

### **Safety Events in the Out-Of-Hospital Care of Children: Results of the Children's Safety Initiative Chart Review**

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**Background:** Studies in the hospital setting have identified medical errors as a significant cause of morbidity and mortality. Little is known, however, about the frequency and nature of patient safety events in the out-of-hospital setting, particularly among children. We sought to describe the occurrence and characteristics of out-of-hospital pediatric patient safety events.

**Methods:** As part of the Children's Safety Initiative – Emergency Medical Services (CSI-EMS), we performed a retrospective chart review of 491 high-risk pediatric ambulance transports during 2008-2011 in an urban EMS system. A paramedic and emergency physician independently reviewed each chart, and a third reviewer (pediatric emergency physician) arbitrated differences. Our main outcome was patient safety events, which was categorized using the acronym "UNSEM": Unintended injury or consequence; Near miss; Suboptimal action; Error; and Management complication. We used descriptive statistics to characterize the distribution of UNSEMs and contributing patient, call, and EMS-care factors.

**Results:** At least one UNSEM was identified in 65.6% (n = 322) of cases; a total of 551 separate UNSEMs were observed (cases could have multiple events). For cases in which at least one UNSEM was recorded, 36.3% (200) of events were classified as errors; 14% (74) as unintended injuries or management complications; and 50.3% (277) as near misses or suboptimal actions. 23.9% (77/332) of cases with UNSEMs were categorized as severe, potentially resulting in permanent harm or death. Severe UNSEMs were more common among transports involving neonates and infants than older children, among dispatches for cardiac arrest or home-birth, and when resuscitation or airway management was performed. Potential contributors to UNSEMs included: lack of provider knowledge and inadequate patient assessment; failure to appreciate the risk:benefit ratio of treatment or the patient's degree of vulnerability; and inadequate scene management or use of online medical control. 74% of UNSEMs were deemed preventable.

**Conclusion:** Among high-risk pediatric ambulance transports, patient safety events are common, potentially severe, and preventable. Identification of patient and clinical scenarios at highest risk for safety events may provide direction for future strategies and interventions to improve care and reduce harm.