CHAPTER 10

Medication Safety

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CHAPTER OUTLINE

KEY DEFINITIONS

Adverse Drug Event—an injury resulting from a medication or lack of intended medication.

Electronic Health Record (EHR)—a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports.

Improper Dose Error—administration to the patient of a dose that is greater than or less than the amount ordered by the prescriber or administration of duplicate doses to the patient, i.e., one or more dosage units in addition to those that were ordered.

Medication Error—any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer.

Medication Reconciliation—the process of identifying the most accurate list of all medications a patient is taking, including name, dosage, frequency, and route, and using this list to provide correct medications for patients anywhere within the health care system. Reconciliation involves comparing the patient's current list of medications against admission, transfer, and/or discharge orders.

Monitoring Error—failure to review a prescribed regimen for appropriateness and detection of problems, or failure to use appropriate clinical or laboratory data for adequate assessment of patient response to prescribed therapy.

Omission Error—failure to administer an ordered dose to a patient before the next scheduled dose, if any.

Order Set—compilation of medication and procedure orders that can be accessed and ordered from a single source in the EHR. These are analogous to paper pre-printed order forms.

Prescribing Error—incorrect drug selection (based on indications, contraindications, known allergies, existing

drug therapy, and other factors), dose, dosage form, quantity, route, concentration, rate of administration, or instructions for use of a drug product ordered or authorized by physician (or other legitimate prescriber); illegible prescriptions or medication orders that lead to errors that reach the patient.

Unauthorized Drug Error—administration to the patient of medication not authorized by a legitimate prescriber for the patient.

Wrong Dosage-Form Error—administration to the patient of a drug product in a different dosage form than ordered by the prescriber.

Wrong Drug-Preparation Error—drug product incorrectly formulated or manipulated before administration.

Wrong Time Error—administration of medication outside a predefined time interval from its scheduled administration time (this interval should be established by each individual health care facility).

Introduction

A case could be made that the safe use of medications should be the highest priority for everyone who touches the medication use process. Those who prescribe, prepare, dispense, administer, and monitor drug therapy are all in key positions to make or break the good intended by the use of medications. Assuring that medications are used safely is certainly every pharmacist's responsibility and priority. For decades, pharmacists and pharmacy technicians have witnessed the problems that result from medication errors and adverse reactions. Michael Cohen and Neil Davis were shepherds for our profession in this field of study.[1-2] Through articles and editorials published over the past 40 years, they raised the level of awareness by frequently pointing out where things went wrong and made suggestions for improvement. Many health-system pharmacies incorporated those suggestions toward the goal of improving the quality of patient care.

Attention to the problem of medication errors, and medication safety in general, began to increase in 1989 when Manasse published two articles that framed the subject.[3-4] These landmark articles on "drug misadventures" placed the issue in a different, and higher, perspective for pharmacists. These articles pointed out how the problem was really much larger than previously imagined, and it certainly extended beyond the walls of the nations' hospitals. Attention again increased in 1995 when Bates and Leape published data that quantified the impact of adverse events.[5-6] Then in 1997, Classen and Bates published cost information that really garnered the attention of decision-makers in health care.[7-8] These two studies, conducted simultaneously at two separate prestigious institutions, yielded remarkably similar results that could be extrapolated to hospitals across the nation. They began to solidify the economic case for investing in medication safety in health systems. When these costs are adjusted for today's dollars, these numbers are approximately double. The financial impact is compelling and cannot be ignored.

The Institute of Medicine then published the landmark "To Err is Human" report in 1999. This report brought the problem of safe medication use to the highest level of national attention ever seen.[9] The report pointed out that annually, up to 100,000 lives are lost and millions of others affected by medical errors, with medication errors leading the way. Thus began the most recent national focus and endeavor to improve medication safety. Since this publication, virtually every provider and accrediting organization has embarked upon a journey to make improvements in the safe use of medications.

The vast majority of efforts to improve medication safety have focused on changing systems and processes, encouraged increased reporting of actual and near miss events, examined the root causes of errors, teamwork and communication, and human factors. These efforts are increasingly turning to technology to help us "error-proof" our prac-