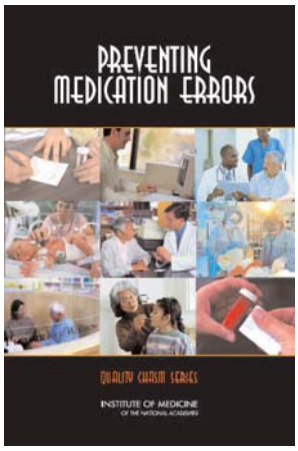
REPORT BRIEF • JULY 2006

Preventing Medication Errors



Almost everyone in the modern world takes medication at one time or another. According to one estimate, in any given week four out of every five U.S. adults will use prescription medicines, over-the-counter drugs, or dietary supplements of some sort, and nearly one-third of adults will take five or more different medications.

Most of the time these medications are beneficial, or at least they cause no harm, but on occasion they do injure the person taking them. Some of these "adverse drug events [ADEs]," as injuries due to medication are generally called, are inevitable—the more powerful a drug is, the more likely it is to have harmful side effects, for instance—but sometimes the harm is caused by an error in prescribing or taking the medication, and these damages are not inevitable. They can be prevented.

Against this background, the Centers for Medicare and Medicaid Services requested that the Institute of Medicine study the prevalence of such medication errors and formulate a national agenda for reducing these errors. The resulting report, *Preventing Medication Errors,* finds that medication errors are surprisingly common and costly to the nation, and it outlines a comprehensive approach to decreasing the prevalence of these errors. This approach will require changes from doctors, nurses, pharmacists, and others in the health care industry, from the Food and Drug Administration (FDA) and other government agencies, from hospitals and other health-care organizations, and from patients.

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THE UNACCEPTABLE COSTS OF MEDICATION ERRORS

In hospitals, errors are common during every step of the medication process—procuring the drug, prescribing it, dispensing it, administering it, and monitoring its impact—but they occur most frequently during the prescribing and administering stages. When all types of errors are taken into account, a hospital patient can expect on average to be subjected to more than one medication error each day. However, substantial variations in error rates are found across facilities.

An ADE arising from an error is considered preventable. It is difficult to get accurate measurements of how often preventable ADEs occur. One study estimated 380,000 preventable ADEs in hospitals each year, another estimated 450,000, and the committee believes that both are likely to be underestimates. The numbers are equally disturbing in other settings. One study calculates, for example, that 800,000 preventable ADEs occur each year in long-term care facilities. Another finds that among outpatient Medicare patients there occur 530,000 preventable ADEs each year. And the evidence suggests that both of these numbers are likely to be underestimates as well. Furthermore, none of these studies includes errors of omission—failures to prescribe medication in cases where it should be. Taking all of these numbers into account, the committee concludes that there are at least 1.5 million preventable ADEs that occur in the United States each year. The true number may be much higher.

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These medication errors are undoubtedly costly—to patients, their families, their employers, and to hospitals, health-care providers, and insurance companies—but there are few reliable estimates of that cost. One study found that each preventable ADE that took place in a hospital added about $8,750 (in 2006 dollars) to the cost of the hospital stay. Assuming 400,000 of these events each year—a conservative estimate—the total annual cost would be $3.5 billion in this one group. Another study looked at preventable ADEs in Medicare enrollees aged 65 and older and found an annual cost of $887 million for treating medication errors in this group. Unfortunately, these studies cover only some of the medication errors that occur each year in this country, and they look at only some of their costs—they do not take into account lost earnings, for example, or any compensation for pain and suffering.

What is most striking about these statistics is that much of this harm is preventable, since a variety of strategies and techniques exist for reducing medication errors. Many of these approaches have already been tested and shown to work in practice, while others seem promising but will require further development. Given this situation, the committee concluded that the current state of affairs is not acceptable and it recommended a series of steps that should be taken to prevent medication errors.

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A PARADIGM SHIFT IN THE PATIENT-PROVIDER RELATIONSHIP

The first step is to allow and encourage patients to take a more active role in their own medical care. In the past the nation's health care system has generally been paternalistic and provider-centric, and patients have not been expected to be involved in the process. But one of the most effective ways to reduce medication errors, the report concludes, is to move toward a model of health care where there is more of a partnership between the patients and the health care providers. Patients should understand more about their medications and take more responsibility for monitoring those medications, while providers should take steps to educate, consult with, and listen to the patients.

To make this new model of health care work, a number of things must be done. Doctors, nurses, pharmacists and other providers must communicate more with patients at every step of the way and make that communication a two-way street, listening to the patients as well as talking to them. They should inform their patients fully about the risks, contraindications, and possible side effects of the medications they are taking and what to do if they experience a side effect. They should also be more forthcoming when medication errors have occurred and explain what the consequences have been.

Patients or their surrogates should in turn take a more active role in the process. They should learn to keep careful records of all the medications they are taking and take greater responsibility for monitoring those medications by, for example, double-checking prescriptions from pharmacies and reporting any unexpected changes in how they feel after starting a new medication.

Also, the healthcare system needs to do a better job of educating patients and of providing ways for patients to educate themselves. Patients should be given opportunities to consult about their medications at various stages in their care—during consultation with the providers who prescribe their medications, at discharge from the hospital, at the pharmacy, and so on. And there needs to be a concerted effort to improve the quality and the accessibility of information about medications provided to consumers. The committee recommends that the FDA, the National Library of Medicine, and other government agencies work together to standardize and improve the medication information leaflets provided by pharmacies, make more and better drug information available over the Internet, and develop a 24-hour national tele-

phone helpline that offers consumers easy access to drug information.

USING INFORMATION TECHNOLOGIES TO REDUCE MEDICATION ERRORS

A second important step in reducing the number of medication errors will be to make greater use of information technologies in prescribing and dispensing medications. Doctors, nurse practitioners, and physician assistants, for example, cannot possibly keep up with all the relevant information available on all the medications they might prescribe—but with today's information technologies they don't have to. By using point-of-care reference information, typically accessed over the Internet or from personal digital assistants, prescribers can obtain detailed information about the particular drugs they prescribe and get help in deciding which medications to prescribe.

Even more promising is the use of electronic prescriptions, or e-prescriptions. By writing prescriptions electronically, doctors and other providers can avoid many of the mistakes that accompany handwritten prescriptions, as the software ensures that all the necessary information is filled out—and legible. Furthermore, by tying e-prescriptions in with the patient's medical history, it is possible to check automatically for such things as drug allergies, drug-drug interactions, and overly high doses. In addition, once an e-prescription is in the system, it will follow the patient from the hospital to the doctor's office or from the nursing home to the pharmacy, avoiding many of the "hand-off errors" common today. In light of all this, the committee recommends that by 2010 all prescribers and pharmacies be using e-prescriptions.

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More generally, all health care suppliers should seek to become high-reliability organizations preoccupied with improving medication safety. To do this, they will have to take advantage of the latest information technologies and the most up-to-date organizational and management strategies. They will also need to put effective internal monitoring programs in place, which will allow them to determine the incidence rates of ADEs more accurately and thus provide a way of measuring their progress toward improved medication safety.

IMPROVED LABELING AND PACKAGING OF MEDICATIONS

Another way to reduce medication errors is to ensure that drug information is communicated clearly and effectively to providers and patients. Some errors occur simply because two different drugs have names that look or sound very similar. With this in mind, the committee recommends that the drug industry and the appropriate federal agencies work together to improve drug nomenclature, including not just drug names but also abbreviations and acronyms. At the same time, the information sheets that accompany drugs should be redesigned, taking into account research that identifies the best methods for communicating information about medications.

POLICY RECOMMENDATIONS

Reducing preventable ADEs will demand the attention and active involvement of everyone involved. The federal government should, for example, pay for and coordinate a broad research effort aimed at learning more about preventing medication errors. Various regulatory agencies should encourage the adoption of practices and technologies that will reduce medication errors. Accreditation agencies should require more training in medication-management practices. The committee believes that the effort will pay off in far fewer medication errors and preventable adverse drug events, far less harm done to patients by medications, and far less cost to the nation's economy.

FOR MORE INFORMATION...

Copies of *Preventing Medication Errors* are available from the National Academies Press, 500 Fifth Street, N.W., Lockbox 285, Washington, DC 20055; (800) 624-6242 or (202) 334-3313 (in the Washington metropolitan area); Internet, http://www.nap.edu. The full text of this report is available at http://www.nap.edu.

This study was supported by funds from the Centers for Medicare and Medicaid Services. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the organizations or agencies that provided support for the project.

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