out-of-date, or inaccurate. Some respondents expressed a desire to see additional information, such as a patient's actual copayment amounts, formulary alternatives for off-formulary medications, or whether a medication requires PA. More than two-thirds of the practices responding believed that the volume of formulary-related pharmacy callbacks was still burdensome because their e-prescribing solutions did not alert them to the need for PAs after the e-prescriptions were sent, resulting in inefficiencies for both parties.44

Alert Fatigue

Part of the challenge of increasing use of available information, including clinical decision support (CDS), is alert fatigue. Alert fatigue is a well-known problem where a continuing large volume of notifications lead the user to become insensitive to the information presented.⁴⁵ Some users or implementations will forgo full activation of CDS, or set alert thresholds high, to reduce the potential for alert fatigue. Balancing CDS information versus alert fatigue and patient safety is one of the conundrums of utilizing technology in health care.

Policy Levers Are Key

The federal government is aware of these issues and, according to the Office of the National Coordinator for HIT (ONC), will use policy levers to help address them.⁴⁶ One possibility is the integration of HIT into federal payment policies. For example, the use of interoperable EHR systems to share information could eventually become part of reimbursement criteria in the Medicare and Medicaid programs.⁴⁷ HIT adoption has been furthered by the Meaningful Use incentive program. While the incentives may not be available in the future because of budgetary constraints, requirements for HIT adoption and use are likely to continue. Meaningful Use Stage 2 is heavy on HIE requirements, while Stage 3 is expected to include requirements for advanced HIE and increased clinical detail.⁴⁸ At some point in the near future, the federal government will be asked to issue guidance concerning the use of NCPDP's new ePA standard transaction.

To promote increased interoperability, the ONC is convening the HIT community to prioritize HIT challenges and subsequently enable development and harmonization of related standards, specifications, and implementation guidance.⁴⁹ Moreover, the ONC has developed a national HIE strategy that will help frame policy discussions and drive initiatives with federal backing.

Efforts will continue by the private sector and public/private initiatives to address connectivity and interoperability issues. An example is the CommonWell Health Alliance, which is a group of health care stakeholders that have banded together to define and promote a national infrastructure for interoperability with common standards and policies for EHRs.⁵⁰ Quest Diagnostics and Surescripts recently announced an agreement to pioneer the formation of an integrated service to make laboratory and prescription information broadly and easily accessible to prescribers. Standards development organizations will continue to create new technical standards and specifications for data exchange and interoperability.

On the state level, legislatures and boards of pharmacy are expected to be addressing HIT-related issues. There are gaps in e-prescribing of controlled substance (EPCS) laws and regulations at the state level that are likely to be addressed. As of the publication of this article, EPCS is legal in 48 states and the District of Columbia.⁴ Clarity and synergy in state laws would eliminate a barrier to EPCS adoption with the added benefits of improving prescribers' workflows, protecting against drug diversion, and increasing patient safety.

Change can be difficult. The successful transition to electronic systems and workflows must be understood, championed, and managed. Managed care organizations must support development and use of HIT and HIE, including in their pharmacies. Pharmacists must be included as leaders championing and motivating staff to participate in the change process and to understand benefits in implementations and workflows.

Conclusions

Managed care pharmacy professionals must understand the value and effective use of HIT solutions, if they are to have an impact on how the future develops. Those who do not recognize and prepare for these changes will not only miss an opportunity, but will be at a competitive disadvantage in the marketplace. Managed care pharmacy professionals will look to AMCP to innovate and champion the development of HIT applications and disseminate their benefits—all of which are a value-add to the membership.

As such, we urge AMCP to maintain the Healthcare Information Technology Advisory Council's charter, which expired early in 2014. Without the assistance of the Advisory Council, AMCP leaders and members will have to ferret out such information on their own and try to interpret it in the context of their own business models and solutions. This is a difficult and daunting task, which can lead to costly mistakes in strategic positioning, HIT investments, and patient care.

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DISCLOSURES

The authors are members of a subgroup of the AMCP Healthcare Information Technology Advisory Council. They declare no other potential conflicts of interest.

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