

people interact with horses daily, and injuries occur. The severity of these injuries range from minor cuts and scrapes to severe head and neck injuries resulting in long-term disability and/or death. These injuries are often treated in the emergency department. The purpose of this study was to identify the number, type, severity, and cause of horse-related injuries and deaths in emergency departments of western Montana and northern Idaho with the goal of incorporating this information into an equestrian injury prevention program.

Design: A descriptive study design was utilized. **Setting:** This study gathered information on victims of horse-related incidents at 16 hospitals in western Montana and 1 hospital in northern Idaho. **Sample:** Any patient presenting to the emergency department of the participating hospitals with an injury resulting from a horse-related incident between the dates of April 15, 2002, and April 15, 2004, was included in the study.

Methodology: A 12-item questionnaire, completed by the primary emergency health care provider at the time of admission to the emergency department, included demographics, mode of arrival, cause of injuries, type of injuries, severity of injuries, and disposition. Data were compiled and analyzed by a multidisciplinary team comprised of a trauma surgeon, a trauma coordinator, a trauma registrar, a trauma physician assistant, and a trauma nurse practitioner.

Results: Six hundred seventeen patients with 879 documented injuries were included in the study. The most common injury was extremity injury (36%), followed by head/neck (26%), chest (20%), pelvis (10%), and abdomen (5%). Of the 617 patients included in the study, 3 (0.5%) died. The average injury severity score for patients who died was 59.7. A quarter of the patients involved in the study sustained injuries that resulted in hospitalization. Ninety-two percent ($n = 568$) of the study sample wore no type of protective equipment such as a helmet or Kevlar vest.

Conclusions: Horse-related injuries comprise a significant number of ED visits in western Montana. Velocity of travel, height of patient off the ground, and unpredictability of animals all lend themselves to several types of injuries: high-speed decelerating injuries, blunt trauma, penetrating trauma, and dragging-type injuries that range from minor to mortal. Little attention has been paid to the cause and prevention of these injuries. Protective equipment is underutilized by most riders. Injury prevention programs stressing the potential severity of injury and the benefits of protective equipment must be made available to equestrians. Further investigation into the cause and prevention of equestrian accidents is needed.

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324-C Research Paper Presentation III: Changing Your Practice
7. Emergency Severity Index Intra- and Inter-rater Reliability in an Infant Sample: A Pilot Quality Study. Jennifer Hinrichs,¹ RN, MSN, CCRN, Emily Dever,¹ RN, CEN, Anne Wojner-Alexandrov,² PhD, CCRN, FAAN, ¹Clarian Health Partners-Riley Hospital for Children, 702 N Barnhill Dr, Indianapolis, IN 46202; ²Health Outcomes Institute, Fountain Hills, AZ

Purpose: Multiple factors delineate the severity of infant illness, which can make triage of this patient population challenging. Triage may become especially difficult when the infant's illness is

chronic and characterized by subtle and/or rapid changes. When the Emergency Severity Index (ESI) was implemented at this hospital (2003), it was well established as being highly reliable in adult patients. The purpose of this research was to determine intra- and inter-rater reliability of the ESI in infants.

Design: Retrospective chart review. **Setting:** An urban, tertiary care pediatric emergency department in the Midwest with an average of 15,000 patients per year. **Sample:** The medical records of infants ranging from 1 to 12 months old were randomly selected from a 2-month period of past ED records.

Methodology: After reviewing each chart, the investigator recorded the original triage acuity assigned and the name of the triage nurse. An ESI expert as determined by this person's experience as a triage nurse (12 years) and having been instrumental in the ESI education when the ESI was implemented was also used in this study. Two de-identified copies of each chart were made; one copy was given to an ESI expert, and the second copy was given to the nurse who originally triaged the patient. Utilizing emergency department documentation, the ESI expert and the triage nurse assigned acuity to the patient using the ESI method. For each case, reassignment of ESI triage acuity scores was performed by the ESI expert and triage nurse within 30 and 60 days following the original date of triage. Kappa coefficient and percentage of agreement was calculated to assess intra-rater and inter-rater reliability. For intra-rater reliability of the triage nurse, the original score was compared to the 30- and 60-day ESI scores determined by chart review. To assess inter-rater reliability, the ESI experts' triage acuity scores were compared with the triage nurses' scores.

Results: The patient sample ($N = 80$) had a mean age of 5.5 months ($SD \pm 3.2$). The triage nurse sample ($N = 11$) had a mean of 11.7 years experience in emergency nursing. Intra-rater reliability reflected a κ coefficient of .313 (95% CI = .157 to .469, $t = 4.5$, $P < .001$) with 53.9% score agreement within each nurse. Inter-rater reliability reflected a κ coefficient of .325 (95% CI = .169 to .481, $t = 4.7$, $P < .001$) with 53.9% score agreement between triage nurses and the ESI expert.

Conclusions: This pilot study demonstrated low ESI intra- and inter-rater reliability. Low intra-rater agreement was not related to improved ESI skill among our triage nurses, as inter-rater reliability was also low. The ESI is still a very new tool; therefore, further research is necessary to evaluate its effectiveness in pediatric, and more specifically, infant populations. One possibility is that the ESI needs some adjustments in order to accurately triage the infant patient population. Additional research is also warranted to determine the effectiveness of educational/training methods on infant ESI for ED staff.

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8. Violence Against Workers in the Emergency Department. Lisa McQueen, RN, MSN, Donna M. Gates, RN, EdD, FAAN, Clara S. Ross, MD, JD, Northern Kentucky University, Nunn Drive, Highland Heights, KY 41099

Purpose: ED workers are at risk of violence because of the increased numbers of patients and visitors under the influence of drugs and/or alcohol or with psychiatric disorders or dementia. In addition, a presence of weapons in the emergency

department, a stressful ED environment, and a flow of violence from the community may contribute to violence in the emergency department. The purpose of this study was to survey ED workers about the violence they experience from patients and visitors.

Design: This was a descriptive survey study. **Setting:** The study took place at 5 hospitals in the Midwest. Two were located in urban areas, and 3 were suburban hospitals. One of the urban hospitals was a teaching, level I trauma center. **Sample:** The study population included 600 ED workers who worked at least 8 hours per month and interacted with patients and/or visitors. The population included nurses, physicians, paramedics, physician assistants, social workers, patient care assistants, unit and registration clerks, schedulers, and patient representatives.

Methodology: The researchers contacted ED managers at each hospital to obtain an anonymous list of workers. A 31-item survey that included multiple-choice, open-ended, and Likert-type items was developed by the researchers. Study variables included frequency of assaults, verbal and sexual harassments, and verbal threats during the previous 6 months; reporting frequency; worker injuries; lost workdays; prevention training; and assault risk factors. Content validity was established using ED nurses as experts. After obtaining approval from each hospital's institutional review board, anonymous surveys and consent letters were distributed to employee mailboxes. ED workers were instructed to place completed surveys in data collection boxes that were located in each emergency department. A reminder flyer was posted in ED break rooms at each facility to increase response rate.

Results: Two hundred forty-two surveys were returned (response rate = 40%). In relation to violence from patients, 94% of respondents reported being verbally harassed, 66% reported being verbally threatened, 48% reported being assaulted, and 39% reported being sexually harassed. Sixty-five percent of those assaulted never formally reported the incident. Sixty-three percent of respondents had no violence prevention training within the previous year. Alcohol and drug use by patients were the most frequently cited risk factors for assault as perceived by respondents.

Conclusions: Results of this study confirm that the ED workplace poses a risk for violence to ED workers. Prevention efforts need to include education, security, environmental controls, and violence prevention policies. Reporting is needed to document risk factors and plan appropriate interventions. Research is needed to evaluate violence prevention strategies.

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9. Implementing the Emergency Severity Index Triage System in the Homeland of Hippocrates. Maria Kyranou,¹ RN, MSc, PhD Candidate, Athansia Chouta,² RN, Georgios Georgiadis,² RN, Dimitris Oulousidis,² RN, Anastasia Tsiviki,² RN, ¹University of California, San Francisco, Box 0610, 2 Koret Way, Nursing 631, San Francisco, CA 94143; ²Papageorgiou General Hospital, Ring Road of Thessaloniki, Thessaloniki, 56403, Greece

Purpose: Different triage systems have been developed and implemented in emergency departments, including the Australian National Triage Scale, the Canadian Triage and Acuity Scale, the Manchester Triage System, and the Emergency Severity

Index (ESI). Implementation of a new triage system depends on strengths and weaknesses of available systems as well as organizational and cultural characteristics of an emergency department. The purpose of this study was to evaluate the implementation of the ESI system in an emergency department in Greece by comparing an early phase of implementation to a later phase.

Design: This retrospective, descriptive study examined patient records and hospital reports as well as nurses' interviews. Descriptive and inferential statistics were used for analyses. **Setting:** The study was conducted at an emergency department of a large tertiary, teaching hospital in Thessaloniki, Greece. This emergency department is 1 of 8 departments that provide emergency and trauma care to 2 million citizens. At any given time, on an alternating schedule, only 2 of the 8 emergency departments operate 24 hours a day, which results in overcrowded waiting rooms. **Sample:** During the study period from November 2, 2003, to September 30, 2004, 50,410 patients visited the emergency department, and their patient records were reviewed retrospectively. The sample was divided into 2 groups. The first group included all patients who visited the emergency department in the first 2 months of the study period (n = 5905), which was during the initial stage of ESI implementation (phase I). The second group included all patients who visited the emergency department during the remainder of the study period (n = 44,505) (phase II).

Methodology: Patients' records and hospital reports were screened for predictive validity outcomes associated with triage levels for both study phases so that comparisons could be made. In addition, data were gathered and comparisons were made related to admission rates, length of stay, mortality at triage, and patients leaving the emergency department after triage. Reliability of the ESI system was tested by measuring inter-rater agreement and test-retest agreement among 15 triage nurses who had at least 1 year of experience in triage guidelines at the hospital.

Results: The following results pertain to Phase I - Phase II and triage categories 1 through 5. Admission rates: (1) 100% - 100%, (2) 64.3% - 89.2%, (3) 22.8% - 33.6%, (4) 4.9% - 2.6%, and (5) 2.4% - 0.38%. Length of stay in minutes: (1) 1 - 1, (2) 4 - 4, (3) 24 - 17, (4) 72 - 62, and (5) 91 - 69. Mortality: 0.2% - 0.08%. Number of patients leaving the emergency department after triage: 4.47% - 3.18%. Inter-rater agreement: 88.5% - 84.5%. Test-retest agreement: 92% - 96%.

Conclusions: Utilization of a newly implemented ESI system was shown to be reliable and valid in this Greek emergency department. Outcomes improve with experience and through continuous follow-up during the implementation process.

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