Implementation of an Evidence-Based Guideline to Improve Vital Sign Assessment and Documentation in the Emergency Department (ED)

Mary Mason, BSN, RN, DNP Candidate; Jennifer Smith, PhD, RN; Laura Sturla, BSN, RN, CEN, CPEN

BACKGROUND

- Vital signs (VS) have remained a priority in nursing documentation as they are used globally as an early warning sign of patient deterioration.
- Timely VS assessments positively influence outcomes by decreasing preventable admissions, length of stay (LOS) times, and mortality rates.
- Despite ongoing reports showing profound VS inconsistencies are related to poor patient outcomes, there is a lack of evidence-based standards for VS assessment and documentation frequencies across healthcare.

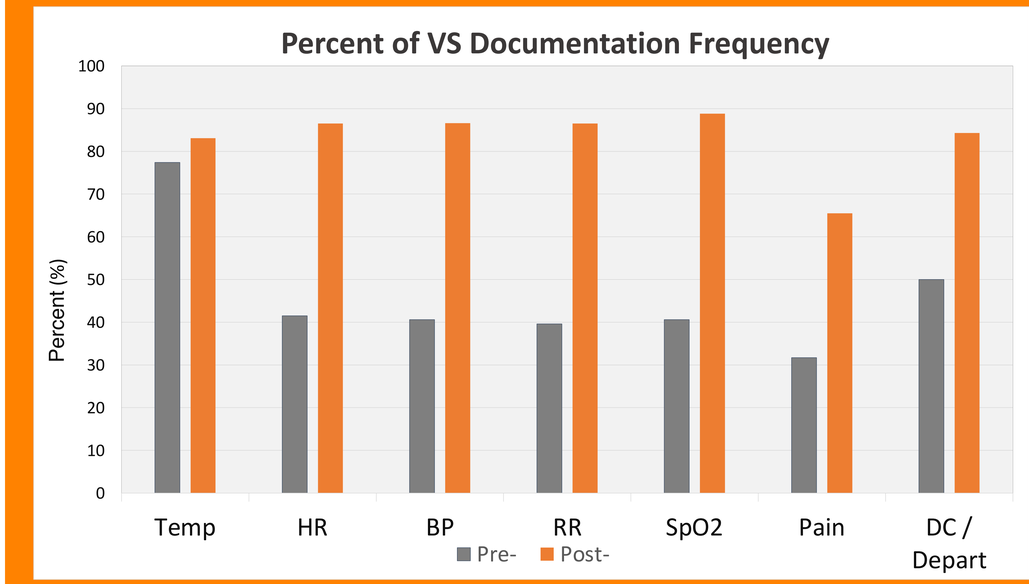
LOCAL PROBLEM

- The site for this evidence-based quality improvement (QI) project is a rural, 19-bed ED on the Eastern Shore of Maryland.
- Prior to implementation of the practice change, the site lacked a standardized process for VS assessment and documentation, leaving potential for negative outcomes.
- *Project Purpose*: To develop and implement an evidence-based VS assessment and documentation guideline based on patient acuity levels for the ED nurses.
- *Project Aim*: To increase VS assessment and documentation frequencies by 50% within 90 days of implementation.

METHODS

- Literature search and critical appraisals demonstrated good and consistent evidence supporting implementation of a VS guideline using a multi-disciplinary approach with written educational interventions.
- The Model for Improvement was used as the process framework for this project.
  - Plan-Do-Study-Act (PDSA) cycles were used to develop and implement the VS guideline.
  - *Process Measures*: Number of VS documented in each patient chart based on their ESI level.
  - *Outcome Measures*: Percentage of charts with the suggested VS recorded per guideline recommendations.
  - *Balancing Measures*: Patient's LOS in the ED.
- Retrospective chart reviews were completed for pre- and post- implementation data collection over 90-day periods (April – July) in 2022 and 2023.
- Descriptive statistics, parametric, and nonparametric tests were used for analysis.

Scan the QR code for further details.



ED nursing VS documentation compliance ***significantly increased*** after implementation of a VS guideline.

Acuity Level	Vital Sign Assessment/Documentation Recommendation
Level I (Critical)	Every 5-15 mins as needed for the first hour or until stabilized. Then at least hourly for the first four hours unless the provider or patient condition warrants differently.*
Level II (Emergent)	Every hour at least if stable for the first four hours, then every two hours at a minimum while stable, unless the provider or patient condition warrants differently.*
Level III (Urgent)	Every two hours at a minimum if stable for the first four hours. Then at least every three to four hours while stable unless the provider or patient condition warrants differently.*
Level IV (Less Urgent)	Per nursing judgment and clinical assessment, but no less frequently than every four hours unless the provider or patient condition warrants differently.*
Level V (Non-Urgent)	At least once unless the provider or the patient condition warrants differently.*
Discharge or Depart	At least 60 minutes prior to the patient leaving the department.*
*All abnormal results should be presented to the provider.	

Note: Vital sign assessment and documentation recommendations for each acuity level based on current evidence. Acuity levels are adapted from *Emergency Severity Index (ESI) Implementation Handbook: A Triage Tool for Emergency Department Care* by N. Gilboy, P. Tanabe. D. Travers, and A. Rosenau, Version 4, 2020, Emergency Nursing Association. Copyright 2020 by Emergency Nursing Association (ENA). For further resources used for guideline development, see the QR code provided.

INTERVENTIONS

- A VS guideline delineating VS assessment and reassessment frequencies based on acuity level was developed and implemented for the ED nursing staff.
- Education sessions and printed handouts, including a VS "badge buddy" and the full-text version of the guideline, were provided to the nurses and stakeholders.
- Laminated copies of the VS guideline were placed on computers and portable VS machines around the department.

RESULTS

- Documentation of heart rate (HR), blood pressure (BP), respiratory rate (RR), pulse oxygenation (SpO2), and pain levels improved by over 100%, exceeding the goal.
- VS documented within 60 mins of departure significantly increased by 68.6%.
- Temperature did not meet goal of 50%, but there was a 25.6% increase when comparing April to July post-data.
- The median LOS decreased by 36.2%.

Variable	Pre-	Post-	% Diff.	p value
Temp	77.4%	83.1%	+7.4%	0.314
HR	41.5%	86.5%	+108.4%	< 0.001
BP	40.6%	86.6%	+113.3%	< 0.001
RR	39.6%	86.5%	+118.4%	< 0.001
SpO2	40.6%	88.8%	+118.7%	< 0.001
Pain	31.7%	65.5%	+106.6%	< 0.001
Depart	50.0%	84.3%	+68.6%	< 0.001
LOS (Mins)	238	165	-36.2%	-

CONCLUSIONS

- A VS guideline can significantly improve ED nurses' VS assessment and documentation compliance, ultimately, improving patient care and process measures, such as LOS.
- Although temperature documentation did not meet the goal, the improvement is still clinically relevant to QI methods. Further research is recommended for manual temperature documentation.
- The continuous improvement of each VS parameter is promising for on-going sustainability. The project site will continue to perform annual education reminder at skills fairs.
- The guideline and educational interventions are easily reproducible and adaptable for numerous healthcare settings.

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