Healthcare Technology Trend Paper:
Electronic Prescribing

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The healthcare industry is at the forefront of integrating electronics into practice for enhanced safety and efficiency in patient care. One such illustration is the advancement of electronic medication prescribing in the outpatient setting. With proven efficiency over the last decade, medical prescriptions has leaped off the script pad and into cyberspace with the addition of electronic prescription software. In the simplest of definitions, Electronic prescribing or E-prescribing uses computer software in order to transmit prescriptions from a practitioner’s office to a pharmacy electronically or other healthcare settings. According to the governments Medicare part D drug program electronic prescribing is defined as:

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.

(U.S. Government, 2010)

Although it is already woven into the healthcare arena, electronic prescription transmission is a relatively new concept, becoming a mainstay only in the last ten years. In 2003, the technology was brought to the forefront of public awareness with the introduction of the Medicare Modernization Act (MMA), a
bill which included electronic prescriptions as part of the medicare overhaul. As the technology progressed, so did the laws that regulated and maintained their legitimacy. Through the introduction of MMA part D, the government established a new set of standards in the world of e-prescriptions, eliminating potential legal barriers in order to encourage more electronic exchanges to take place (U.S. Government, 2010). This foundation standard of MMA set a precedence of what would be required to regulate the system and ensure the safety and privacy of patients. As governances advanced so did the respect of the E-prescribing system amongst large medical organizations. The Institute of Medicine (IOM), for example, wrote a report depicting the supportive evidence that showed a large decrease in medication errors with the use of electronic prescription structure, giving even more validity to the technology. In 2009, the Medicare Improvement for Patients and Providers Act (MIPPA) provided expansion of the technology by providing primary care providers financial incentive if they adopt the electronic system. Since the enactment of laws in 2003, statistics have shown 44% of doctors are now using the electronic prescription system in their practice (Hahn, 2014). In less than ten years, electronic prescribing has gone from an unknown technology to a mainstay in the American healthcare system.
The intention of electronic prescription technology is to provide a convenient service to expedited prescription refills without jeopardizing patients' privacy or safety. The prescription is channeled through an encrypted network, usually through an intermediary server, to the patient's pharmacy of choice allowing for a secure and effective way of communicating medical data.

E-prescriptions can either be part of a separate prescribing system or a larger, more detailed electronic health records (EHR) that connects medical records into the electronic pharmacy system to further enhance the safety of the
patient. As of 2012, 86% of e-prescription users had a system connected with an EHR while 14% used standalone e-prescribing (Gabriel, 2013). One such system is Surescripts, the largest network with 240 million US patients, used by all pharmacies: chain, franchise, and independent alike (Hahn, 2014). Surescripts commissions as a governing body, reaching out twice a year to their client to ensure providers success. Beyond the type of system, specialized computer software allows pharmacists to look beyond the pharmacokinetics of a drug by connecting the patient to the prescription. The software not only provides coverage information, but also what medication is needed, the patients comorbidities, allergies, and other medications currently being prescribed. This system functions with the intention of preventing potential interactions or fatal allergic reaction that may otherwise be missed with traditional paper prescribing.

The image below depicts how coverage information is integrated into the electronic prescribing system and how transmission of the patients insurance information is expedited.
Although the electronic transmission of prescriptions is a relatively new technology the benefits are immense. The E-prescription technology is touted as being safe, convenient, and an effective means to prescribing medication. Prior to electronic prescriptions, errors from illegibility in paper prescriptions attributed to approximately 7,000 deaths per year: E prescribing has decreased these erroneous events by seven folds (Hahn, 2014). Besides removing illegibility issues as a fundamental reason for error, mandated safety components in the software systems has contributed to further prevention. In 2009, the MMA ensured that each electronic system have safety specifications to help avert errors, these included red flags triggered by drug-drug interactions, patient drug allergy to the drug prescribed, and inappropriate route or dosing prescribed by the physician (U.S. Government, 2010). If error messages in the e-prescription system are used correctly, they warn pharmacists of potential adverse events that may have otherwise been missed in a paper system. However errors have occurred when pharmacy staff chose to ignore or turn of alerts touting annoyances with the system this in turn compromises safety. The electronic prescription system can ensure prevention of major adverse effects if safety software is fully implemented and used correctly.

Another benefit is the transparency of medication adherence that exists within the electronic system. Medication adherence is a huge problem amongst
patients across our healthcare system. The E-prescribing system has a monitoring tool to perceive a patient’s compliance by tracking how often they refill their medications. This can assist providers in addressing potential reasons for nonadherence, hence improving the overall health of the patient. Another significant benefit of an electronically imposed system is the high job satisfaction it generates among staff. Employee’s (pharmacy and office staff) who use the e-prescription computer systems, have a more positive outlook on the technology and its benefits. In a recent study, 92% of those involved in the health IT process showed a positive response to the e-prescription use and outcomes (Gabriel, 2013).

Just like with every new technology limitations exist even with the electronic prescribing system. According to Gabriel, cost and work flow are the two most common challenges cited in adopting electronic health technologies. One such consideration is the initial cost to start an electronic prescribing system in a medical practice. In order to integrate an e-prescription program into an establishment, the average cost per physician is $29,000 which does not include the $4,000 every subsequent year for continued support and maintenance of the system (Hahn, 2014). In order to encourage providers to implement an e-prescriptions structure, the medicare system have now added financial penalty for those who choose not to an electronic system by decreasing the Medicare part B service reimbursement by 1.5% (Hahn, 2014). Although financial recourse is present it is unclear if the punishment
outweighs the long term profitability potential. Another consideration, once the e-prescription system is actualized, is the time and cost to train individuals on how to use the system.

Limitations on implementation may occur due to simple logistical problems as well. Some practices, like in the case of rural settings, may lack the resources, access, and internet connection required to mobilize an electronic prescription network.

Another restriction consideration is the finite nature of the standardization process in an electronic system. The National Council for Prescription Drug Programs created a code format in an attempt to regulate the safe transmission of data however, this practice is currently not mandatory or enforced. Without standardization one can not ensure every software company will comply especially since implementing and enforcing new standards may impact the bottom line profit of their corporation.

One last consideration in the nationwide implementation of e-prescribing software is the latent psychological hurdle in older non-tech savvy providers. Some practitioners may feel the prescription software is too difficult and not crucial enough to adopt this new technology into their practice.

Even with these constraints, the rate at which electronic prescriptions have become an integral patch in the fabric of our healthcare system is phenomenal. In the last five years, E-prescriptions for all providers (MD’s,
nurse practitioners, physician assistants) increased from 70% to 94% and e-prescribing via EHR increased 7% to 54% (Gabriel, 2013). Although the rate of use has increased there are still hurdles in the transmission and filling of schedule II drug prescriptions. As of 2010, the DEA allocated authorization of controlled substances via e-prescriptions however, many pharmacists have chose not to utilized the system due to safety concerns. This has forced prescribers to continue the use of timeworn technology of phone or fax to fill these prescriptions. Statistics have shown control substances are 11% of all scripts issued but utilized by 90% of prescribers making it a necessary barrier to overcome (Hahn, 2014). Just like in the case of controlled substances, the e-prescription ideology can indefinitely be improved upon. As the electronic prescribing software enhances so will the confidence of those who may be hesitant to use the technology.

Over the last decade electronic prescribing has gone from an unknown entity to a mainstay in today's healthcare industry. The electronic prescription system has afforded prescribers, pharmacists, and patients the safest, most efficient means for prescribing medications. As long as system enhancement perseveres and government supported regulations occurs, electronic prescribing will thrive in the electronic healthcare movement.
References


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