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E-PRESCRIBING
AND ITS EXPANDING
ROLE IN HEALTHCARE

Authors: Walt Zywiak and Melissa Harmon

Electronic prescribing **synonyms:**

- E-prescribing
- Eprescribing
- Escribing
- eRx

"E-prescribing means the transmission using electronic media, of prescription or prescription-related information between a prescriber, dispenser, pharmacy benefit manager, or health plan, either directly or through an intermediary, including an e-prescribing network. E-prescribing includes, but is not limited to, two-way transmissions between the point of care and the dispenser."[2]

CMS definition (since November, 2005)

Introduction

Electronic prescribing is about to become a significant preoccupation of healthcare providers, payers and pharmacies for the next several years (through at least 2012). The reason is simple: payer, state and other groups that have piloted and studied e-prescribing for the past several years are convinced that e-prescribing programs are ready to deliver significant benefits to healthcare, and have begun campaigns to promote implementation.

CMS is taking the lead with its Medicare claims payment incentive program, which is structured to encourage early adoption by offering bonuses to e-prescribing providers beginning in 2009, and by 2012 introducing penalties for non-compliance (based on MIPPA — the Medicare Improvements for Patients and Providers Act of 2008). However, other payers and state healthcare agencies are also participating with similar incentives, legislation, and assistance programs that include grants, subsidies and loans.

Providers are less enthusiastic. Their concerns are the associated costs and the impacts e-prescribing will have on their practices. Specifically, they are voicing concerns about incentive program certification requirements (being onerous and/or difficult to manage), the costs and challenges of acquiring and managing systems to meet program prerequisites, and the possibility that programs primarily benefit payers and pharmacies at their expense. They also have to make difficult decisions such as whether to temporarily implement standalone e-prescribing systems, upgrade legacy Electronic Health Record (EHR) systems without e-prescribing modules, or wait for or convert to fully certified and functional EHR systems. Provider resistance to e-prescribing is an important barrier to overcome. As put by a group ePrescribe Florida consulted for an assessment, "[unless providers receive adequate technical and financial support], eprescribing will be a long slow grind."[1]

This paper discusses:

- What e-prescribing is, including major functions
- CMS and other incentive programs, including prerequisites
- Resources
- Keys to success, including barriers and best practices

E-Prescribing — What it is

Functions: At its core, e-prescribing currently promoted by CMS and other organizations is a process by which healthcare providers (prescribers) use electronic devices to place patient medication orders and electronically transmit those orders to commercial pharmacies where they are filled and picked up by or delivered to patients. By itself, that process is a valuable source of efficiency and patient convenience. However, most current programs and pilots also require at least some, if not all, of the following additional functions (to provide additional benefits):

- **Benefits data access:** that prescribers use to check and document patient medication coverage information such as co-payments and formulary information. CMS requires access to information about lower cost alternatives when available.

- **Medication history access:** to help prescribers avoid duplicate orders, drug interactions and drug-seeking behaviors (and satisfy medication list guidelines such as required for Joint Commission accreditation).
- **Decision support:** including at a minimum, drug/drug, drug/allergy and drug/food contraindication alerts or information.
- **Prescription fill status notification:** messages indicating that patients have or have not picked up prescribed medications.
- **Refill request routing:** that pharmacies use to send refill reminders/requests to prescribers for approval and return for processing.

Other functions often built into programs include options to cancel, modify and update statuses of prescription orders.

Components: E-prescribing programs require the following components:

- **Prescriber systems:** which prescribers use to create and transmit electronic medication orders as well as exchange and review related information and alerts.
- **Payer and pharmacy systems:** which respond to requests from, and exchange data with, prescriber systems, and in the case of pharmacy systems are used to access (or transcribe) the order for processing, notify the prescriber that the prescription has or has not been picked up, and request refills.
- **The Internet:** for passing the information between and among the systems and/or system users.

Prescriber Systems: Prescriber systems are available in two varieties: EHR systems configured with e-prescribing modules and standalone e-prescribing systems (some hospitals also enable e-prescribing via CPOE systems). The major distinction between EHR and standalone systems is that EHRs build e-prescribing into the visit or other encounter management/documentation process and include access to complete patient records, while standalone systems are just that — systems that only provide e-prescribing functions (and require reviewing clinical information from other sources). Otherwise, both fully support e-prescribing.

Most EHR systems are client-server or browser applications operating on PC workstations. Standalone e-prescribing systems almost always give prescribers the choice of using internet browsers or hand-held devices. In addition to integrating e-prescribing into the overall care process and patient record access (because they have access to more information), EHR systems can also be used to deliver more advanced medication-related clinical decision support, such as alerts and recommendations based on tests ordered, results, diagnoses and symptoms.

Standalone systems, on the other hand, are quicker, easier and less expensive to purchase and implement. The vision of many e-prescribing promoters is that prescribers who adopt standalone e-prescribing will quickly realize the value of and convert to fully functional EHRs.

Networks, including the Internet, HIE networks, and/or SureScripts-RxHub: Prescriber systems connect to PBM (pharmacy benefit manager) payer and pharmacy systems and users via the Internet. Most commercial prescriber systems are designed to exchange e-prescribing information via SureScripts-RxHub networks; some e-prescribing programs choose to link prescriber systems directly to SureScripts-RxHub, while others use intervening RHIO (regional health information organization) or private HIE (health information exchange) networks.

SureScripts-RxHub operates nationwide networks of PBM/payer and pharmacy links, and manages routing of data to and from those sites. Its networks include PBMs and payers representing 200 million patients in the U.S., and more than 70 percent of community pharmacies (97 percent of pharmacy chain stores).[3] Payer alternatives (practical when operating within limited geographical areas) are RHIO and other HIE networks and direct interfaces; pharmacies without active links can receive e-prescribing orders as computer-generated faxes.

PBM/payer and Pharmacy Systems: Most PBMs/health plans and many pharmacies support true end-to-end electronic information exchange (such as direct prescriber system to pharmacy system prescription transmission and access) without manual intervention. However, not all electronic medication orders to pharmacies are processed as end-to-end electronic transactions. For example, some pharmacies report that some or all prescription orders are printed (or displayed on side-by-side computer monitors) for manual transcription/entry into pharmacy systems.[4] In addition, most prescriber systems can be and are used to send computer-generated facsimile prescriptions to pharmacies (for the purpose of adjudicating MIPPA awards, CMS announced in November, 2008 that computer-generated faxes to pharmacies not equipped to receive true electronically transmitted prescriptions will qualify as e-prescriptions until 2012[5]).

How these functions and components are implemented and managed can significantly impact e-prescribing programs, because when they are not available, do not work or are inconvenient for prescribers, they become barriers to provider adoption and program success. *Figure 1* outlines e-prescribing functions, components and information exchange paths.
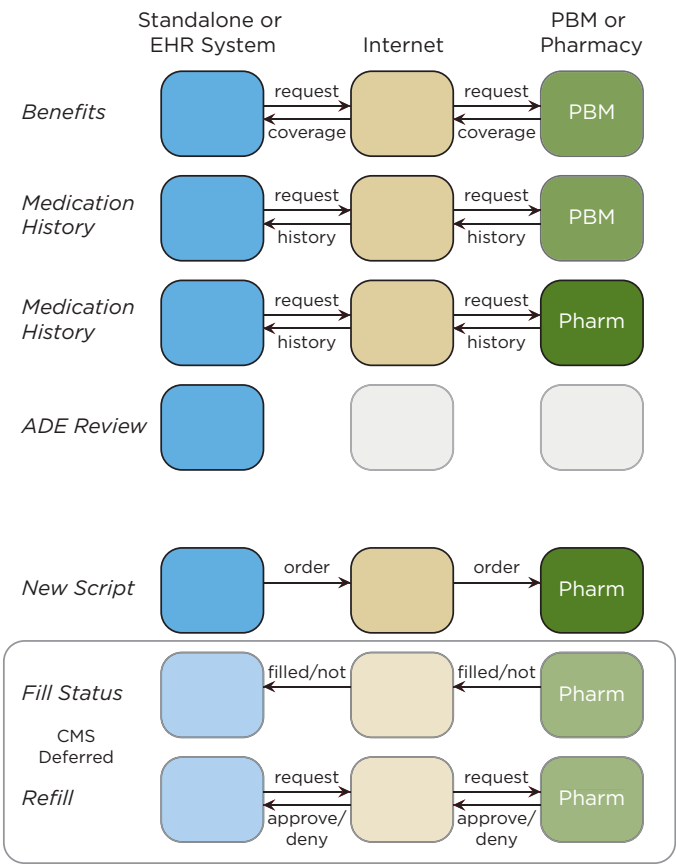
Figure 1. E-prescribing functions, components and information exchange paths. Notes:

- Not all commercial e-prescribing programs include all functions. Most commonly excluded are fill status, medication history, benefits and formulary transmission.[6]

- Benefits include lower cost alternatives and formulary information.

- To qualify for 2009 CMS incentive payments, program must provide all non-shaded functions, shaded functions currently are on hold.

- Prescribers often avoid using available functions if they are clumsy or time-consuming, such as medication history request and review.

- Internet options include using SureScripts-RxHub and/or HIE networks to facilitate interfacing and information routing.

SureScripts-RxHub

History: SureScripts-RxHub is the product of the July, 2008 merger of the following two previously independent business entities:

- **SureScripts:** founded in 2001 by the National Association of Chain Drug Stores (NACDS) and the National Community Pharmacists Association (NCPA), and operates a network of more than 70 percent of the nation's 57,000 community pharmacies.

- **RxHub:** also founded in 2001 by the three largest pharmacy benefit managers (PBMs) and operates a similar network of PBM/payer organizations managing medication coverage for more than 200 million patients in the U.S.

While business operations have been merged and SureScripts-RxHub plans to physically merge networks, the two networks currently continue operating independently. One major e-prescribing consequence of independent operation is separate medication histories (one from pharmacies and another from PBMs) that prescribers have to visually or manually consolidate. SureScripts-RxHub has expressed interest in developing tools to consolidate the histories, but no specific plans have been announced.

E-Prescribing — Incentive Programs

CMS E-prescribing incentives: The prominent player in e-prescribing incentives is CMS. Beginning in 2009, the MIPPA-based program makes providers who e-prescribe eligible for Medicare claims payment bonuses. Bonus amounts will decrease in subsequent years and gradually be replaced by penalties as outlined in the following tables:

- Bonuses:

2009 – 2010:	2.0 percent
2011 – 2012:	1.0 percent
2013:	0.5 percent

- Penalties:

2012:	1.0 percent
2013:	1.5 percent
2014 (and beyond):	2.0 percent[7]

To be eligible for the CMS e-prescribing bonus in 2009 providers must:

- Use a CMS-qualified e-prescribing prescriber system. A CMS-recommended starting point is SureScripts-RxHub, which publishes a list of commercial products that it certifies for functions specified (http://www.surescripts.com/get-connected.aspx?ptype=physician).[8] More specifically, to qualify for 2009 CMS incentives, the product(s) used must be enable users to perform the following four functions:

  1. Generate a complete active medications list, incorporating data transmitted electronically from PBMs and pharmacies if available.

  2. Select medications, electronically transmit prescriptions to pharmacies and perform safety checks. Safety checks include information and alerts about drugs being prescribed, inappropriate doses and administration routes, potential allergic and drug/drug interactions, and general cautions.

  3. List available lower cost therapeutically-appropriate alternatives.

  4. Provide formulary or tiered formulary, patient benefits, and authorization requirements based on the patient's drug plan.[9]

- Report the availability and use of a qualified e-prescribing program for at least 50 percent of Medicare-covered encounters during the year. (Also to qualify, at least 10 percent of a provider's total allowed charges for Medicare Part B-covered services must derive from specified denominator codes.[10] These denominator codes represent services that are likely to include prescriptions, and the intent is to focus on providers most likely to prescribe. For example, ophthalmologists and other specialists whose visits primarily consist of exams are unlikely to qualify.)

- Include specified "G codes" on each Medicare encounter claim. G codes indicate that a qualified e-prescribing program was available but no medications were ordered, a qualified program was used to place medication orders, or a qualified program was available but its use was forbidden by regulations.

Other incentive programs and players: As noted in the *Introduction*, CMS does not stand alone in its efforts to promote e-prescribing. The following is just a partial list of other players, programs and efforts:

- **CMS Medicaid Pilots:** in addition to Medicare incentives, CMS has issued grants to Medicaid pilot programs now operating in seven states

- **Other payers:** including:
  - BC/BS of Massachusetts, which co-sponsors the subsidized *eRx Collaborative* e-prescribing program in Massachusetts, and in October, 2008 announced an incentive that will make e-prescribing a prerequisite for all BC/BS provider P4P (pay for performance) rewards starting in 2011 (that can amount to as much as 10 percent of reimbursement).[11]
  - BC/BS of North Carolina, which in July, 2008 announced awards to North Carolina providers and pharmacies that adopt and enable e-prescribing systems by the end of 2008.[12]
  - Aetna, which subsidizes several provider efforts, including e-prescribing pilots in New Jersey and Pennsylvania.[13]

- **State-run programs:** twenty states are supporting or operating programs, including New York and Minnesota which both offer grants and loans to interested providers, and Minnesota, which has enacted legislation requiring all providers to use fully-functional EHRs (including e-prescribing) by 2015.

- **NEPSI:** the National ePrescribing Patient Safety Initiative, which is sponsored and supported by numerous providers, payers and vendors throughout the U.S. and supplies prescriber software systems to providers at no charge.

- **Provider initiatives:** such as www.GetRxConnected.com (which is co-sponsored by provider organizations and MGMA — Medical Group Management Association).

- **Commercial pharmacy promotions:** such as the April 2008 national campaign launched by ten major pharmacy chains to raise consumer awareness (and enlist consumer help in encouraging providers to e-prescribe).[14]

- **Publications and support initiatives:** from provider and community agencies, including The Center for Improving Medication Management, the eHealth Initiative, and The State Alliance for e-Health.

E-Prescribing Benefits

While this paper's purpose is not to establish or promote the value of e-prescribing, it is important to recognize reported and predicted benefits the industry will realize from widespread e-prescribing adoption, including:

- **Improved patient safety and quality of care:** as a result of:
  - ADE (adverse drug event) alerts at the point of order
  - Increased access to medication history at the point of order
  - Reduced transcription errors
  - Real-time order transmission which eliminates or reduces patient waiting as well as having to hand-carry prescriptions
  - Patient compliance reporting and alerting that can both reduce costs and help save lives
- **Reduced costs and inefficiencies:** including:
  - Pharmacist calls to physicians for clarification
  - Orders for medications that are not formulary compliant
  - Brand name drugs that can be effectively replaced with less costly generics
  - Reduced staff time spent on refill request processing

Specific examples include the following list John Halamka, MD (CIO, BIDMC — Beth Israel Deaconess Medical Center, Boston) posted on his blog in March, 2008:*

- **Reduced MA (medical assistant) busywork:** by reducing the average number of prescription call-ins per day from 350 to 80. That reduced demand (from 3 to 0.66 FTEs) has enabled MAs to instead pilot a new check-out process, increase vital sign documentation consistency, improve charge capture timeliness and reduce exam room turnaround delays and patient waiting.
- **Improved patient satisfaction:** by reducing prescription communication delays (to pharmacies) from as many as two days to near real-time.
- **Decreased medication errors:** that result from wrong patient, wrong medication, wrong dose and other communication errors, particularly those that result when prescriptions are called-in to the pharmacy.
- **Better and easier prescription tracking:** which now requires only reviewing the EMR (as opposed to searching individual work queues for the name and telephone number of the MA who has to be phoned).

E-Prescribing — Resources

Prescriber systems: Prescribers who choose to participate have access to a variety of commercial e-prescribing software systems. In addition, serious efforts are underway to certify products. For example, CCHIT (the Certification Committee for Healthcare Information Technology) currently certifies EHR systems for e-prescribing and will begin certifying standalone e-prescribing systems in 2009.

Since one of the major provider motivations for adopting e-prescribing programs is the incentives, prescriber systems must meet minimum CMS certification requirements (see previous *Incentive Programs* section for the four current

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* John Halamka, MD, "The Impact of e-Prescribing," from Life as a HealthCare CIO, March 21, 2008, http://geekdoctor.blogspot.com/2008/03/impact-of-e-prescribing.html. Accessed December 10, 2008.

requirements). However, providers should also prepare for further future demands, such as EHR integration and other emerging certification standards.

- **Preparing for EHR integration:**
  - Practices with EHRs should determine if current systems offer certified e-prescribing modules, and if they do not, whether suitable modules can be retrofitted or the systems have to be replaced.
  - Practices selecting new or replacement EHRs should be sure the systems include, or can be equipped with, CCHIT certified e-prescribing modules.
  - Practices without EHRs or immediate plans to acquire them should look for standalone systems that can either be upgraded to an EHR (several EHR vendors sell "light" or e-prescribing-only versions of their products) or represent modest investments that can be scrapped when full EHRs are adopted.
- **Preparing for emerging standards:** while it is impossible to predict all future standards, hints are out there. Examples include:
  - Functions CMS and other pilot program sponsors have studied, but have on-hold pending resolution of technical or other issues (such as RX NORM and other standards, prior authorization management, refill request transmission, and evolving fax guidelines).
  - Functions CCHIT and other emerging certification groups are considering (such as interoperability, decision support alerting based on patient allergies and other clinical data, and portability of patient information — to new and other systems — including EHRs, which CCHIT is ultimately promoting).
  - Local requirements, such as BC/BS of Massachusetts' early adoption of the refill function (which it requires now — CMS has it on hold), its announced e-prescribing prerequisite for receipt of any P4P awards (related and un-related, and which can be as high as 10 percent) beginning in 2011, and Minnesota legislation that demands that all providers use full-function EHRs (including e-prescribing) beginning in 2015.

One other caveat to prescribers is do not assume "free" is better. As an experienced e-prescribing provider (Lou Spikol, MD, Allentown, PA) is quoted, "If free software is five times harder to use than software that comes with a price tag, you're better off picking the latter."[15]

SureScripts-RxHub: SureScripts-RxHub networks provide coverage information for approximately two-thirds of patients in the nation and links to more than 70 percent of pharmacies (92 percent of pharmacy chain stores). This access is via established, working links with PBMs, payers and pharmacies, which means the networks provide proven, immediate, easy and reliable information exchange. The access also comes with limited or no fees to providers — as SureScripts-RxHub's primary revenue source is fees from participating PBMs, payers and pharmacies.

E-prescribing programs: E-prescribing programs (such as SEMI — Southeastern Michigan e-Prescribing Initiative, ePrescribe Florida and the eRx Collaborative in Massachusetts) are often the glue that enable local e-prescribing programs to get off the ground and operate. In addition to promoting the programs, they often subsidize or offer prescriber systems and internet access at no charge, and provide prescriber support. Support is important, and includes ensuring that promoted prescriber software vendors provide hands-on support to prescribers and/or working with affiliated RHIO or other HIE networks.

HIE Networks: HIE network-based programs are particularly well positioned to provide special support programs. As Gail Fournier, CSC Partner who manages support of the MA-SHARE (Massachusetts Simplifying Healthcare Among Regional Entities) Rx Gateway program, notes, "A significant value we provide is filling gaps in e-prescribing services." Examples include adapting e-prescribing interfaces to home-grown and other EHR systems that do not include e-prescribing, developing

"When we talk to clinicians across the country, the key barrier to getting to electronic prescribing is financing."[17]

Janet Marchibroda, CEO, The eHealth Initiative

custom filters to comply with local regulations, and providing direct links to PBM/payer systems. Many HIE network vendors also offer prescriber systems that are integrated with the provider viewer (portal) or EHR included with the network.

According to John Halamka, MD, CIO of BIDMC (Beth Israel Deaconess Medical Center, Boston, which uses Rx Gateway), "Key services BIDMC and other prescribers need from eRx suppliers include not only technology (which is important) but also expertise to address workflow, vendor certification and implementation challenges that can delay eRx projects."

One other benefit from HIE networks is a framework that can be used to support traditional information exchange initiatives. For example, John Kelly, Director of IT Operations at HPHC (Harvard Pilgrim Health Care, a Boston-based health plan) explained that HPHC decided to exchange e-prescribing data with providers via MA-SHARE Rx Gateway (a local HIE) instead of SureScripts-RxHub so it could take advantage of up-to-date technology in Rx Gateway's underlying network. That technology enables HPHC to layer benefits, formulary and medication history exchanges with other information transfers. In an era when increased demand for information exchange looms on the horizon, particularly as providers transition from just e-prescribing to interoperable EHR systems, that additional capacity may play a major role.

The downside of HIE networks is additional cost. Most RHIOs and other HIE networks cover operating costs with transaction and/or other fees.

E-Prescribing — Keys to Success

Achieving widespread e-prescribing adoption within healthcare is going to require effort from players in all three involved industry segments — providers, payers and pharmacies. Despite ongoing pilot programs, grants and other support since 2001, current utilization is low — only 6 percent of prescribers used e-prescribing for orders to commercial pharmacies in 2007 (an increase to 7 percent is predicted for 2008).[16] The causes are barriers that discourage physicians and other prescribers from incorporating the process into their practices, and gaps in functionality that keep programs from reaching their full potential. The following are best practices required to overcome these barriers.

Prescriber financial support: The major complaint providers voice about pressure to adopt new technology is their costs. Per-subscriber software costs can be as much as $5,000 per year for standalone e-prescribing subscriptions and $42,000 for purchase/$9,000 per year maintenance costs for EHR systems, and software is only part of the cost. Associated costs for hardware and hardware support, internet access, network wiring, implementation and lost productivity also have to be budgeted. Providers also argue that cost/benefit ratios for implementing these systems favor payers and pharmacies over providers.

Payer, government, and other program subsidies, grants, loans, utilization awards and software giveaways go a long way toward addressing provider costs. Examples include CMS MIPPA and PQRI awards to providers who e-prescribe, similar awards from other payers (most recently BC/BS of Massachusetts), and e-prescribing software purchase subsidies and grants, such as CMS pilot Medicaid program grants in seven states, Aetna and BC/BS of North Carolina software purchase subsidies, and Minnesota, New York, and other state grant and loan programs. In addition, organizations such as NEPSI and Medco Health Solutions are distributing prescriber software and services at no cost to providers who agree to use it.

However, providers argue that existing subsidies are not enough because they do not cover all costs. The most frequently overlooked are implementation support costs (such as training and workflow re-design) and productivity losses incurred while providers and other staff learn how to use and incorporate new systems into everyday practice.

"Free is Not Cheap Enough

• Initial start up costs must be subsidized

• Additional incentives required to promote utilization"[18]

Make incentive programs easier to manage: If incentive inadequacies are not enough, providers also worry that incentive programs present their own barriers. For example, one report from MedPage Today coverage of the October 2008 CMS National E-prescribing Conference warned that:

> Collecting the 2 percent bonus promised by CMS to doctors who transmit prescriptions for their Medicare patients electronically won't be effortless … The challenges involve not only buying and using the necessary software, but also reporting your e-prescribing activity correctly to Medicare.[19]

Make prescriber systems easier and quicker to use: Prescribers have legitimate complaints about system functions and features that are clumsy and/or time-consuming. The key factor is time. Providers who are increasingly pressured to not only see more patients but also document more administrative and clinical details feel that they have almost no choice but to avoid time-consuming steps even when they are otherwise beneficial.

Improve pharmacy readiness: More than 12 times as many pharmacies as providers are e-prescribing (almost 75 percent vs. 6 percent). However, when pharmacy programs do not work as advertised (which happens enough to pose problems), patients arrive to find that supposedly electronically transmitted prescriptions not only are <u>not</u> filled and waiting, but the pharmacy also cannot find them. The major cause is prescriptions that are transmitted, but never make it to pharmacy systems — in most cases because the electronic link is interrupted with a manual transcription process, e.g., the order is faxed or printed and misplaced, or otherwise not transcribed.

Resolve technical challenges: While CMS in particular has successfully addressed numerous technical and standards issues in preparation for the Medicare incentive program, several remain. They are not preventing e-prescribing implementation and adoption but do require workarounds. Examples include unresolved prior authorization requirements and standards such as proposed *Rx Norm* medication nomenclature.

Address medication history review challenges: One of the major reasons medication histories are overlooked by ambulatory prescribers is that they are often delivered as multiple information streams that have to be visually or manually reconciled. For example, SureScripts-RxHub delivers one history from pharmacies and another from PBMs/payers. Proposed solutions are that SureScripts-RxHub, HIE networks and/or prescriber system vendors develop automated consolidation features, but to date, neither the features nor a standard technique for consolidating the data are widely available. On top of that, even reconciled medication histories are not necessarily complete. In addition to over-the-counter medications, they omit prescriptions paid as claims by non-participating PBMs, filled at non-participating pharmacies, and filled outside program-specified time windows.

Resolve DEA and other regulations that prohibit e-prescribing: The biggest current regulatory barrier to e-prescribing is the DEA (Drug Enforcement Agency) ban against e-prescribing controlled substances. Controlled substances represent approximately 20 percent of medications prescribed in the U.S., so this is a significant barrier as it requires e-prescribers to maintain and use two separate medication order processes on a regular basis. The DEA recently submitted a draft controlled substance e-prescribing policy for public comment, response to which has been criticized (because of what are perceived to be onerous process requirements) and the Agency is reconsidering the proposal.[20]

Other regulatory barriers are state and local legislation, which prohibit the electronic exchange of medication information associated with specific conditions (such as HIV or mental health), and which require local system/network filters to expunge prohibited data.

E-Prescribing — Our Recommendations

The general conclusion about the state of e-prescribing in today's healthcare industry is that while an e-prescribing infrastructure is forming and successful programs are delivering benefits, adoption has been slow. Another reality is that not all e-prescribing programs are currently operating with the full array of e-prescribing functions outlined in *Figure 1*, and in many cases where functions are available, provider utilization also is low.

Specifically, while almost every e-prescribing program enables request and receipt of patient benefits and formulary information, medication contra-indication information review, and creation/transmission of electronic medication orders:

- Not all programs are accessing medication histories for review.
- Not all prescribers who have access actually request and/or review medication histories (utilization reported at one pilot site was less than 3 percent[21]).
- Few programs "close the prescription loop" by transmitting fill status (whether the patient has (or has not) picked up the medication) from the pharmacy back to the prescriber.[22]

In addition, there are numerous "disconnects" in e-prescribing transmissions that prevent true end-to-end electronic processing of medication orders. Examples include pharmacies that receive electronic orders but have pharmacists or pharmacy technicians manually transcribe them into pharmacy systems, "electronic orders" that are actually computer-generated faxes to pharmacies, and refill requests that are phoned and faxed to provider practices. The downside of these "disconnects" is of course that they perpetuate manual transcription — one of the major error-prone practices e-prescribing is otherwise designed to eliminate.

Put more bluntly, there is still much to be done before e-prescribing becomes part of everyday healthcare delivery. Efforts we strongly recommend include:

- Continue promoting provider adoption. Two keys are provider financial incentives, and assistance with implementation and adoption (including programs with strong vendor and/or HIE network support). Ambulatory practice providers are under so much pressure to maintain and improve productivity that clear and immediate incentives and support are the motivation they need to change.
- Resolve unclear and controversial e-prescribing requirements and utilization standards. One example is fill status transmission. While listed as a function by CMS (and other programs), reports from the field are that it is rarely used and that when available providers prefer turning it off and reviewing patient compliance during subsequent visits.
- Focus on the ideal long-term e-prescribing venue, i.e., EHR-integrated prescriber systems. It is the ideal solution for providers to track medication and other histories, perform true and accurate medication reconciliation, and ultimately benefit from comprehensive medication decision support based on test, symptom and other patient record data. There is evidence that movement in this direction has actually begun. For example, a June, 2008 report co-sponsored by the eHealth Initiative and the Center for Improving Medication Management notes a shift in the ratio of standalone to EHR e-prescribing (from 95:5 percent in 2004 to a projected 40:60 percent by the end of 2008).[23] However, this ratio may change if incentive programs convince prescribers to adopt standalone systems, and it is important for all players, including providers, to focus on ultimately adopting full EHR system functionality.

"Electronic prescribing should be seen as an important step in improving patient care, with an eye toward moving to implementation of a complete EHR system."[24]

"While [clinical decision support] benefits can be obtained from standalone eRx systems, progression to (or close interoperability with) a more comprehensive electronic health record is necessary to reap the full spectrum of benefits."[25]

About the Authors

Walt Zywiak is a Principal Researcher in Emerging Practices, the applied research arm of CSC's Global Healthcare Sector. Melissa Harmon is a Research Analyst in the Emerging Practices group at CSC.

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CSC

266 Second Avenue
Waltham, Massachusetts 02451
United States
+1.800.272.0018

Worldwide CSC Headquarters

The Americas
3170 Fairview Park Drive
Falls Church, Virginia 22042
United States
+1.703.876.1000

Europe, Middle East, Africa
Royal Pavilion
Wellesley Road
Aldershot, Hampshire GU11 1PZ
United Kingdom
+44(0)1252.534000

Australia
26 Talavera Road
Macquarie Park, NSW 2113
Australia
+61(0)29034.3000

Asia
139 Cecil Street
#08-00 Cecil House
Singapore 069539
Republic of Singapore
+65.6221.9095

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