

## **Current Research**

### **Nebulized Albuterol Administration by EMT-Basics--The SAALE Project (Study of Albuterol Administration by Loyola EMT-Basics)**

- Previous research has demonstrated that using nebulized albuterol in a pre-hospital setting for bronchospasm and/or asthma is an effective treatment and can lead to better clinical outcomes.
- Prior research has demonstrated that with proper education and training, EMT-Basic providers can effectively administer nebulized albuterol and improve patient outcomes (Richmond, 2005, Markenson, 2004).
- Currently no EMT-Basics in the Chicagoland area are trained to administer albuterol.

With permission from the Illinois Department of Public Health and the LUMC IRB, Loyola EMS is piloting a research project with the goal of addressing the clinical, professional and societal ramifications implementing this new standard operating procedure (SOP) with the Maywood Fire Department in Maywood, Illinois.

### **Attitudes of Prehospital Providers in Regards to Albuterol Administration by EMT-Basics**

This study, coat-tailing the above SAALE Project is examining the opinions and attitudes of multiple levels of Prehospital Providers in regards to EMT-Basics administering albuterol. EMT-basics were administered a survey eliciting their attitudes to administering a new drug, that was not taught to them during formal EMT-Basic training. The research tool examines their attitudes and abilities to expand their role in saving lives. EMT-Basics attitudes will be reexamined six months after usage of albuterol. These surveys will be compared and contrasted to the attitudes of Paramedics who work in the same region as the EMT-Basics.

### **Study of Employment Expectations and Demographics of EMT-Basic Students (SEEDS Study)**

Prehospital Providers, especially EMT-Basics represent a significant health care resource and to date there is little or no descriptive data available that describes this large population of potential healthcare employees in Illinois. The only descriptive data available of prehospital employees comes from the LEADS project (Brown, et al, 2003, Dawson et al, 2003), a longitudinal study project hosted by the National Registry of Emergency Medical Technicians (NREMT). It is designed to describe the attributes and demographic information that accurately reflect the individuals currently providing emergency medical services throughout the United States. Data has shown that EMT-Basics earn an average of only \$18,324 and 94% believe that EMT-Basics should be paid more for the job that they do. In addition, 25% have no health insurance. While this study current trends and attitudes of EMT-Bs, there is no research on the perceptions of prospective and future EMT-B providers.

SEEDS survey (will make this a hyperlink)

The objectives of our study are to:

- Assess personal attributes, expectations for employment and perceptions of the prehospital profession for students enrolled in EMT-Basic classes at Loyola and in the surrounding area.
- Assess demographic variables of enrolled EMT-B students. Variables include, but are not limited to; age, gender, geographical location and highest level of education completed.
- Assess if the events of September 11, 2001, a family history of prehospital employment, and military experience affect a student's desire to become an EMT-B.
- Compare results from our survey to results from the LEADS study.
- Assess expectations and perceptions that EMT-B students have towards employment in the prehospital field.
- Determine student's short and long-term plans regarding employment in prehospital care.

## Prior Research

### Inclusion of Medical Students in Hospital Mass Casualty Disaster Plans

**Study Objectives:** Medical students are a manpower resource that could be mobilized during a disaster. Students offer advantages in possessing hospital identification, familiarity with the facility, and capability of filling multiple roles. As medical students may be eager to participate in a catastrophic disaster, it is incumbent on medical schools and teaching hospitals to collaborate to develop guidelines to protect them. Parameters such as volunteer status, notification, assembly, roles and responsibilities, supervision, and liability should be addressed in a written plan. The objectives of this study were to: 1) determine the number of US medical schools whose students have been incorporated into a written plan for mass casualty disasters by the primary teaching hospital; 2) determine if the medical student plan has been implemented through drill or actual disaster, 3) determine the number of plans developed before and after 9/11/2001 and 4) perform a geographical analysis on schools with plans.

**Methods:** A survey was distributed via e-mail to the Education or Student Affairs Deans at the 140 allopathic and osteopathic US medical schools as listed by the Association of American Medical Colleges. Follow-up contact was attempted by a medical student via telephone.

**Results:** Of the 140 medical schools, 93 (66%) completed the survey; 38 (41%) by e-mail and 55 (59%) by phone interview. Twenty-two schools (24%) reported medical students were included in the hospital mass casualty disaster plans, 16 (17%) did not know, and the remaining 55 (59%) did not include students. Schools without a single primary teaching hospital were more likely to be uncertain of whether students were incorporated in disaster training at their teaching hospitals. Of the hospitals incorporating medical students into their mass casualty plan, at least one specifically excluded them from participating. Of the 22 schools in which students were included, 14 (64%) had activated the medical student mass casualty plan. With respect to when

the medical students were integrated into the hospital mass casualty plans, 15 of 22 schools with plans knew when this occurred; 6 were written before 9/11 and 9 were written afterward. Of the 71 schools that did not include medical students in their hospital mass casualty disaster plans, 25 (35%) stated there was no current effort to develop such a plan, 28 (40%) did not know the status, and 18 (25%) stated there were intentions to develop a plan. The results of a regional analysis of medical schools with plans are illustrated:

Number of Medical Schools	Region				
	Midwest	Northeast	Southeastern	Western	Southwestern
Total	40	40	33	15	12
Participated in Survey (% Total)	30 (75)	24 (60)	20 (61)	10 (67)	9 (75)
Included Students in Plan (% Schools Participating)	9 (30)	5 (21)	5 (25)	1 (10)	2 (22)

**Conclusion:** Staffing for mass casualty events presents a challenge for hospitals. Medical students are an underutilized source of potential manpower in disaster planning. Only one quarter of Deans from US medical schools reported knowledge of an official plan defining the role of their students in disaster activities.

\*\* Data was presented at the American College of Emergency Physicians National Research Forum, October 15, 2006.

For abstract is (include citation from Annuals)\*\*

### **Disaster Training for Prehospital Providers**

**Objectives:** To survey prehospital providers (PPs) to determine: 1) the quantity and format of training over the past year in chemical, biological, radiological/nuclear (CBRN) and other mass casualty events (MCEs), 2) exposure to pediatric casualties, 3) preferred educational formats, 4) self-assessed preparedness for various MCEs and 5) perceived likelihood of occurrence for MCEs. Differences between municipal and private ambulance company personnel were examined.

**Methods:** A survey, consisting of 11 questions, was distributed to 1010 active PPs in an urban EMS system comprised of 40 departments. The system includes fire departments, private ambulance services, and industrial, air and hospital-based ambulance services with a variety of departmental sizes and organizational structures. The survey utilized multiple formats for responses including yes/no, Likert scales and fill-in-the-blank. Demographic data was collected for descriptive analysis.

**Results:** Surveys were completed by 640 (63%) of PPs from 31 departments. Slightly more than half (55%) of the participants were EMT-Bs, 44% were Paramedics and 1% recorded their position as "Other". The primary work setting of 87.2% (558) of PPs was a municipal department and 12.8% (82) were affiliated with a private company. Twenty-two percent of PPs reported no CBRN or other mass casualty training within the past year, 19% reported 1-5 hours, 15% reported 6-10 hours, 24% reported 11-39 hours, and 7% reported receiving greater than 40

hours. Responses were invalid for 13% of participating PPs. The mean hours of training in the past year was 5 hours for both chemical and biological events (SD = 11 hours and 19 hours, respectively) and 4 hours for radiological/nuclear and other MCEs (SD = 10 hours and 18 hours, respectively). Ninety percent of respondents reported never receiving pediatric specific disaster education and 86% had not participated in a drill with victims <15 years old. Lectures and drills were the most common formats for prior training. On a 5-point scale with 1 as “Never Helpful” through 5 as “Always Helpful” with respect to training methods, mean scores were drills (4.46), lectures (3.73), self-study packets (3.20), Web-based learning (2.91), and other (3.00). On another 5-point scale with 1 as “Totally Unprepared” through 5 as “Strongly Prepared”, PPs felt most prepared for other MCEs (3.64), followed by chemical (3.14), biological (2.99), and radiological/nuclear (2.86). Over half (61%) felt other MCEs were “Somewhat Likely” or “Very Likely” to occur within the next 3 years, whereas chemical (42%), biological (38%), and radiological/nuclear (33%) rated lower. A comparison between municipal and private ambulance PP’s revealed that municipal workers felt more prepared for chemical and biological events (p=.032 and .048, respectively). There was no statistically significant difference in reported training hours or feelings of preparedness for radiological/nuclear events.

**Conclusions:** The quantity of training recalled in the past year for CBRN events varied greatly among PPs, with almost a quarter reporting receiving no education in this area. Drills and lectures were the most utilized and preferred formats for training. PPs felt least prepared for a radiological/nuclear event. Further studies not subject to survey limitations are needed to assess competency and performance improvement related to training time and format.

\*\* Data was presented at the American College of Emergency Physicians National Research Forum, October 15, 2006.

For abstract is (include citation from Annuals)\*\*

### Health Care Concerns for the 21<sup>st</sup> Century – Educating Medical Students for WMD and Disaster Preparedness

**Study Objective:** Creation of an introductory Bioterrorism/Weapons of Mass Destruction (BT/WMD) course for medical students. Specific student learning objectives include: 1) Gain basic scientific principles of various agents and medical interventions 2) Realize potential roles and responsibilities in case of disaster, regardless of anticipated medical specialty 3) Receive hands-on training through a disaster drill utilizing decontamination equipment and appropriate Personal Protective Equipment 4) Gain understanding for the infrastructure and processes in place on local, state and national levels.

**Methods:** Fourth year medical students received presentations from hospital, regional and national experts, including representatives from the Emergency Department, Fire Department, Poison Center, CDC, and FBI. Historical and hypothetical scenarios were used and basic science material covered; however student roles regarding chain of command, overall management plans and available resources were emphasized. Disaster preparedness principles (mitigation, preparedness, recovery, and response) were integrated into lectures. Students participated in a

disaster drill. Basic science competencies were assessed with pre and post-tests. Other course objectives were assessed with post-course and focus group discussions, student comments in the media and by direct observation during the drill.

**Results:** Pre and post test results for basic science were 47% and 93% respectively. Student recognition of their current and future roles in BT/WMD events was affirmed during post-course and focus group discussions, and in comments to the media. The London Underground bombings (July 2005) occurred during the course resulting in extensive media coverage and heightened appreciation of the subject matter. Participation in a disaster drill allowed students hands-on training and familiarity with roles, gave the hospital an opportunity to exercise policies and procedures, and through the media gave the general public the ability to witness preparedness activity.

**Conclusion:** As present and future participants in BT/WMD disaster preparedness and response, medical students must recognize their roles and be prepared to contribute constructively regardless of their career choices or the particular events on the ground. An effective introductory method of accomplishing this is to use hospital, regional and national experts to emphasize general concepts of disaster medicine and to have students participate in a disaster drill.

\*\* Data was presented at the American College of Emergency Physicians National Research Forum, October 15, 2006.

For abstract is (include citation from Annuals)\*\*

#### Patient Attitudes of Osteoporosis at the time of a Low Impact Fracture

Specific Question: This pilot study attempts to identify patient attitudes and issues regarding the treatment and risk factors of osteoporosis after a minimal energy fracture.

Methods: A survey instrument was administered to patients presenting in the Loyola University Medical Center (LUMC) Emergency Department with a low impact fracture from May 2004-July 2005. The survey contained items grouped by baseline knowledge of osteoporosis, risk factors, willingness to take preventative measures, and attitudes toward the disease.

Results: A total of 57 surveys were collected. Mean patient age was 54.72 years old, with a range of 21 to 93 years of age. There were a total of 39 fractures (68.4%) due to falls. The remaining 18 fractures (31.6%) were categorized under "other". 78.9% of all patients have a regular physician. When controlling for age, 84.8% of the 40 and older group had a Primary Care Physician (PCP), whereas 54.5% of the under 40 years old group had a PCP ( $p = .027$ ). Of the patients with a regular physician, only 17 (29.8%) had spoken with their doctor about osteoporosis. When controlled for age, 59% of those 40 years old and older did not speak with their physician about the disease while quite a larger proportion of those under 40 (83.3%) did not. 18 (31.8%) patients are familiar with osteoporosis, 21 (36.8%) have heard of the disease but are unaware of the risk factors. High risk factors were abundant, including: 18 patients receive the acceptable level of calcium either through diet or supplementation, 15 patients have a family

history of hip fractures, 19 smoke cigarettes, 22 drink caffeine daily, 26 do not get regular exercise, and 42 do not monitor their diet.

Conclusions: Given that there are a large percentage of patients with high risk tendencies for osteoporosis education by the medical community is greatly needed. Only 11 patients could identify the factors that contribute to the disease. Only 2 ranked osteoporosis as a significant health concern. Interestingly, only 18 patients would refuse a DEXA test. The health care system is obligated to educate patients regarding their risk for osteoporosis and proper preventative measures.