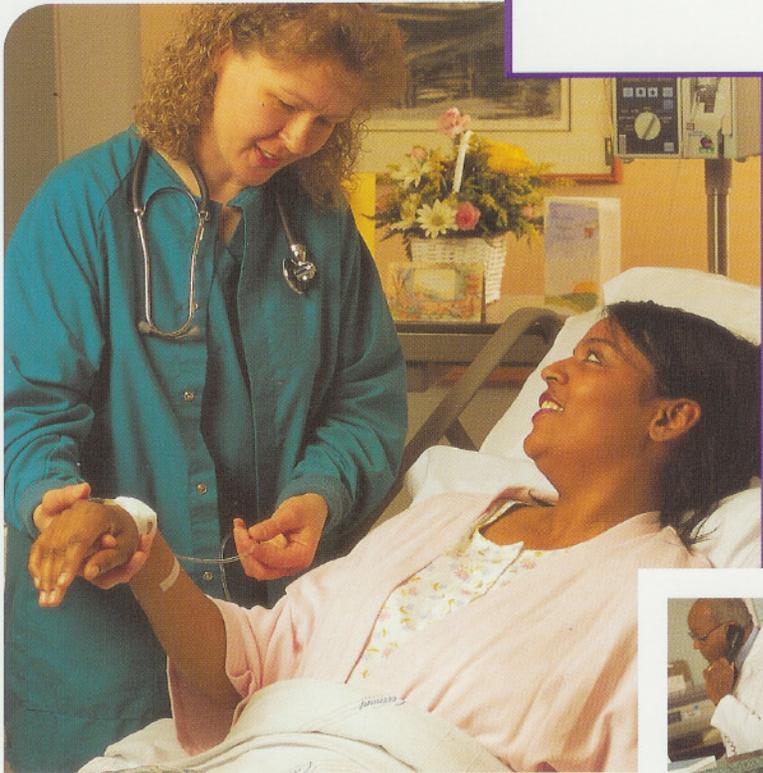


Strategies for

MEDICATION MANAGEMENT



PREVENTING MEDICATION
ERRORS WITH IT SOLUTIONS
FROM MCKESSONHBOC

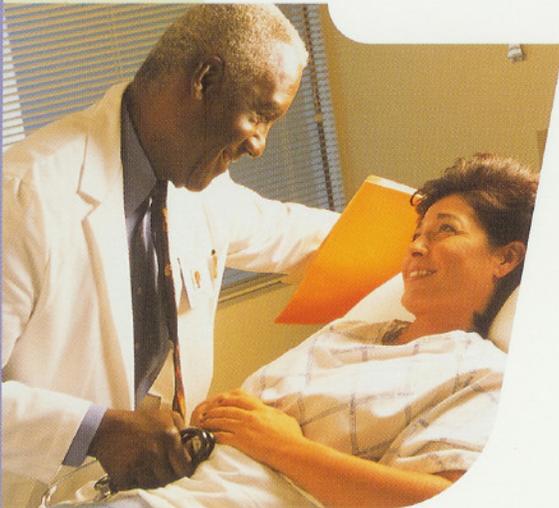
McKessonHBOC

The Impact of

ADVERSE DRUG EVENTS

Medical errors in general and medication errors in particular continue to take the spotlight as a problem in healthcare. The concern is justified. Medication errors alone have been documented to kill more than 7,000 people each year, and, unfortunately, the death rate for inpatients has dramatically increased in the past 15 years. Beyond the fatalities lie a greatly underestimated number of serious and potential adverse drug events (ADEs).

Besides the overwhelming cost to human life and wellness, there's the financial impact to healthcare providers and payors. In 1990, it was reported that there were an estimated 3.75 billion drug administrations every year to patients in U.S. hospitals. Since then, there has been a surge in the number and types of drugs available, and the use of drug therapies has increased. According to the 1999 Institute of Medicine (IOM) report, 'To Err Is Human: Building a Safer Health System, the estimated cost of preventable ADEs is a staggering \$2 billion annually in the inpatient setting alone.



HELPING YOU

Combat ADEs

The media attention may be new, but for years, McKessonHBOC has been developing solutions that help combat medication errors and reduce their associated costs. Since the early 1980s, we've been deploying pharmacy information systems with the ability to screen medication orders for potential interactions. In 1989, we incorporated fail-safe medication administration features into our acute point-of-care clinical information systems. And we invented the first robotic dispensing system, releasing it in 1992. Our other offerings extend medication management solutions to physician offices, ambulatory clinics, retail pharmacies, call center services and the home. We are dedicated to helping pharmacists and clinicians avoid potential ADEs while promoting patient compliance well beyond the hospital.

In short, McKessonHBOC's experience with and commitment to medication management strategies — through the use of both automation and information technology — is unmatched in the industry. Our products supply the industry's most extensive range of tools available to implement the recommended error-reduction strategies at every stage of the medication process — prescribing, transcribing, dispensing and administering. By providing integrated checkpoints at all of these stages, we help our customers develop an improved workflow with the assistance of the very technologies that have been widely recommended — not just to help caregivers reduce errors but to protect patients. McKessonHBOC is the only company in the healthcare industry today that has truly “closed the loop” on the medication management process.

WHAT IS AN

ADVERSE DRUG EVENT?

An adverse drug event is a patient injury resulting from a medical intervention related to a drug. The most frequent types of drug-related hospital injuries include heart-rhythm disturbances, diarrhea, fever, nausea and vomiting, kidney failure, mental confusion, rashes and itching, low blood pressure and bleeding. These include non-preventable ADEs that occur when patients have an allergy or other reaction to drugs they've never taken.

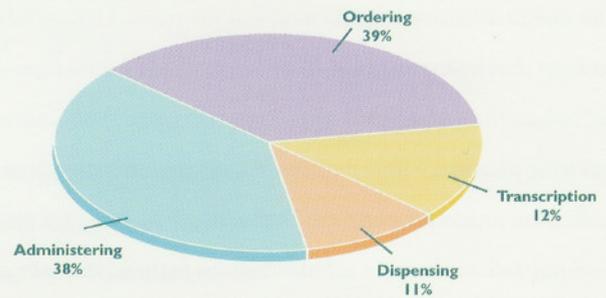
Studies have shown that, depending on the definitions applied, as many as half of all ADEs are preventable and are therefore considered medical errors. These are twice as expensive as non-preventable ADEs — and twice as dangerous as ADEs overall.

WHERE ERRORS OCCUR

Research conducted by the Adverse Drug Events Prevention Study Group looked at ADEs in terms of severity and preventability, depending on the setting in which they occurred. The study results projected that a typical 300-bed hospital could expect to experience 891 ADEs annually, with an estimated annual cost to the hospital (exclusive of legal judgments and malpractice costs) of \$1.78 million. Nearly one-third of that amount was associated with preventable ADEs. Researchers found that the most serious ADEs were more likely to be preventable, and that 77 percent of them resulted from errors in the ordering and administering stages.

A JAMA study identified 16 system failures that contributed to medication errors. Of the 16, two accounted for nearly half of all errors: inadequate access to current clinical knowledge (29 percent) and inadequate access to patient data (18 percent).

ADVERSE DRUG EVENTS



Research from the Adverse Drug Events Prevention Study Group looked at four stages where medication errors occur and found that most happen during ordering and administration.

IOM Strategy

FOR REDUCING MEDICATION ERRORS

McKessonHBOC ADDRESSES	IOM RECOMMENDATION	McKessonHBOC ADDRESSES	IOM RECOMMENDATION
✓	Implement standard processes for medication doses, dose timing and dose scales in a given patient care unit	✓	Do not store concentrated solutions of hazardous medications on patient care units
✓	Standardize prescription writing and prescribing rules	✓	Ensure the availability of pharmaceutical decision support
✓	Limit the number of different kinds of common equipment	✓	Include pharmacist during rounds of patient care units
✓	Implement physician order entry	✓	Make relevant patient information available at the point of patient care (e.g., bar codes, allergy display)
✓	Use pharmaceutical software	✓	Adopt a system-oriented approach to medication error reduction
✓	Implement unit dosing	✓	Improve patients' knowledge about their treatment
✓	Central pharmacy should supply high-risk intravenous medications		
✓	Use special procedures and written protocols for the use of high-risk medications		

Preventing Medication Errors

IN THE HOSPITAL



Studies show that medication errors don't occur because of bad providers, but largely because of processes and systems that have too much margin for error. McKessonHBOC is helping healthcare organizations address these problems. Within the acute-care setting, our automated medication management solutions provide checkpoints at each medication stage — from prescription and ordering to dispensing and administering. Such automated systems help providers ensure that the “five rights” of medication management take place: right medication, right patient, right time, right dose and right route. Clinical systems that monitor the patient's current condition and test results provide decision support to help caregivers modify treatment plans as needed, thereby improving patient outcomes.

WHERE IT BEGINS: ORDER ENTRY

To help prevent the large number of errors that occur when medications are ordered, McKessonHBOC offers an automated medication order entry system that includes interactive alerts for real-time decision support. By entering orders electronically at the point of care, clinicians — including an increasing number of physicians — can help eliminate errors caused by handwriting and transcription.

During order entry, interfaces to peer-reviewed knowledge bases enable the system to check for conflicts before the order is completed. Such conflicts include allergies, incompatible medications, food interactions and other conditions recorded in the patient's online chart. The knowledge base potentially identifies interactions that would otherwise not be caught until the order reaches the pharmacy. Authorized users can test new drug orders against a patient's current and historical drug and allergy profiles, so pharmacists are less likely to call the physician for changes to the order. As physicians recognize the benefits of real-time alerts during order entry and as the workflow becomes familiar to them, their access can be broadened to include more specialized interactions and dosing information.

*RECONSIDERING ROLES:
PHARMACIST INTERACTION*

Studies show that medication errors are reduced when pharmacists are more directly involved in patient care. For the electronic order entry process to be successful, a methodology for pharmacist verification — one that does not overburden the department — must be available. Our pharmacy information system features an electronic work queue from which the pharmacist can monitor the flow of information through the department. From the work queue, the pharmacist can access the fully integrated patient profile for inpatient or retail order management. This verification step allows the pharmacist to determine whether the medication ordered is the best choice. McKessonHBOC's pharmacy information system includes drug/drug, drug/allergy and therapeutic class duplication checking, which provides a second required checkpoint when the pharmacy processes the order and makes the pharmacist part of the care team. Customizing the pharmacy system knowledge base enhances an organization's ability to manage the patient medication process.



McKessonHBOC also offers sophisticated alerts that include advanced clinical screens such as cumulative dose limits. Alerts can be networked across healthcare facilities and patient encounters and can be documented at a level of detail that a manual system would not be able to manage. To further support the pharmacist, laboratory data is captured and linked to the patient profile. Our system monitors the appropriateness of the current drug therapy based on user-defined high and low ranges of selected lab results. Any value that triggers the need for review is sent to the work queue, where the pharmacist can catch them on the fly.

*A WORKHORSE IN THE PHARMACY:
DISPENSING AND FILLING*

The use of unit dosing, or prepackaged medication doses, has consistently been recommended to reduce medical errors. Bar-coded unit doses enable pharmacists to automate prescription filling and allow nurses to verify medications before administering them. McKessonHBOC provides bar-coded, unit-dose medications through its pharmaceutical supply business as well as innovative technologies and services.