McKESSON
Empowering Healthcare

Electronic Prescribing:

Can Electronic Medical Record Systems Help?

A brief white paper that explains how an electronic medical record (EMR) system can help physician practices go from fax to electronic prescriptions.

Introduction

This white paper explores how an EMR system offers providers the ability to electronically prescribe in light of the regulatory and government environment surrounding medication errors.

Executive Summary

Medication errors became front page news with the November 1999 release of a compelling report from the Institute of Medicine (IOM). The public may have been surprised to learn that errors involving prescription medications kill up to 7,000 Americans a year, according to the IOM, and that the financial costs of drug-related morbidity and mortality may run nearly $77 billion a year.

But the problem of medication errors is not new. In fact, research demonstrates that injuries resulting from medication errors are not the fault of any individual healthcare professional, but rather represent the failure of a complex healthcare system. System failures can be analyzed and prevented, many through emerging information technology (I.T.) solutions.

In the medication management system, errors can be introduced at multiple points. Numerous problems are related to the naming, labeling, and/or packaging of drugs or to inefficient distribution practices. Patients often contribute to errors by failing to comply with instructions. Many errors occur as prescriptions are written; these tend to be failures of communication and, in far too many cases, the underlying problem is clinicians' handwriting.

The healthcare industry has been slow to adopt new technologies, although these tools hold promise for enhancing the delivery of healthcare. Prescription writing is perhaps the most important paper transaction remaining in our increasingly digital society; it seems simplistic to note that electronic prescribing tools could minimize medication errors related to handwriting. Yet even though such devices are available for use in hospitals, ISMP estimates that less than 5% of U.S. physicians currently "write" prescriptions electronically.

The hurdles until very recently have been clinicians' reticence about computers, a lack of hardware and software that would conveniently allow prescribers to select medications electronically, and fear of the costs associated with such technology. Fortunately, the advent of electronic medical records is making it increasingly possible to solve the "handwriting crisis," perhaps on all 3 counts.

Electronic Medical Records: Promise, Not Panacea

Easy-to-use point-of-care systems, some that offer comprehensive applications in real time, are becoming available from a number of manufacturers-and at perhaps a surprisingly low cost of entry. Such integrated programs may provide benefits for cost and risk management as well as for clinical care, and they may enhance the prescribing process beyond addressing penmanship alone. For example, some electronic medical records systems that incorporates electronic prescribing alert practitioners to potential drug or

allergy interactions via up-to-date databases of medications that are connected with patient records. That kind of functionality should help to rapidly expand adoption of electronic prescribing among practitioners.

Of course, computerized medication management systems certainly are not a panacea. Moreover, clinicians' use of technology is but one part of a larger solution that includes such simple and low-tech strategies as separating look-alike medications in a dispensing cabinet.

Medication Errors: A Compelling Public Health Issue

The subject of medication errors has become front page news. President Clinton put the issue on the media map during a press conference in December 1999. The catalyst: a report from the Institute of Medicine (IOM) documenting that these errors have unacceptably high costs, in both human and economic terms, especially since medication errors are almost completely preventable.

The IOM is a nonprofit institution that provides health policy advice under a congressional charter. The report is significant because it represents the consensus of leading experts in the healthcare community. It addresses many kinds of medical errors, including diagnostic and surgical mistakes, which could cost as many as 98,000 American lives each year. In addition, medical errors cost society billions of dollars in unnecessary healthcare expenditures, not to mention the costs related to disability and lost productivity.

The report notes that medication-related errors alone constitute a sizable problem. Errors related to medication orders and prescriptions and to administration of medications kill up to 7,000 Americans annually, both in and out of hospitals. These errors actually cause more deaths each year than workplace injuries, which have long received considerable public scrutiny. One estimate places the annual national cost of drug-related morbidity and mortality in the outpatient setting as high as $76.6 billion.

Medicare Regulation Details

Recent governmental regulation has increased the spotlight on electronic prescribing. On July 15, 2008, Congress overrode the President's veto of the bill that included the halt of financial incentives to physicians for using electronic prescribing.

Medicare physicians ***who use*** e-prescribing technology will be eligible for incentive payments:

- 2% in fiscal year 2009 and 2010
- 1% in 2011 and 2012
- 0.5% in 2013

Physicians participating in Medicare who ***do not e***-prescribe

- % payment cut in 2012
- 1.5% payment cut in 2013
- 2% in subsequent years

Not a New Phenomenon

Understandably, such dramatic statistics inspired immediate responses from the media, the federal government, and a wide range of healthcare interests. But despite this outcry, the problem of medication errors is not at all new. Healthcare researchers have been examining the causes of these errors for a quarter-century, and they have been identifying ways to minimize inadvertent and, thus, preventable errors. Many healthcare groups have called attention to the issue.

What is Electronic Prescribing?

One of the key pieces missing in the fight to prevent medication errors has been automation of the prescribing function itself. Electronic prescribing represents a class of technology that could improve patient safety at the point of care, especially as hand-held

wireless devices are harnessed for this purpose. That is one reason, though not the only one, why ISMP feels strongly about bringing this solution to the public consciousness. Electronic prescribing, if used appropriately, can have a powerful impact on medication errors in the short term.

Electronic prescribing, as defined by the National council for Prescription Drug Programs (NCPDP), a standards development organization, has two parts:

Part 1: Two way [electronic] communication between physicians and pharmacies involving new prescriptions, refill authorizations, change requests, and prescription fill messages to track patient compliance. Electronic prescribing is not faxing or printing paper prescriptions.

Part 2: Potential for information sharing with other health care partners including eligibility/formulary information and medication history.

What Is a Medication Error?

In order to evaluate the potential of electronic prescribing, it is important to first go through the reasons for medication errors. A few definitions are in order: The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) defines a medication error as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer. Such events may be related to professional practice; healthcare products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use." In other words, a medication error is any deviation from an order for a drug as prescribed by a licensed clinician, such as a physician, physician's assistant, or nurse-practitioner. The error can be one of planning (for example, if an improper dosage is selected) or one of execution (the prescriber's intentions are misunderstood). Errors can be made at any point during the process of prescribing and executing a prescription.

Growing Pressure on Providers

The scenario is worsened by the trend in many institutions to reduce staffs and budgets. The personnel who are left must care for more-and sicker-patients. Doctors themselves have been facing increased pressures from managed care organizations or from their own office managers to see more patients in less time.

The volume of prescriptions also exacerbates the situation. Figures from the National Wholesale Druggists' Association show that in 1998, nearly 2.5 billion prescriptions were dispensed by U.S. pharmacies. The National Association of Chain Drug Stores estimates the number will reach 4 billion by the year 2005.

Why are prescriptions increasing? Pharmaceuticals are, on the whole, beneficial; they can be lower-cost alternatives to surgery and hospital care. With the aging of America, more and more patients are taking multiple drugs for chronic conditions. Plus, younger patients are taking drugs for longer periods of time; many of these are the so-called lifestyle drugs used, for example, to curb cholesterol, treat depression, or improve sexual function. Direct-to-consumer advertising of prescription products now tops $1 billion a year, driving demand for specific brand name products.

Patients themselves often are involved in medication errors, simply by failing to comply with their instructions. They may choose not to fill a prescription or fail to take it as directed. They may stop taking a drug before the entire course has been completed. Noncompliance is a profound problem; estimates vary,

but somewhere between 50% and 90% of all patients do not take their medications according to recommended instructions. Close to 20% of all prescriptions are never filled.

A Handwriting Crisis

One fundamental source of medication errors arises out of the very act of handwriting prescriptions. These errors tend to be failures of communication between the prescriber and the nurse and/or pharmacist who must fill the order. In far too many cases the underlying problem is clinicians' handwriting (see figure 1). Many jokes have been made about doctors' sloppy penmanship, but illegibility is no laughing matter. Virtually all of the prescriptions issued each year in the United States are written by hand. Indecipherable or unclear prescriptions result in more than 150 million calls from pharmacists to physicians, asking for clarification, a time-consuming process that could cost the healthcare system billions of dollars a year in wasted time. At the very least, that process can delay the time until patients receive their medications. At worst, a misread order can lead to injury or even death.

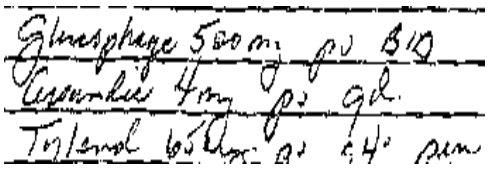

Figure 1.

In far too many cases of medication errors, the underlying problem is prescribers' handwriting. In this example, the physician prescribed Avandia, a diabetes drug. But it was read as Coumadin, a blood thinner. Many jokes have been made about doctors' sloppy penmanship, but illegibility is no laughing matter. Virtually all of the 3 billion prescriptions issued each year in the United States are still written by hand.

Enter: Electronic Prescribing

While the medical community has made efforts to curb the odds of misinterpretation of handwritten prescriptions, prescription writing remains one of the last and perhaps most important paper transactions in our increasingly computerized society. Most clinicians still write prescriptions by hand, utilizing memory for drug names, dosage strengths, and directions. It is an archaic system, and it is time to change it-by automating the prescribing function.

Indeed, several recent studies in hospitals have shown that physicians who use a computer order entry program witness improvements in medication error rates. One noteworthy example[1] found a 55% reduction in errors with potential for harm; the program greatly reduced the need for transcription, and it minimized misinterpretations caused by illegibility. In a study of intensive care patients[2], a computerized system helped physicians reduce the incidence of allergic drug reactions and excessive drug dosages by more than 75%; the average time patients spent in the unit dropped from 4.9 days to 2.7, slashing costs by 25%.(6) Yet another study[3] concluded that medication errors, though common, result in relatively few ADEs, but those that do result in ADEs are preventable-through physician computer order entry.

Not Just for Handwriting

In light of such promising results with inpatients, it is logical to assume that many additional medication errors could be avoided if clinicians harnessed electronic prescribing tools for their ambulatory care practices as well. It is highly likely that the poor handwriting that causes ADEs would be eliminated, and proper terminology would more likely be used.

But computerized order entry is only part of the solution. To be truly effective in reducing medication

errors, electronic prescribing must offer even more capabilities and stop errors at additional points in the medication management system. With so many drugs available and so many patients taking concurrent medications, the opportunity for ADEs has never been greater, especially when some patients see a variety of specialists who may be unaware of what their colleagues have already prescribed.

Integrating patient and drug information for electronic prescribing offers invaluable benefits to practitioners and other healthcare constituents, such as pharmacists and managed care providers. Among these benefits are the following:

- Computers can maintain accurate, unbiased, and up-to-date drug databases, which constitute essential tools as the number of approved medications continues to increase.
- Prescribers can receive on-screen prompts for drug-specific dosage information, with reminders to ensure that look-alikes and sound-alikes are not confused.
- Vital patient-specific information, such as overdose warnings, drug interactions, and allergy alerts, can be presented in the course of prescribing, so that potential ADEs that would otherwise go unrecognized can easily be avoided.
- Computers can reduce, even eliminate, the margin for error by flagging pre-existing medical conditions or concurrent medications that would preclude use of certain drugs in individual patients.
- Electronic prescribing can expedite refill requests, once patients are entered into the system.
- Computers can facilitate data exchange to enhance teamwork between clinicians and professionals who represent other parts of the medication management system, such as pharmacists in retail, hospital, and online environments; pharmacy benefit managers (PBMs); and health plans.
- Computers can enable practitioners to stay abreast of changes in formularies and insurance coverage.
- The use of computers can reduce healthcare costs through time and efficiency savings and by encouraging prescribers to consider lower-cost drug options.

Technology Options for Providers

Physicians now have options – whether hand-held or as part of an electronic medical record. The hand-held electronic prescribing units that now are available typically utilize radio frequency, cellular, or infrared signals to communicate with an on-site server or a PC-based Internet connection. Patient and drug information is available confidentially to practitioners in real time. An electronic prescription can be entered directly into a computer, then electronically transmitted to a pharmacy-at the hospital, in a local retail store, to a mail order outlet, or to a virtual pharmacy on the Internet-or perhaps be provided right in physicians' offices. The entire process is far less time-consuming than the current paper-based system.

Portability can be a benefit but some providers have not found the workflow process as effortless as described. For these providers, electronic medical records have been more attractive because it does not disrupt work flow from the chart to the prescription and the transfer of data can be automatic.

In fact, electronic medical records are being put to use for all manner of clinical tasks, including but not limited to automating and integrating the prescription-generating process.

EMR Example:

Effectively managing patient medications can improve many patients' quality of care. With the prescription-writing functionality of Practice Partner® Patient Records, for example, every time a prescription is written, the EMR system automatically

initiates drug-to-drug and drug-to-allergy interaction checks, medication list updates, and automatic documentation of the prescription in the progress note and checks of selected drugs against the patient's formulary. All of these checks reduce the risk of improper prescriptions and related issues that can compromise quality of care.

Managing Risks

Even the greatest technology is of no value if it is not used. It is likely that clinicians, given their reticence about computers and the related costs, will need a clear incentive to spur greater use of electronic prescribing. An appropriate incentive may well be the potential ability of this technology to address long-standing concerns in the area of malpractice.

According to the Physician Insurers Association of America, the average indemnity payment for claims related to medication errors between 1985 and 1992 was nearly $100,000. Medication error claims settled out of court may involve much higher amounts. In October 1999, a cardiologist in Texas was ordered to pay $225,000 to the family of a patient who died after receiving Plendil instead of Isordil; the pharmacist could not read the prescription. Medication errors related to misinterpreted physicians' prescriptions were the second most prevalent and expensive claim listed on 90,000 malpractice claims filed over a recent 7-year period; the same report noted that computers are playing a major role in solving the "handwriting problem." For that reason alone, electronic prescribing could well help mitigate malpractice risk.

About the Product

Practice Partner Electronic Medical Record and Practice Management Solution

McKesson's Practice Partner is an award-winning suite of integrated applications designed to manage all of the mission-critical functions of a modern physician office. Total Practice Partner includes Patient Records, one of the nation's leading electronic medical record systems, Appointment Scheduler, a sophisticated multi-clinic scheduler, and Medical Billing, a complete practice management system. Over 2,000 practices nationwide utilize Practice Partner EMR/PM software to improve productivity and enhance quality care.

About the Company

Practice Partner is a part of McKesson Corporation, currently ranked 18th on the FORTUNE 500. McKesson is the oldest and largest healthcare services and information technology company in North America and works with physicians and providers across the United States in practices ranging in size from one to more than 400 physicians.

To Learn More

To find out how an EMR system can help your practice prescribe electronically, contact McKesson today at:

1-800-770-7674

For more information about the award-winning Practice Partner EMR/PM solution, visit:

www.practicepartner.com

McKesson Provider Technologies
5995 Windward Parkway
Alpharetta, Ga. 30005

1. Bates DW, Leape LL, Cullen DJ, et al: Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. JAMA 1998;280:1311-1316
2. 6. Evans RS, Pestotnik SL, Classen DC, et al: A computer-assisted management program for antibiotics and other anti-infective agents. N Engl J Med 1998;338:232-238
3. 7. Bates DW, Boyle DL, Vander Vliet MD, et al: Relationship between medication errors and adverse drug events. J Gen Intern Med 1995;10:199-205