

Emergency Department Pharmacy Services: A Prescription for Patient Safety

Rolla T. Sweis, Pharm.D., Stewart Reingold, M.D.

Department of Emergency Medicine
Advocate Christ Medical Center, Oak Lawn, Illinois

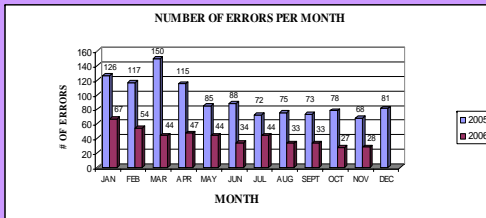


Introduction

Clinical pharmacists have been shown to improve drug therapy, decrease medication costs, and prevent adverse drug events (ADE). A potentially greater role is promoting medication safety. Placing clinical pharmacists in the Emergency Department (ED) is a new practice, with the impetus being patient safety. The ED Clinical Pharmacist at Advocate Christ Medical Center began in January 2005. Since then a number of positive changes have been implemented to decrease medication errors, thus increasing patient safety.

Medication Errors

All orders on critical care and admitted patients are reviewed by our Clinical Pharmacist during covered shifts. Medication errors, such as dosing and administration errors, are reviewed and analyzed on a monthly basis. The causes of the errors or near misses are investigated. Potential system improvements are researched and implemented to avoid future errors. Errors have been monitored since January of 2005 and the number of errors has decreased by 77%.



Elimination of Heparin Flushes

At our institution we use prefilled saline syringes for all line flushes. They are available in 3, 5, and 10ml sizes. This decreases the risk of using the wrong heparin concentration for flushing.



Since the current hours of the clinical pharmacist cover only 8 hours of the day, there are potential errors that are not caught or discovered during other times of the day.

An anonymous online error reporting system allows ED staff members to report those errors when there is no pharmacist coverage.

• In the automated dispensing cabinet (ADC), drawers that contain “look alike/sound alike drugs” have stickers labeled on the actual drawer indicating “STOP: look alike sound alike drug”. This flags the pharmacy technician when filling the ADC as well as the nurse to confirm one last time they are pulling the drug desired.

• Within the ADC, we also have programmed the Tall Man Lettering for easy identification of look-alike drugs.

Established Name	Recommended Name
Acetohexamide	AcetoHEXAMIDE
Acetazolamide	AcetaZOLAMIDE
Dimenhydrinate	DimenhyDRINATE
Diphenhydramine	DiphenhydrAMINE
Dobutamine	DOBUTamine
Dopamine	DOPamine
Glipizide	GlipiZIDE
Glyburide	GlyBURIDE
Hydralazine	HydrALAZINE
Hydroxyzine	HydrOXYzine
Methylprednisolone	MethylPREDNISolone
Methyltestosterone	MethylTESTOSTERone
Nicardipine	NICARdipine
Nifedipine	NIFEdipine
Prednisone	PredniSONE
Prednisolone	PrednisoLONE

ADC Alerts prior to Dispensing

- Alerts have been programmed to remind the nurse to use appropriate tubing or certain precautions relative to the drug.
- An alert for phenytoin and mannitol has been set up to remind the nurse to use a filter.
- An alert for IV nitroglycerin reminds the nurse to use “nitroglycerin” tubing.
- Patient allergies are uploaded from the electronic medical record system to the ADC; attempts to give a listed medication result in warnings that require multiple steps to override.

Use of Technology

- Standardization of all drip concentrations allows standardizing titration guidelines among nurses.
- Colleague Guardian feature on the Baxter pumps provides added function of low and high dose limit warning.
- Dosing errors when using standard concentrations with the Smart Pump technology implemented in April 2005 have been dramatically reduced.

ACMC Critical Care Standard Drips						
DRUG	DOSE MODE	DRUG AMOUNT	DILUENT VOLUME	CONCENTRATION	LOW DOSE LIMIT	HIGH DOSE LIMIT
Diltiazem	mg/hr	125mg	125ml	1mg/ml	5mg/hr	15mg/hr
Dobutamine	mcg/kg/min	1000mg	250ml	4000 mcg/ml	2.5mcg/kg/min	20mcg/kg/min
Dopamine	mcg/kg/min	800mg	250ml	3200 mcg/ml	1mcg/kg/min	20mcg/kg/min

Conclusions

Emergency Pharmacy services are a growing trend and the impetus is patient safety. The aging patient population, complex drug regimens, and the constant stream of new medications make Emergency Department pharmacists valuable. The value of an ED pharmacist is an added benefit to the health care team. We have demonstrated a significant decrease in medication errors and improved the overall system in the department to promote patient safety.