problems and provide a transition back to the patients' primary care provider (PCP).

Objectives: To demonstrate an absolute reduction of 5% in the combined endpoint of 30 day ED return visits and mortality. A secondary endpoint was 180 day mortality.

Methods: Patients recently discharged from the ED were identified through electronic health records and called by registered nurses specifically trained to make patient phone calls. After informed consent, patients were randomized to receive an appointment to the Geriatrics Clinic within 3 days or to receive standard care.

Results: Excluding nursing home residents, 315 patients were eligible for our program and 224 (71%) were successfully contacted. After 6 months of enrollment, 199 agreed to speak with us but only 26 (13%) of these patients agreed to a post-ED visit in our geriatrics clinic and the trial was terminated for futility. Reasons given for refusing the appointment were as follows:

1 33% already had a physician or had arranged their own follow-up
2 19% offered no specific reason, but declined to come
3 10% miscellaneous other reasons
4 9% preferred to see own PCP or other medical team
5 8% no transportation
6 8% too sick to come
7 6% no time
8 5% felt that the clinic was too far way
9 4% visit is unnecessary

Conclusion: Patients 75 years of age and older and recently discharged from the ED were reluctant to accept a post-acute follow-up visit in a geriatrics clinic. This is consistent with Centers for Medicare and Medicare Services claims data from North Carolina indicating that fewer than 35% of patients older than 75 visit their PCP within 15 days of ED discharge. We believe that a gap exists in our knowledge about the attitudes and preferences of the sickest elderly toward post-acute care. Until we can better define what drives these personal decisions, we will fail to engage many of these patients in health care programs.

204 Frequency Of Emergency Department Revisits And Death Among Older Adults After A Fall

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Background: Falls among older adults (aged ≥65 years) are the leading cause of both injury deaths and ED visits for trauma. There is limited data demonstrating the long-term relationship between older adult ED fall patients with recurrent ED visits and mortality.

Objectives: We aim to examine administrative data of ED patients from a 5 year period. We report the characteristics and prevalence of older adult ED fallers as well as the recurrent ED visit and mortality rate.

Methods: We conducted an analysis of a cohort of patients who presented to the ED at two urban, Level I trauma center, teaching hospitals with approximately 80,000-95,000 annual visits. Patients were eligible if aged >= 65 years, and presented to the ED between February 1, 2005 and December 31, 2011 with a fall-related ED diagnosis (defined as visits with International Classification of Diseases-9th edition (ICD-9) codes of E880.X-E888.X). Data was obtained from hospital and ED databases. We examined the frequency of ED revisits and death at 3 days, 7 days, 30 days, and 1 year. We calculated differences in patient characteristics and calculated odds ratios for ED visit, death and a composite of ED revisit and death controlling for certain covariates.

Results: Our cohort included 21,340 older adult patients who presented to the ED with a fall- related diagnosis. The average age was 78.6. An increasing proportion of patients revisited the ED over the course of a year, ranging from 2% of patients at 3 days to 25% at 1 year. Male sex, race/ethnicity, median income, comorbidities, and injury severity score (ISS) were consistently associated with more ED revisits and death at 3, 7, 30 days and 1 year. 10,728 (50.2%) patients returned to the ED at some point during our study period and 36% of patients had an ED revisit or death within 1 year. In multivariate logistic regression, male sex and comorbidities increased the odds of for both ED revisits and death. Hispanic ethnicity also increased the odds of ED revisits while age and ISS increased the likelihood of death.

Conclusion: Older adult patients who present to the ED after a fall have a high ED revisit and death rate. Falls often mark the beginning of decline among older adult patients. Future research should focus on whether guidelines or other fall related programs can prevent future falls, morbidity and death.

205 The Effect of a Novel, High-Fidelity Pediatric Simulation Course on Paramedic Seizure Management

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Background: Pediatric seizures are common in EMS, and management varies. To optimize care, a 1-day simulation-based course, Pediatric Simulation Training for Emergency Prehospital Providers (PediSTEPPs), was developed. No studies have evaluated pediatric outcomes after EMS simulation training.

Objectives: The primary study objective was to determine if PediSTEPPs enhances seizure protocol adherence, indicated by blood glucose measurement and midazolam administration for seizing children. The secondary objective was to describe the management of these patients by EMS and EDs.

Methods: This is a 2-year retrospective cohort study of paramedics who transported 0-18 year old seizure patients to 10 urban EDs receiving most pediatric transports. Management was compared between EMS crews with at least one paramedic who attended PediSTEPPs to those that had none. Blood glucose measurement, medications administered, IV access, seizure recurrence, and respiratory failure data were collected from databases and run reports. Data were compared using Pearson's X^2 Test (categorical) and the Mann-Whitney test (continuous).

Results: Of 2200 pediatric seizure transports, 250 (11%) patients had active seizures. Of these, 65 (26%) were treated by a paramedic that attended PediSTEPPs. Patients treated by both groups were demographically comparable. Blood glucose was checked in 66%, and this was 48% more likely by the trained paramedics (OR=1.48, 95%CI 0.80-2.76, p=0.21), though not statistically significant. Overall, 58% received an indicated dose of midazolam, and this was 39% more likely by the trained paramedics (OR=1.39, 95%CI 0.77-2.49, p=0.28), though not statistically significant. There were no differences in secondary outcomes between groups. The prevalence of hypoglycemia was low (2%). Peripheral IVs were attempted in 80%, and the most common routes for midazolam were IV (68%) and rectal (12%), with 52% receiving a correct dose. Seizures recurred in 22%, with 34% seizing on ED arrival. Respiratory failure occurred in 10% of prehospital patients.

Conclusion: Seizure protocol adherence tended to be higher in paramedics who attended simulation-based training, though not statistically significant. Data supports the need to optimize the route and dose of midazolam for seizing children. The low prevalence of hypoglycemia should prompt reprioritization of blood glucose measurement.

206 Implementation of the PECARN Traumatic Brain Injury Prediction Rules for Children Using Computerized Clinical Decision Support: A Multi-center Trial

Pediatric Emergency Care Applied Research Network[1], Clinical Research on Emergency Services and Treatments Network[2], and Partners HealthCare System[3]

Table 206
PECARN: CT use before and after CDS implementation in patients at very low risk of clinically-important TBI

Intervention EDs	Months before CDS	Months after CDS	CTs obtained before CDS	CTs obtained after CDS	Unadjusted Odds Ratio	Adjusted Odds Ratio (95% CI)[†]	P-value[†]
PED 1	13.1	10.1	52/963 (5.4%)	22/705 (3.1%)	0.56	0.57 (0.34, 0.94)	0.03
PED 2	14.2	12.0	18/434 (4.1%)	6/264 (2.3%)	0.54	0.52 (0.20, 1.34)	0.18
PED 3	13.2	10.1	65/809 (8.0%)	39/898 (4.3%)	0.52	0.49 (0.32, 0.74)	0.0007
PED 4	9.6	15.7	22/158 (14%)	42/319 (13%)	0.94	0.66 (0.24, 1.87)	0.44
GED 1	15.7	12.3	7/341 (2.1%)	10/391 (2.6%)	1.25	1.25 (0.47, 3.33)	0.65
GED 2	15.7	12.3	15/556 (2.7%)	23/521 (4.4%)	1.67	1.78 (0.88, 3.73)	0.12
GED 3	15.6	12.3	15/391 (3.8%)	19/732 (2.6%)	0.67	2.41 (0.52, 11.12)*	0.34
Overall			194/3652 (5.3%)	161/3830 (4.2%)	0.56	0.72 (0.52, 0.98)	0.037

†P-value and adjusted odds ratio are from logistic regression models, controlling for age group and time trend (if present). Overall result additionally controls for site.
*Although proportion of CTs decreased before to after CDS, odds increased due to time trend adjustment.

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Background: Data assessing whether the implementation of prediction rules decreases the use of CT in children with minor blunt head trauma (BHT) are scarce.

Objectives: To determine whether a computerized clinical decision support (CDS) implementation of the PECARN traumatic brain injury (TBI) clinical prediction rules decreases cranial CT use in children with minor BHT at very low risk of clinically-important TBIs (ciTBIs), and for all patients with minor BHT

Methods: We conducted a clinical trial with concurrent controls at five pediatric EDs (PEDs; 1 control site) and 8 general EDs (GEDs; combined as 4 pairs for analysis, 1 control pair) from 11/2011-6/2014. Eligible patients were <18 years with minor BHT, defined by Glasgow Coma Scale scores 14 or 15, after non-trivial mechanisms in the prior 24 hours. Clinicians completed BHT templates in the electronic health records containing the PECARN TBI prediction rule findings. In the after-phase, intervention sites received CDS that provided CT recommendations and estimated risks of ciTBI. The primary study outcome was whether a CT was obtained in the ED, comparing before to after CDS. Analyses were conducted using segmented logistic regression, controlling for time trend; primary analysis was by site.

Results: Overall, 19,028 patients with minor BHT were analyzed: 16,635 intervention patients and 2,393 controls. At intervention EDs, 8,568 patients (43% very low risk for ciTBI) were enrolled before and 8,067 (47% very low risk) after CDS. No meaningful differences were noted in characteristics before and after CDS. Table 206 displays the main study results. Over the study period, the control PED site had little change (1.6% to 2.9%) in CT use in those at very low risk of ciTBI; the control GED had a decrease (7.1% to 2.6%). For all patients with minor BHT (whether very low risk or not), CT rates decreased modestly at all intervention sites and at the PED control site.

Conclusion: A TBI prediction rule implementation using CDS was associated with a modest decrease in CT use for children with minor BHT, but this was not noted at all sites. There were also some secular trends of decreased CT use at control sites.

207 Drug Shortages: Implications for Medical Toxicology

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Background: Prescription drug shortages have become increasingly prevalent over the past decade. There are limited data as to how drug shortages can affect medical toxicology.

Objectives: To describe drug shortages affecting the management of poisoned patients.

Methods: Drug shortage data from January 2001 to December 2013 were obtained from the University of Utah Drug Information Service. Two medical toxicologists reviewed pharmaceutical products affected by shortages and identified agents that are used in medical toxicology. Shortage data were analyzed focusing on the type of drug involved, formulation, reason for shortage, shortage duration, marketing status (brand vs. generic), and if the drug was a single source product (produced by one manufacturer). The availability of a substitute therapy and whether the alternative was also affected by a shortage at any time during the study period was also noted.

Results: Of 1,751 products in shortage during the study period, 141 (8.1%) were used in medical toxicology. The number of shortages reported annually increased steadily from the mid-2000s, reaching a high of 26 in 2011, with a slight decline in recent years. Of 141 shortages, 21 (14.9%) were unresolved as of December 2013. The median duration of resolved shortages was 166 days (IQR 85-469). Generic drugs were involved in 85.1% of shortages and 41.1% were single-source products. Parenteral drugs were more commonly affected by shortages (126, 89.4%). The most common type of medication involved were sedative-hypnotics (benzodiazepines/barbiturates). An alternative agent was available for 121 (85.9%) drugs; however, 88 (72.7%) of these alternatives were affected by a shortage. The reason for shortage was not reported for 50.4% of drugs. When present, the most common reason reported was manufacturing delays (20.6%), followed by supply/demand issues (17.0%). (See Table 207.)

Table 207
Mazer-Amirshahi: Medical Toxicology Agents Without Alternatives Frequently in Short Supply

Agent	Number of Times in Shortage	Shortage Days
Antivenin Latrodectus Mactans	3	362, ongoing since 12/2010
Digoxin Rescue Agents	2	262
Lipid Emulsion	1	Ongoing since 11/2008
Methylene Blue	3	898 ongoing since 3/2013
Naloxone	6	1601
Pralidoxime	2	987
Protamine	4	1228