

Medication Errors Observed in 36 Health Care Facilities Original Investigation

Arch Intern Med.: Vol. 162 No. 16, September 9, 2002; 1897-1903

Kenneth N. Barker, PhD; Elizabeth A. Flynn, PhD; Ginette A. Pepper, PhD; David W. Bates, MD, MSc; Robert L. Mikeal, PhD

FROM ABSTRACT

Background

Medication errors are a national concern.

Objective

To identify the prevalence of medication errors (doses administered differently than ordered).

Design

A prospective cohort study.

Setting

Hospitals accredited by the Joint Commission on Accreditation of Healthcare Organizations, nonaccredited hospitals, and skilled nursing facilities in Georgia and Colorado.

Participants

A stratified random sample of 36 institutions.

The target sample was 50 day-shift doses per nursing unit or until all doses for that medication pass were administered.

Methods

Medication errors were witnessed by observation, and verified by a research pharmacist (E.A.F.). Clinical significance was judged by an expert panel of physicians.

Main Outcome Measure

Medication errors reaching patients.

Results

In the 36 institutions, 19% of the doses (605/3216) were in error.

The most frequent errors by category were wrong time (43%), omission (30%), wrong dose (17%), and unauthorized drug (4%).

7% of the errors were judged potential adverse drug events.

Error rates were higher in Colorado than in Georgia.

Conclusions

Medication errors were common (nearly 1 of every 5 doses in the typical hospital and skilled nursing facility).

The percentage of errors rated potentially harmful was 7%, or more than 40 per day in a typical 300-patient facility.

The problem of defective medication administration systems, although varied, is widespread.

THESE AUTHORS ALSO NOTE

The 1999 Institute of Medicine report on the quality of care, calls for more systematic approaches to the prevention of injuries due to medical care.

Many ADEs are problems with the process of the medication use system, which is divided as follows:

- (1) prescribing
- (2) delivery and administration

This article focus only on delivery and administration.

[IMPORTANT: prescribing problems would therefore be an addition to the numbers presented here. Adverse reactions to properly prescribed and administered drugs would be another addition: RECALL:

The 1998 study by Lazarou on fatal and serious adverse hospital drug events found:

A. 106,000 fatal adverse drug events per average year (fourth leading cause of death in the USA).

B. 2,216,000 serious adverse drug events per average year. These serious ADRs were defined as those that required hospitalization or were permanently disabling.

In this study, errors in drug administration (which is what this 2002 study is concerned with), noncompliance, overdose, drug abuse, therapeutic failures, and possible ADRs were excluded. These authors only look at bad reactions to the correct drug being given in the correct dose for the correct diagnosis.

(Jason Lazarou, MSc; Bruce H. Pomeranz, MD, PhD; Paul N. Corey, PhD; Incidence of Adverse Drug Reactions in Hospitalized Patients; JAMA. April 15, 1998; 279:1200-1205.]

Previous research indicates that prescribing errors account for 56% of error events and administration errors account for 44% of events.

RESULTS

"The results show that medication errors were common, occurring in 19% or nearly 1 of every 5 doses in the typical site."

"Assuming 10 doses per patient day, this would mean the typical patient was subject to about 2 errors every day."

POTENTIAL FOR HARM

"A panel of 3 physicians, experienced with such judgments, rated 7% of these errors as potential ADEs" (causing death, requiring additional hospitalization, causing permanent disability).

"For 300 inpatients, assuming 10 doses per patient on 1 day, this would be almost 40 potential ADEs per day in that facility."

CONCLUSIONS

"Medication errors were frequent, occurring at a rate of nearly 1 of every 5 doses in the typical hospital and skilled nursing facility."

"The percentage of errors rated potentially harmful was 7%, or more than 40 per day per 300 inpatients, on the average."

"The error rates are likely to be understated because of the large proportion of facilities that declined to participate."

"This evidence of a high rate of medication errors in many of the institutions in the sample supports the implications of the Institute of Medicine report that the medication delivery and administration systems of the nation's hospitals and skilled nursing facilities have major systems problems."

KEY POINTS FROM DAN MURPHY

This study looked only at the error in administration of prescribed drugs in hospitals, and found:

- (1) 19% of the drugs prescribed ended up with administration errors, or 1 of every 5 doses in the typical hospital.
- (2) This administration error of 1 of every 5 doses in the typical hospital means the typical patient was subject to about 2 drug administration errors every day.
- (3) 7% of these errors were judged events that could be fatal, cause permanent injury, or require additional hospitalization.
- (4) This 7% of potentially serious administration errors per day is more than 40 per day in a typical 300-patient facility. $40 \times 365 = 14,000$ serious administration errors per year per facility. **WOW!**
- (5) These administration error rates are understated because a large number of facilities declined to participate in the study.
- (6) Despite these incredible numbers for administration errors, prescribing errors are worse: Prescribing errors are 56% of events while these administration errors are only 44% of events.
- (7) If prescribing errors were only equal to administration errors (recall, prescribing errors are greater than administration errors, 56% to 44%), it would mean that 40% of hospitalized patients are victims of drug errors.
- (8) In addition, the Lazarou study would add an additional 106,000 deaths and 2,216,000 serious adverse reactions to drugs per year in American hospitals that are not the result of prescription or administration error, but just fall-out for a system awash in drugs.

I am so glad I am a Chiropractor.