

Longitudinal Trends in U.S. Drug Shortages for Medications Used in Emergency Departments (2001-2014)

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Introduction

- Prescription drug shortages have become increasingly prevalent over the past decade.
- There are limited data as to how drug shortages can impact drugs used in emergency medicine settings.
- **Research Question:** To describe drug shortages affecting the management of patients in the ED.

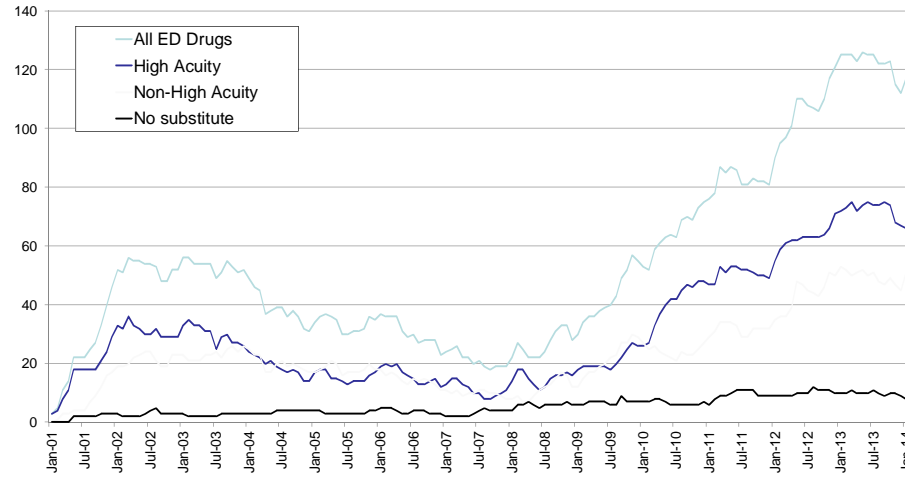
Methods

- Drug shortage data from January 2001 to March 2014 were obtained from the University of Utah Drug Information Service (UUDIS).
- Two board-certified emergency medicine physicians classified drug shortages based on whether the drug is within the scope of emergency medicine practice, whether they are used for life-saving interventions or high-acuity conditions, and whether a substitute for the drug exists for its routine use in emergency care.
- Trends in the length of shortages for drugs used in emergency medicine (EM) practice were described using standard descriptive statistics and regression analysis.

Disclosures

- UUDIS receives some funding support from Novation LLC for providing drug shortage information.

Shortages of Emergency Medicine Drugs (1/2001 – 3/2014)



Categories of Drugs on Shortage used in EM and High-Acuity vs. Non-High Acuity Drugs

Drug Category	Number of Shortages (%)	Acuity of Shortage			Drug Most Frequently on Shortage (Number of times on shortage)
		High Acuity	Non High Acuity	% High Acuity	
Infectious Disease	148 (24.3%)	66	82	44.60%	Acyclovir injection (6)
Analgesia	57 (9.3%)	3	54	5.30%	Hydromorphone (8)
Toxicology	52 (8.5%)	51	1	98.10%	Antivenin polyvalent injection (5)
Critical Care	50 (8.2%)	49	1	98.00%	Epinephrine 1 mg/mL injection (7)
Gastrointestinal	48 (7.9%)	9	39	18.80%	Pantoprazole (8)
Miscellaneous	48 (7.9%)	20	28	41.70%	Dexamethasone (6)
Cardiology	39 (6.4%)	36	3	92.30%	Nitroglycerin injection (8)
Fluids/Electrolytes	26 (4.3%)	23	3	88.50%	Calcium chloride (5)
Sedative-Hypnotic	22 (3.6%)	13	9	59.10%	Phenobarbital Elixir (6)
Local Anesthetics	21 (3.4%)	4	17	19.00%	Lidocaine / Epinephrine (9)
Hematology	18 (3.0%)	14	4	77.80%	Desmopressin (2)
Pulmonology	18 (3.0%)	5	13	27.80%	Guafenesin extended-release tablets (multiple suppliers) (4)
Cardiovascular	12 (2.0%)	9	3	75.00%	Bumetanide injection (3)
Neurology	11 (1.8%)	6	5	54.50%	Phenytoin (5)
Allergy/Immunology	9 (1.5%)	3	6	33.30%	Diphenhydramine (3)
Ophthalmology	9 (1.5%)	0	9	0.00%	Tetracaine 0.5% eye drops (2)
Endocrine	8 (1.3%)	6	2	75.00%	Levothyroxine injection (4)
OB/GYN	5 (0.8%)	4	1	80.00%	Methylergonovine (4)
Psychiatry	4 (0.7%)	0	4	0.00%	Bentropine injection (2)
Musculoskeletal	4 (0.7%)	0	4	0.00%	Methocarbamol 500 mg tablets (4)
Topical	1 (0.2%)	0	1	0.00%	Gelfoam (1)
Total	610	321	289	52.60%	

Results

- Of 1,798 drug shortages over the 13+ year period, 610 shortages (33.9%) were within the scope of EM practice.
- Of those, 321 (52.6%) were for drugs used as a life-saving intervention or for high acuity conditions; and 32 (10.0%) were for drugs with no available substitute.
- The prevalence of EM drug shortages fell from 2002 to 2007; between 2008 and March 2014, the number of EM drug shortages increased 373%.
- Shortages for drugs used as a direct life-saving intervention or for high acuity conditions increased 393% and shortages for drugs with no substitute grew 125%.
- Manufacturers did not cite a specific reason for 46.6% of all EM drug shortages.
- Infectious disease drugs were the most common EM drugs on shortage, with 2213 shortage months during the study period.

Discussion

- Drug shortages can lead to delayed therapy, suboptimal therapy, and medication errors for ED patients.
- We were not able to directly assess the cause for the fall and subsequent rise in shortages in recent years; nor were we able to determine patient outcomes.
- The economic downturn of 2008-9 combined with changes in regulatory priorities at the FDA due to a new presidential administration may play a role in the recent increase in shortages.

Conclusions

- Shortages impacting drugs used in emergency care have grown dramatically since 2008.
- Future studies should focus on the impact of drug shortages have on patient care and resource utilization.

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