

throughout the hospital, our objective was to determine if the ED waiting area is a feasible environment to implement a political advocacy program.

**Methods:** We performed an institutional review board (IRB)-approved, convenience-sample, prospective survey study at a suburban teaching hospital ED with an annual census of over 73,000 patients. Inclusion criteria were visitors aged older than 17 years and capability of communicating freely in English. Exclusion criteria were overt psychiatric illness and prior survey completion. Trained research interns approached visitors in the ED waiting area to complete an anonymous 9-question survey on health care issues. Questions were extracted from a national joint survey (Kaiser Family Foundation/Gallup Poll). After completing the survey, visitors were offered information on current health care issues including a 2-page American College of Emergency Physicians form about the Access to Emergency Medical Services Act of 2007/2009. Finally, visitors were asked to sign and send a letter in support of this legislation to their Senator. The data was analyzed using descriptive statistics.

**Results:** 377 eligible subjects were approached from July 2009 to April 2010: 283 (75.1%) agreed to complete the survey, 190 (50.4%) agreed to read the information, 139 (36.9%) were willing to sign letters of support, and 134 letters (35.5%) were mailed.

**Conclusion:** This political advocacy program yielded significant participation from eligible visitors. The majority (75.1%) offered their opinions on health care issues. Approximately half were willing to read the informational packet. The majority of the subjects who were willing to complete the education stage were also willing to review and possibly send a signed letter of support to their legislator. Furthermore, over a third of visitors (134/377) who were approached in the waiting area sent a letter to their legislator in support of the Access to Emergency Medical Services Act. In conclusion, the ED is reasonable location to implement a political advocacy program.

## 282 State Laws Governing Physician Assistant Practice in Emergency Departments

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**Study Objective:** Physician assistants (PAs) are increasingly utilized in U.S. emergency departments (EDs) to increase efficiency and decrease costs. However, practice variability for PAs exists and is governed by state laws (statutes and regulations). The description and variability of these laws relating to ED practice have not been previously reported. We sought to describe the differences in 1) scope of practice, 2) prescriptive authority, and 3) physician supervision required by individual states for PA practice.

**Methods:** We performed an analysis of laws that govern PA practice in all 50 U.S. states and the District of Columbia. We abstracted data from each state's public Web site that detailed specific language of PA-related laws. These data were then categorized based on the consensus of both authors. State characteristics, including total number of practicing PAs, total population, and % rural population, were collected from the American Academy of Physician Assistants ([www.aapa.org](http://www.aapa.org)) and U.S. census ([www.census.gov](http://www.census.gov)) Web sites. We dichotomized these characteristics by median values and compared groups using chi-square test.

**Results:** All states required PAs to practice within the scope of practice of the supervising physician. While all states allowed PAs to assist in invasive procedures, 13 (25%) restricted independent performance of major invasive procedures (beyond minor procedures including laceration repairs, incision and drainage, and simple wound debridement). Restrictions on major invasive procedures were more likely in states with higher population (38%,  $p=0.03$ ), lower rural proportion (40%,  $p=0.02$ ) and lower number of PAs per population (40%;  $p=0.02$ ). Local anesthesia was allowed by all states, but 11 (22%) restricted PA performance of sedation or general anesthesia. However, 24 (47%) states had provisions for an expanded scope of practice for medical emergency or disaster situations, and these provisions were more likely in states with larger population (62%,  $p=0.03$ ). All but two states (FL and KY) allowed PA prescription of schedule III-V medications, and 37 (73%) allowed PAs to prescribe schedule II medications (eg, oxycodone). Only one state (VA) explicitly required onsite physician presence for PA practice in EDs, and only 6 (12%) required physician review of PA medical records <1 week after visits, all of which were larger population states ( $p=0.01$ ). Additionally, 32 (63%) state's time interval for required physician review of PA practice was  $\geq 1$  month from the visit or not specified. Physician co-signature of PA charts was required by 37 (73%) states. Additional physician oversight or restrictions on practice for new PA graduates (defined as 6 months to 2 years after graduation varying by state) was required in 14 (27%) states.

**Conclusion:** Laws governing PA practice in EDs differ by state. Nearly all states do not require onsite physician supervision, and few states require review of medical records in an urgent (<1 week) time frame. Many have no specified restrictions on major invasive procedures (eg, chest tubes, airway management), sedation/anesthesia, and prescription of scheduled medications. Smaller, rural states and those with higher density of PAs per population were less likely to have tighter restrictions or oversight. Future studies should evaluate whether existing PA training and skills support patient safety of such autonomous practice.

## 283 County and Hospital Determinants of Ambulance Diversion

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**Study Objectives:** Ambulance diversion is a commonly used measure of emergency department (ED) saturation. Little is known about community-level determinants of ambulance diversion, and such knowledge is important to target efforts to reduce diversion and underlying ED crowding. We identify county and hospital predictors of ambulance diversion in California hospitals.

**Methods:** We obtained hourly diversion data for the entire year of 2007 for all hospitals from the 31 local emergency medical systems (LEMS) governing all 58 California counties. This dataset was merged with data from all non-federal, California ED visits in 2007 collected by the California Office of Statewide Health Planning and Development. We generated facility-level summaries that included demographic features of ED visitors, hospital structural characteristics, and county factors such as population density and number of hospitals. Logistic regression identified county-level factors associated with LEMS-approved ambulance diversion. In counties where ambulance diversion was allowed by LEMS, a hierarchical mixed effects model with county random effects identified hospital level predictors of annual diversion hours.

**Results:** There were 20 LEMS that allowed ambulance diversion in 20 counties. Of 288 acute-care, non-federal hospitals with EDs, 66 were in counties that did not allow diversion. Non-diversion counties had fewer hospitals and lower population density ( $p<0.05$ ) compared to other counties, and half of these counties had a single hospital. In the remaining cohort of 222 hospitals, the annual diversion median and mean hours were 254 and 640. Multivariate predictors of annual diversion included trauma center status and county ownership ( $p<0.01$ ); demographic summaries were weakly associated with diversion. Trauma and county hospitals had 600 and 700 additional hours of diversion compared to other facilities.

**Conclusion:** Ambulance diversion is an increasing problem that indicates system-wide resource shortages and inability to treat patients at the nearest site of care. In California, diversion is an LEMS allowed policy in predominantly urban counties with multiple available hospitals. Our results suggest that LEMS level efforts to reduce diversion hours should focus on trauma and county-owned facilities.

## 284 Evaluation of a Simulation-Based Emergency Medicine Geriatrics Curriculum

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**Study Objectives:** The elderly comprise an ever-increasing percentage of emergency department (ED) visits and that by 2025 will represent 28-40% of all ED patients. The geriatric patient deserves an increased educational emphasis in light of their rapidly increasing proportion of the population and because of their unique medical needs. Simulation offers the promise of effectively and efficiently providing residents knowledge and skills to deal with the elderly patients they will encounter in the ED. The objective of this study was to evaluate the effectiveness of a new emergency medicine geriatrics (EM-G) simulation-based curriculum. Three different areas were assessed: knowledge gain, change in attitude towards geriatric patients, and participant satisfaction.

**Methods:** This was a pre/post observational study. A curriculum was developed in EM-G using a cooperative effort between the institution's emergency medicine (EM) residency leaders and the institution's director of the fellowship training program in geriatrics. The curriculum focuses on five geriatric specific issues with high likelihood of ED presentation: adverse drug events, alterations in presentation of deadly conditions, trauma, abuse/neglect, and functional decline/agitation and includes a core set of ten readings and five simulation scenarios. The curriculum was presented

to two successive EM-3 classes. Prior to the distribution of the readings and performance of the scenarios, a 20-item multiple choice geriatrics knowledge test (MCT) and a geriatrics attitude survey (GAS) were completed by each of the residents. The GAS, an independently validated survey instrument, assesses attitudes towards caring for the elderly as well as confidence in performing and teaching various components of a geriatric assessment. The residents were provided the readings prior to the first scenario. The scenarios were one hour in length and were precepted by one of the study authors who was blinded to the test and survey results. The scenarios were completed by the entire EM-3 class for a given year as a single group in five different sessions over a 2 month period. At the conclusion of the curriculum the identical MCT and GAS along with a satisfaction survey were again completed. Student's t-test was performed on the pre/post data.

Results: Eighteen residents took the pre test/survey and 17 took the post test/survey. For the MCT, pre-test mean score = 11.8, and post test mean score = 13.5 (difference = 1.75,  $p = 0.023$ ). No significant change was found in the GAS scores. The post course satisfaction survey revealed high satisfaction ratings (1= lowest to 5= highest score): making the course a permanent part of overall curriculum = 4.41; course will help you provide quality geriatric care = 4.18; the simulations added to the course's educational value = 4.65.

Conclusion: This EM-G course was rated very highly by its participants and significantly improved their didactic knowledge. Further study is needed to determine why the experience apparently did not change their attitudes or confidence as it relates to caring for the geriatric patient.

## 285 The Effect of Emergency Medicine Residency Training on Resident Productivity In the Emergency Department

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Study Objectives: Recent publications suggest that resident productivity in the emergency department (ED) decreases throughout training and residency training in emergency medicine (EM) does not improve resident productivity compared to other specialties, including internal medicine (IM). In light of anecdotal evidence to the contrary, this study sought to assess these prior conclusions.

Methods: A retrospective review of computer-generated shift lists for all attendings and residents working 8-hour shifts in the higher acuity zone of a tertiary, academic health care center with 52,000 annual visits. Shifts from three months were reviewed: July, October, and January. The number of patients seen, admitted patients, and patients staffed by attendings were recorded. Groups were created by residency program, EM and IM, and then by year of training, first (1) and second (2). Group differences were analyzed using ANOVA. The study was deemed quality assurance and did not require IRB approval.

Results: This study reviewed a total of 717 shifts: 161 EM1, 274 EM2, 137 IM1, and 145 IM2 shifts. The EM1 number of patients managed per shift showed significant increase by month: July 6.11, October 6.95, January 8.39 ( $p < 0.01$ ). Over all three months, the number of patients managed per shift (EM1 7.09, EM2 11.97, IM1 4.70, IM2 6.24,  $p < 0.01$ ) and number admitted per shift (EM1 3.66, EM2 7.22, IM1 2.31, IM2 2.95,  $p < 0.01$ ) were significantly different between both EM and IM residency programs and year of training.

Conclusion: Contrary to prior studies comparing resident productivity in the ED, this study reveals residents are able to manage increasing numbers of patients as they progress through their training. The data also suggests that EM residency training, more than IM residency training, prepares residents to manage greater patient volume, including a larger number of patients who require admission.

## 286 Clinical Teaching In a Busy Emergency Department: Interruptions During Case Presentations

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Study Objectives: In the emergency department (ED) of a teaching hospital, attending physicians are challenged to instruct medical students and residents while simultaneously caring for critically ill patients. Thus, they must balance the need to quickly devise patient assessments and plans with their responsibility to devote time toward teaching students. Studies have only recently begun to quantify and

characterize interruptions occurring in the ED. Our objectives were to determine the frequency and nature of interruptions by the training physician that occur when medical trainees perform oral case presentations (OCPs).

Methods: This was a prospective observational study which took place from June 2009 through August 2009 in the ED of a large academic medical center. A convenience sample of house officers and fourth-year medical students were observed during OCPs with attending physicians. None of these physicians or students were aware of the purpose of the study. They were informed only that a second-year medical student was observing case presentations as part of his/her summer elective. As many different attending physicians as possible were sampled while maintaining equal hours of observation for each daily shift. The student completed a simple data sheet after each case presentation and recorded OCP duration, interruption frequencies, and interruption types. An "interruption" was defined as any event that caused the learner to stop the OCP for longer than 2 seconds, and only interruptions initiated by the teaching physician were recorded. Effects of learner level or time of day on frequency of interruption were evaluated using analysis of variance, with statistical significance at the  $p < 0.05$  level.

Results: A total of 570 case presentations were observed during the study period; involving 53 EM faculty, 52 house staff and 11 medical students. The mean duration of presentation was 3.4 + 2.2 minutes (range 0.5 to 14 minutes). There were a total of 1739 interruptions during case presentations; mean 3.0 (+ 2.4) interruptions per presentation or 0.94 (+ 0.70) interruptions per minute. At least one interruption occurred in 94% of OCPs, with a maximum of 16. The interruptions were categorized as follows: interruptions by faculty (88%), phone calls (4%), questions by nursing staff (7%), ECG interpretation (1%), and orders on other patients (1%). The majority of faculty interruptions (55%) involved questions about history or exam findings or injection of teaching points. In 37% of OCPs, attending physicians interrupted to give an assessment and/or a treatment plan before the learner had done so. The number of interruptions (per OCP) and duration of OCP varied by learner level of training ( $p < 0.01$ ), with more experienced learners giving shorter presentations and being interrupted less often. Neither frequency nor number (per OCP) of interruptions was statistically different by time of day.

Conclusions: The education of students and residents occurs primarily during case presentations to ED faculty, an environment in which interruptions frequently occur. The majority of these interruptions are driven by the faculty themselves and vary by the learner level of training. These interruptions can be potentially beneficial, such as the injection of timely teaching points or clarification of clinical findings.

## 287 Impact of a Core-Competency Based Consensus Faculty Evaluation Program on Emergency Medicine Resident Opinion Regarding the Evaluation Process

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Study Objective: Multiple methods for resident evaluation have been employed with varying degrees of success. Ideally, the resident evaluation process should yield an accurate appraisal of resident performance, provide specific goals for improvement, and offer continual assessment of resident progress. Our objective was to create and evaluate a resident evaluation process that would offer a comprehensive and effective ACGME core competency-based assessment of resident performance and also provide specific improvement goals for each resident in our program.

Methods: Our resident evaluation tool consisted of a faculty forum-generated composite evaluation for each resident in our three-year program. The document summarized specific strengths and weaknesses addressing each of the six ACGME core competencies. Furthermore, the consensus document provided specific improvement goals and offered summary commentary on the faculty's global assessment of each resident's overall performance level. Subsequent composite evaluations were similarly performed, and resident progress was assessed. To assess the effect of our evaluation process, residents were surveyed using a completely anonymous online questionnaire. The residents were surveyed both prior to the implementation of our composite evaluation process and also following the receipt of two composite evaluations. Resident opinion regarding his/her new evaluation process and its impact on his/her training and professional growth was then measured and compared against his/her previous evaluation process. Resident satisfaction was measured on a 5-point Likert Scale. Statistical comparisons were made using the student's t-test through Microsoft Excel.

Results: 28 of 31 residents (90%) responded to the first online questionnaire, and 30 of 31 residents (97%) responded to the second online questionnaire. The percentage of respondents who either "somewhat agreed" or "strongly agreed" that