

## ASHP Report: Study Equivocal, But Faith In ED Pharmacists Still Strong

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LAS VEGAS—Hopes were high for the largest study ever undertaken to measure the impact of a clinical pharmacist on quality of care and medication safety in the emergency department (ED). However, the results, presented at the American Society of Health-System Pharmacists' (ASHP) Midyear Clinical Meeting, failed to live up to expectations.

Although the study did show some positive trends in the quality measures that were investigated, it did not achieve its primary objective—to show a reduction in adverse drug events (ADEs) and potential ADEs (PADEs) due to the presence of a clinical pharmacist.

But the dramatic story of a fatality that occurred in the absence of an ED pharmacist, recounted by a presenter during the ASHP session, underscores the potential consequences of not having a pharmacist monitoring drug safety in critical care settings (sidebar).

Still, the failure of the 10,000-patient, two-year study to attain its main outcome was a “disappointment,” said lead investigator Rollin J. (Terry) Fairbanks, MD, MS, assistant professor of emergency medicine at the University of Rochester in New York. But he stressed that “it was our methods that failed to capture what we all know happens”—that medication errors and ADEs are less likely to occur in the pressured atmosphere of an ED when a clinical pharmacist is present.

### Flaws in Study Design

Dr. Fairbanks described the study design failings in some detail, but among the major flaws he detailed was the failure of the investigators to anticipate the “contamination” that might occur between the two groups of mainly critically ill patients studied—those enrolled when a clinical pharmacist was on duty in the ED, primarily daytime, and those enrolled when a pharmacist was not available.

A principal reason for the contamination, he said, was that the educational and systems-improvement efforts of the two University of Rochester emergency medicine pharmacists—H. Daniel Hays, PharmD, and Sarah Kelly-Pisciotti, PharmD—have had a powerful carryover effect into the hours when they are not physically present in the ED, thus minimizing any differences between the study groups.

“The presence of a clinical pharmacist in the ED raises the level of safety, medication awareness and quality of care in the entire ED, even on the days when a pharmacist is not there,” Dr. Fairbanks said. He suggested that conducting a multicenter comparison study might avoid the contamination problem in the future.

Another reason for the lack of significant difference between the two groups, he said, was that ADEs and PADEs tended to get recognized and documented more frequently when a clinical pharmacist was present. Thus when nurses later compared charts of the two ED patient groups, one treated when a pharmacist was on duty and the other treated when a pharmacist was not on duty, they found more errors and ADEs during the on-duty periods, making it look as if the pharmacists' presence wasn't improving safety—that is, reducing errors and ADEs.

As an example, Dr. Fairbanks cited the case of a patient in the trauma bay who was intubated and put on propofol. “Ten minutes later,” he said, “an acute MI [myocardial infarction] or trauma patient comes in,” and the attention of the limited staff shifted from the intubated patient, whose blood pressure had fallen, to the one demanding emergency measures. “If the clinical pharmacist is there,” Dr. Fairbanks continued, “they have a tendency to come grab somebody and say, ‘Betty, come on over here and fix this propofol drip because the blood pressure is a little low.’” That low blood pressure, which otherwise would have been undocumented, he said, was

recorded on the chart and picked up in the chart review study as occurring on the pharmacist's watch.

### Quality Improvements Found

Despite the lack of a difference between the two groups, there were bright spots in the Rochester research, including evidence of specific quality improvements when a pharmacist is on duty in the ED. For example, the study found that an emergency pharmacist's presence saves, on average, 12 minutes in the time it takes to get acute MI patients from their first electrocardiogram to the cardiac catheterization lab.

A research highlight for Dr. Fairbanks was the response of ED physicians, residents and nurses to a survey measuring the value of clinical pharmacy services in the ED. Virtually all (96%) of the 75 randomly selected physicians and nurses who responded agreed that an emergency pharmacist "improves quality of care," and that an emergency pharmacist is an "integral part of the team." For the physicians and nurses who were surveyed, the pharmacists' most important role is being available for a consult right in the ED.

"Believe me when I say that I will never work in an ED that doesn't have a clinical pharmacist," Dr. Fairbanks said, "and I think almost all of my colleagues would say the same thing."

### Clear Role Exists for ER Pharmacists

In another ASHP presentation, John P. Santell, MS, RPh, FASHP, director of practitioner programs and services at the United States Pharmacopeia (USP), asked, "Why has the [ED] appeared on the radar screen of patient safety advocates? Well, research has indicated that the ED has the highest percentage of preventable errors."

Mr. Santell cited National Center for Health Statistics data showing that 114 million patients are seen each year in the ED. "Other reports suggest that 5% of these patients experience a potential adverse drug event," he said. "So if you apply this percentage to the 114 million, that comes out to 6 million patients experiencing an ADE each year in the United States, 70% of which are preventable—meaning 4.2 million ED patients experience a preventable ADE."

Mr. Santell described an analysis of the approximately 30,000 ED medication errors reported to USP's MEDMARx program from 2002 to 2006. Of those errors, 900 were rated as harmful, and nine resulted in fatalities, he said.

"So is there a need for pharmacists in the ED or at least greater pharmacy involvement?" Mr. Santell asked. "Absolutely, yes. Our finding indicates that there are many safety risks in the ED, and there are many opportunities for pharmacists to make a difference [by reducing those risks]."

The Joint Commission also has addressed the issue of medication safety in the ED. Darryl S. Rich, PharmD, MBA, FASHP, touched on the issue in another session at the ASHP meeting, describing efforts to find a way that hospital EDs can comply with Medication Management Standard 4.10, which requires that pharmacists review all medication orders.

Dr. Rich noted that after several stabs at finding a workable medication review standard for the ED, the Joint Commission finally settled on an interim policy that, he noted, "basically says, 'do anything.'" The ED standard requires prior pharmacist review of medication orders unless the drug is urgently needed or unless a licensed independent practitioner is in the immediate area. "Is there anyone," he asked the audience, "who doesn't have a physician or PA in their emergency room?" It responded with laughter.

Dr. Rich, a surveyor for the Joint Commission, said an expert panel made up of physicians, nurses and pharmacists is working to resolve the issue. "I'm told that we will have a decision that will be implemented January of 2009," Dr. Rich added. "I don't think there is anything to worry about [in 2008]. But we will have something that's more stringent than this; probably some kind of sample-based audit process that will be required for drugs in that area."

"Obviously, our goal will be something that is achievable without a lot of wasted resources but at the same time improves patient safety."

## Two Drug Errors—One Fatal—Point to Need for Pharmacists in ED

LAS VEGAS—How big a difference can a clinical pharmacist make in the emergency department (ED)? Two anecdotes presented at the American Society of Health-System Pharmacists Midyear Clinical Meeting offer a hint to the answer.

Darryl S. Rich, PharmD, MBA, FASHP, surveyor for the Joint Commission, described a recent commission survey, in which he took part, of a hospital with 24/7 pharmacy services in its ED. "The physician surveyor," he recalled, "was blown away by a pharmacist who caught an error at 2 a.m. in the emergency department. It was a serious, life-threatening error, what would have been a sentinel event."

Another incident in the ED did not turn out as well. It involved a catastrophic medication error, described by Julius Cuong Pham, MD, assistant professor, Department of Emergency Medicine, and assistant professor, Department of Anesthesia and Critical Care Medicine, Johns Hopkins University School of Medicine, Baltimore.

Dr. Pham told how the ED, which was not at Johns Hopkins, had lost its 24/7 pharmacist because of budget tightening. About four weeks later, the ED team was performing resuscitation on a patient who was hypotensive. "We asked for Levophed [norepinephrine], and probably if a pharmacist were available we would have [gotten] Levophed," predicted Dr. Pham. "But what the nurse did [was run] to the medication box, and Levophed was sitting right next to Levaquin [levofloxacin] .... She grabbed the Levaquin and hung it up."

The emergency team managed to get the patient's pulse back, but blood pressure remained low. "We said, 'keep titrating that Levophed,'" Dr. Pham recalled. But the blood pressure still didn't respond. "Okay," Dr. Pham remembered saying, "why don't we open that bag wide open? Just give it all to me." The blood pressure remained stubbornly low as Dr. Pham watched the medication drip in, and as he watched he saw the medication name printed on the bag: Levaquin. "I just hung my head," he said. The patient had been hypotensive for "probably 10 minutes [and] that was associated with the patient's demise."

"You better believe that the next week we had our 24-hour pharmacist back," he told the audience, adding, "It's a tragedy that it takes something of that magnitude to effect change."

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