TRAINING MATTERS!!
HOW UTAH IMPROVED THE DOCUMENTATION
OF PRE-HOSPITAL PEDIATRIC VITAL SIGNS

A Performance Improvement Initiative

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INTRODUCTION

- Pediatric patients represent 10% of EMS transports nationally and 12% in Utah.
- Previous studies show inconsistencies in obtaining vital signs for this population in a pre-hospital setting.
- The 2009 *Utah Preventable Mortality Study* also noted deficiencies of documentation in the pre-hospital phase of care as an opportunity for improvement.
OBJECTIVE

➢ Assess whether educational interventions could improve the percentage of pediatric transport patients with a full set of vital signs documented
METHODS

- Retrospective analysis of pre-hospital data for pediatric patients between 2007 and 2010
  - n = 54,780
  - # of pediatric patients with at least one set of vital signs captured
  - # of pediatric patient care reports

- Education Interventions
  - Instruction delivered to EMS medical directors
  - Instruction delivered to EMSC coordinators
  - Instruction delivered to EMS service providers

- Creation of Pediatric Vital Sign report in POLARIS
METHODS

- Loop Closure
  - Analysis of pre-hospital data for pediatric patients between 2011 and 2014
    - n = 75,737
    - # of pediatric patients with at least one set of vital signs captured
      # of pediatric patient care reports
- Publication of results
  - Multiple venues (EMS Committee, TSAC, EMSC, etc.)
  - Re-distribution of instructions to EMS service providers for running POLARIS report
RESULTS

- Documentation of the four critical vital signs increased by double digits in all four categories.
  - Measurement of $\text{SpO}_2$ increased most consistently across all age groups over time
  - Providers obtained RR and HR near 90% of the time across all age groups after the educational training
  - BP remains the most inconsistently obtained vital sign, especially in younger pediatric patients, with children <3 years of age having a documented BP in <50% of transports
RESULTS - SBP

Systolic Blood Pressure

% of PCRs With at Least 1 Vital Sign Recorded

Patient Age

2007-2010

2011-2014
RESULTS - HR

Heart Rate

% of PCRs With at Least 1 Vital Sign Recorded

Patient Age

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

2007-2010
2011-2014
RESULTS - $\text{SpO}_2$

PULSE OXIMETRY

% of PCRs With at least 1 Vital Sign Recorded

Patient Age

2007-2010

2011-2014

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

0 10 20 30 40 50 60 70 80 90 100
RESULTS - RR

RESPIRATORY RATE

% of PCR's With at Least 1 Vital Sign Recorded

Patient Age

2007-2010
2011-2014

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

0 10 20 30 40 50 60 70 80 90 100
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EMC providers in Utah improved their practice of documenting four pediatric vital signs between 2007 and 2014.

- Obtaining a blood pressure, especially in younger children, continues to be a challenge.
- 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.
- More work remains to be done.