



National EMS Information System (NEMSIS)  
*Helping Unify EMS Data*



## UTAH DEPARTMENT OF HEALTH

### Bureau of Emergency Medical Services and Preparedness

In this issue of The NEMSIS TAC Best Practices Spotlight, we take a look at a report published by the Utah Bureau of Emergency Medical Services. The report, titled: "Training Matters! How Utah Improved the Documentation of Pre-Hospital Pediatric Vital Signs", details the problems with obtaining pediatric vital signs and how to improve documentation of pre-hospital pediatric vital signs. Using data obtained from EMS agencies, it was found that pediatric patients make up approximately 10% of all EMS transports nationwide, and 12% in the state of Utah. Previous studies have shown that often pediatric patients do not have vital signs recorded such as blood pressure (BP) and pulse oximetry (PO), that are otherwise ob-

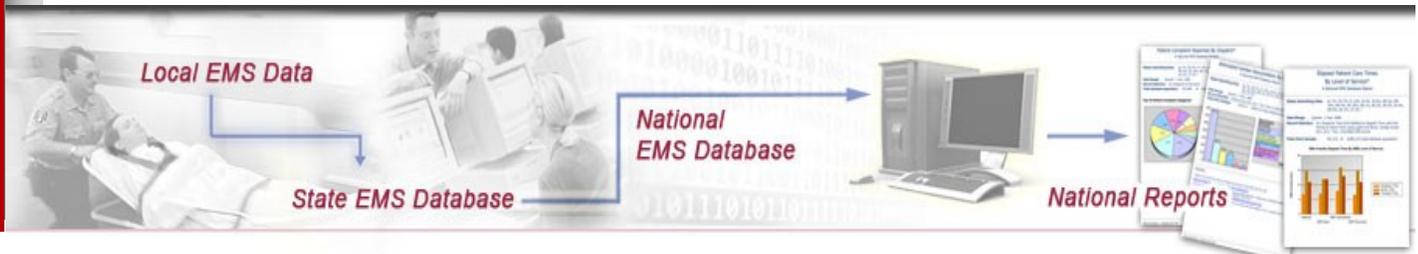
tained consistently in the pre-hospital setting for adults. Utah EMS data reveals that up to 70% of children, especially infants and toddlers, did not have a blood pressure obtained in the pre-hospital setting. Among certain conditions like traumatic head injury and shock, unrecognized hypotension and/or hypoxia have been linked to increased morbidity and mortality.

The state of Utah has implemented a combined State Trauma and EMS performance improvement project designed to monitor how often EMS providers documented four critical pediatric vital signs (BP, heart rate [HR], PO, respiratory rate [RR]) over an 8 year period.

## About Spotlight

This newsletter was developed to highlight utilizations of NEMSIS data to improve healthcare systems and EMS performance. Each issue will highlight successful programs/attributes associated with state or local EMS agencies that are integrating EMS data to serve local and state public health and safety needs.

In each quarterly issue we will focus on a state program or implementation strategy that has been successful in utilizing NEMSIS data to enhance patient care, ensure workforce training and





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“Evaluate the effect that education has on pre-hospital pediatric vital sign reporting”



### Objective

The objective stated in “Training Matters! How Utah Improved the Documentation of Pre-Hospital Pediatric Vital Signs” was to evaluate the effect that education has on pre-hospital pediatric vital sign reporting.

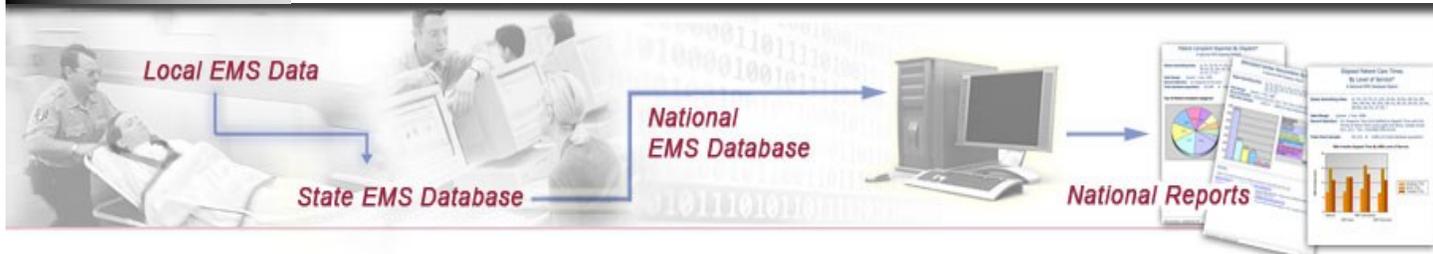
### Methods

The Bureau of EMS and Preparedness implemented educational outreach interventions to encourage EMS providers to gather vital signs on pediatric patients.

- Percentage for captured vital signs was calculated using the total number of patient care reports for pediatric patients.
- One vital sign recorded as the numerator and the total number of patient care reports for pediatric patients as the denominator.

This began on July 2010, presentations were delivered statewide to the State EMS Children coordinators. In addition, 15 short lectures were also presented at other venues across the state emphasizing the importance of monitoring pediatric vital signs, these being presented by the Bureau’s Medical Director.

In 2013, a 6 hour training program, which included information on performance improvement and importance of pediatric vital signs, was given directly to state EMS providers.





“ It was found that documentation of the four critical vital signs... increased by double digits in all four categories. ”

### Results

It was found that documentation of the four critical vital signs (blood pressure, heart rate, pulse oximetry, respiratory rate) increased by double digits in all four categories.

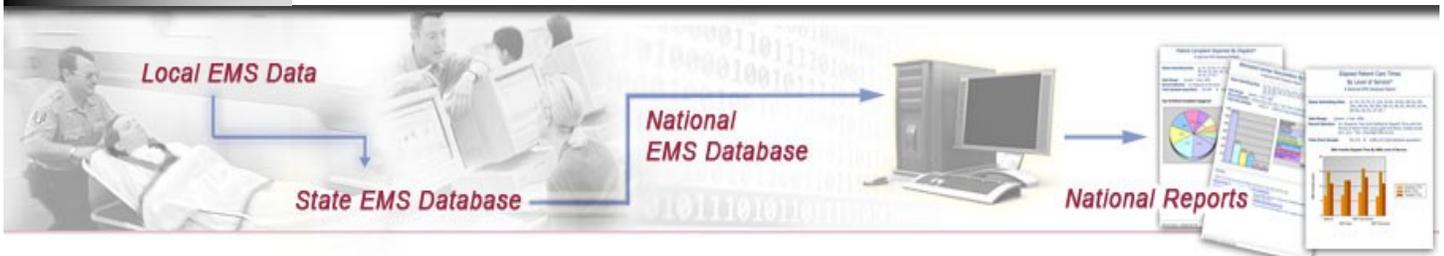
- Pulse oximetry increased most consistently across all age groups over time.
- Providers obtained respiratory rate and heart rate nearly 90% of the time across all age groups after receiving educational training.
- It was also found however that blood pressure remained the most inconsistent obtained vital sign, especially in younger patients. Children <3 year of age continue to have a blood pressure documented in <50% of transports.

### Conclusion

In conclusion, the report states the EMS providers statewide have improved their practices of documenting four pediatric vital signs between 2007 and 2014. However, blood pressure continues to be an area of improvement, especially among younger children. Two educational interventions designed to encourage EMS providers to obtain vital signs resulted in an increase in the percentage of pediatric transports with partial vital signs documented. It remains the State goal for documenting all four vital signs in >90% of pediatric transports.

As stated above in the conclusion, “EMS providers have improved their practices”. This remains at the heart of the best practice report, to highlight improvement to EMS care making a better experience for not only patients, but EMS providers as well. At the NEMSIS TAC, we commend the state of Utah in their efforts to increase the obtaining of vital signs for pediatric patients. This document can be found here: <https://www.nasemso.org/Meetings/Annual/documents/Training-Matters-How-Utah-Improved-the-Documentation-of-Pre-Hospital-Pediatric-Vital-Signs.pdf>

“ EMS providers statewide have improved their practices ”





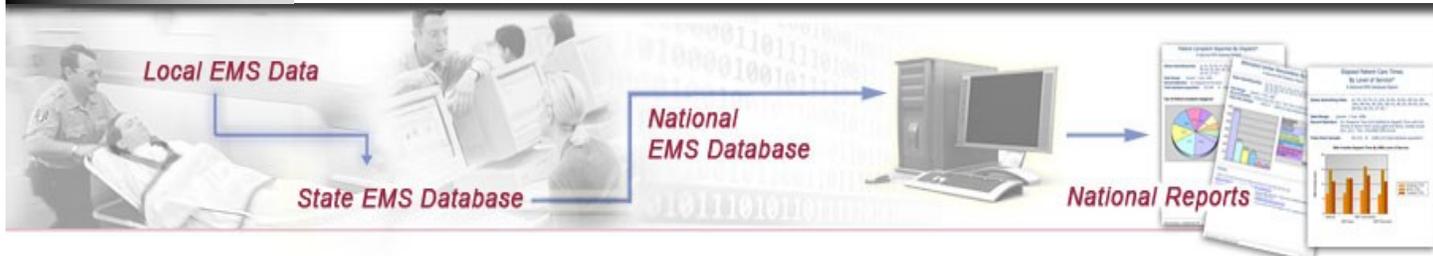
### Reference

Documentation of pediatric vital signs by EMS providers over time.

Hewes H, et al. J Pediatr Surg. 2015.

#### Authors

Hewes H<sup>1</sup>, Hunsaker S<sup>2</sup>, Christensen M<sup>2</sup>, Whitney J<sup>3</sup>, Dalrymple T<sup>4</sup>, Taillac P<sup>5</sup>.  
J Pediatr Surg. 2015 Oct 22. pii: S0022-3468(15)00609-0. doi: 10.1016/j.jpedsurg.2015.10.001. [Epub ahead of print]





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### Reference Materials

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## Do you know of an agency or project that deserves to be in the "Spotlight"?

As you have seen in this issue, we intend to highlight systems that have utilized NEMSIS compliant data to improve health systems, and to shorten the gap between EMS field care and hospital care.

In order to be featured in a future issue of The NEMSIS TAC Best Practices Spotlight, gather your relevant data, graphs and narratives and submit them to The NEMSIS TAC using the contact information provided.

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