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New Developments for Electronic Prescribing

Background

Electronic prescribing or e-prescribing is the electronic transmission of prescription or prescription-related information utilizing an electronic media between a prescriber, dispenser, pharmacy benefit manager, or health plan either directly or via an intermediary, including an e-prescribing network.[1]

E-prescribing is a major part of nationwide Medicare initiatives to improve care and provide new services through health information technology. These initiatives were announced in July 2004 by the Centers for Medicare and Medicaid Services (CMS). The Medicare Modernization Act (MMA) of 2003 mandates that drug plans participating in the Medicare Part D prescription drug program must support the standards of e-prescribing set by the CMS by 2009. Adherence to an initial set of well-established standards was required by January 2006.[2-5] The initial standards required drug plans participating in the Medicare prescription benefit to support electronic transmission of prescriptions and electronic transmission of information on eligibility and benefits (e.g., drug formulary, prior authorization messages), and patient instructions.[6]

Participation of prescribers and pharmacists is voluntary. As a result, e-prescribing has been slow to catch on due to the expense of software/hardware to support e-prescribing and the time needed to learn how to operate the system. It is estimated that less than 20% of prescribers are using e-prescribing. Although 95% of pharmacies have the ability to use SureScripts, an e-prescribing transmission network, only 67% actually use it.

There have been a number of campaigns to provide free e-prescribing systems in order to increase participation in the U.S. The latest campaign is the National e-Prescribing Patient Safety Initiative (NEPSI) led by Allscripts, a leading electronic medical record manufacturer, and a coalition of technology and insurance companies. NEPSI is offering free web-based e-prescribing software, *eRx Now*, to prescribers in the U.S.[7] The software will allow prescribers to prescribe medications from any personal digital assistant (PDA) or computer connected to the internet. By providing free prescribing software to prescribers, NEPSI hopes to speed up the nationwide adoption of e-prescribing. For more information about *eRx Now* go to http://www.nationalerx.com/.

E-prescribing is not yet legal in Canada. The Ontario College of Pharmacists recently approved guidelines on transmitting prescriptions to pharmacists by fax or digital images. Further evaluation of the guidelines by the College of Physicians and Surgeons of Ontario Council is needed before the guidelines can be implemented. Currently, both Canada Health Infoway and Health Canada are working on making e-prescribing a reality in Canada.[8]

Potential Advantages of E-Prescribing

According to the Institute of Medicine (IOM), preventable medication errors result in at least 1.5 million adverse drug events and 7,000 deaths each year in the U.S.[4,9] E-prescribing can potentially reduce errors and improve patient safety by eliminating illegible prescriptions, providing real-time check for drug-drug interactions, drug-allergy interactions, dosing errors, and therapeutic duplications.[5,7,9,10] In addition, real-time check for drug formularies can potentially reduce cost and improve work efficiency by reducing pharmacy call-backs.[10] The average reduction in pharmacist labor cost from e-prescribing is about $0.97 for each new prescription and $0.37 for each renewed prescription according to a recent study.[26] As a result, the IOM recommends all prescribers and pharmacies use e-prescriptions by 2010.[9]

The potential cost savings of e-prescription is great. The Center for Information Technology Leadership estimates that the nationwide adoption

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of e-prescribing would prevent over 3 million adverse drug events annually, preventing nearly 1.3 million provider visits, more than 190,000 hospitalizations, and more than 136,000 life-threatening adverse drug effects.[11,17] Studies suggest that national savings from universal adoption of e-prescribing could be as high as 27 billion dollars each year from adverse drug event prevention and better utilization of drugs (e.g., generic prescribing, adherence to formulary, prevention of therapeutic duplication).[11]

Potential Disadvantages of E-Prescribing

As more prescribers utilize e-prescribing systems, traditional medication errors are expected to decrease. However, a new generation of medication errors can be expected. Accidental selection of the wrong drug, dose, or dosage form from the computer drop-down list will replace medication mix-ups from illegible prescriptions. It is also easy to select the wrong patient profile. Sometimes the dosage or dosage form listed on the computer is just the dose that the drug formulary allows or what the pharmacy stocks and doesn't reflect minimum or maximum doses. This can lead to inappropriate dosing and formulation. Prescription duplication can also occur if the prescriber tries to change a dose and forgets to discontinue the old prescription. It is also easy for prescribers to ignore alerts for allergies, interactions, and therapeutic duplication when too many alerts are flashing on the computer screen.[16]

There is a transmission fee associated with receiving prescriptions electronically or requesting/receiving a refill approval electronically. Some vendors charge a fee when a refill request is sent, while others charge only when a refill request has been approved by the prescriber electronically. The fee is determined by the pharmacy dispensing software vendor and varies depending on the contract. The average cost of each transmission is about $0.25 per transmission. The cost of receiving e-prescription on the fax may be different from receiving the prescription directly on the computer.[21-25]

How It Works

True e-prescribing is a paperless process where the prescriber's computer "talks" directly to the pharmacy computer. For this to happen, both the e-prescribing software and pharmacy dispensing software must be compatible with electronic transmission network(s) in order to allow electronic transmission of prescriptions. Examples of these networks are SureScripts and RxHub. RxHub connects the prescriber's e-prescribing software to PBMs and insurance companies to determine patient eligibility, formulary status, and patient medication history. RxHub also connects prescribing software to PBM mail order pharmacies. SureScripts connects the e-prescribing software to retail pharmacies for transmission of prescriptions electronically.

Pharmacies that are connected with an electronic prescription transmission network (e.g., SureScripts) will be able to receive prescriptions from prescribers with e-prescribing systems that are also connected with SureScripts. They can also send refill requests, receive refill approval/denial response, and request and receive changes from prescribers using the computer.[12] For true e-prescribing to happen, the prescriber must utilize software that is connected to both RxHub (to check patient eligibility, drug formulary, etc) and SureScripts for transmission of e-prescription to community pharmacies.

Receiving prescriptions electronically will allow pharmacists to reduce time spent on entering written prescriptions into the computer, resolving prescription and third-party issues, and requesting refill authorizations, while increasing time for patient care.[12]

A typical scenario for initiating/processing an e-prescription is as follows:[12-14]

- The prescriber diagnoses a patient and selects the appropriate medication using the computer or a PDA.
- Depending on the sophistication of the software, the e-prescribing system can check for appropriate dosing, therapeutic duplication, drug-drug interaction, drug-allergy interaction, and formulary status. It alerts the prescriber if the prescription needs to be changed.
- The prescriber selects an alternative medication if needed.
- The e-prescription is finalized and printed on copy-proof paper and handed to the patient to take to the pharmacy to be filled OR

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- the prescriber or office staff can electronically direct which pharmacy will receive the prescription.
- The pharmacy receives the e-prescription on the pharmacy computer in the work que or on the fax, if the pharmacy does not subscribe to SureScripts or does not have the software to receive it electronically.
- The pharmacist dispenses the medication with minimal time spent on verifying the formulary status of the medication.
- The pharmacist counsels the patient.

The refill process is also simplified on the pharmacy end when done electronically. The pharmacist sends a refill authorization request directly to the e-prescribing application on the prescriber's computer, the prescriber or office staff reviews the request and approves or denies it, and the authorization arrives at the pharmacist's computer within seconds.[12]

Security and Confidentiality

The concerns of security and confidentiality with e-prescribing are valid since some vendors had initially stated that patient information and physician prescribing data would be shared with third parties for commercial purposes.[13] E-prescribing is relatively secure as e-prescribing systems and electronic health records typically employ multiple layers of privacy protection. Tools and techniques that are used to secure information are the same as those used to protect credit card transactions. Vendors are legally required to not divulge any patient information to third parties as mandated by the HIPAA regulation.

According to the Department of Health and Human Services (HHS) final ruling on e-prescribing, the security of e-prescriptions and the protection of e-prescription information must meet the requirements set forth under HIPAA's administrative provisions for protected health information (PHI) and electronic protected health information (EPHI).[5]

Commentary

The benefits of e-prescribing are great, including improved patient safety and reduced overall healthcare costs. One of the main reasons e-prescribing has been slow to catch on is because of the initial cost. To speed up the nation-wide adoption of e-prescribing, HHS published parallel final rules in August 2006 allowing certain healthcare groups to donate e-prescribing and electronic health record technology to prescribers, pharmacies, and others.[15] Of course these groups stand to benefit from increased use of e-prescribing. The resulting improvement of formulary adherence and reduction of medication errors will lead to substantial savings for health plans and pharmacy benefit managers. Because of these potential cost-savings, some health plans are funding e-prescribing programs in office practices (e.g., WellPoint, Aetna, Inc, Horizon Blue Cross Blue Shield Plans, Medco, etc).[18,19] E-prescribing system vendors/manufacturers will also gain brand-name recognition by providing free stand-alone e-prescribing tools. It is expected that users will be more likely to choose their product when looking to implement integrated electronic medical record systems. Many technology companies sponsoring NEPSI will also gain brand-name recognition.

As e-prescribing becomes more common, it will be critical that pharmacists utilize effective patient counseling to detect med errors. For example, discussing why a medication is being used will quickly uncover errors due to incorrect drug selection (e.g., if *Zocor* was inadvertently selected instead of *Zoloft* from a computerized drug list). Reminding prescribers to include indications on the prescription will also help prevent these types of errors. Prescribers and pharmacists are encouraged to report any medication errors related to e-prescribing to the Institute of Safe Medication Practices (ISMP) at http://www.ismp.org/ so new safeguards can be devised.

In order for pharmacists to receive prescriptions directly on their computer, pharmacies will need to have pharmacy software set up with SureScripts. Pharmacies that are not set up to receive prescriptions directly on their computer will receive them via fax. For more information about connecting to SureScripts, visit http://www.surescripts.com/default.asp. For more information about connecting to RxHub, visit http://www.rxhub.net/.

Keep in mind that it is not yet legal to prescribe controlled substances electronically. The Drug Enforcement Administration (DEA) and HHS are currently discussing rules and

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regulations on e-prescribing controlled substances.[20]

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