Modified Early Warning Score (MEWS)-Enhanced Emergency Department Patient Flow Process

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Background

- Emergency Department (ED) overcrowding is a longstanding problem in the United States
- Admission to the inpatient floors can be a bottleneck in ED patient flow due to the need for hospitalist assessment of patient clinical stability
- Early Warning Systems (EWS) have been proposed that use vital signs to detect early signs of clinical deterioration
- Modified Early Warning System (MEWS)
  - Systolic BP
  - Heart Rate
  - Respiratory Rate
  - Temperature
  - AVPU Score

Problem Statement

We set out to determine whether a modified version of MEWS (mMEWS) could be safely utilized to discriminate patients in whom ED streamlined admission orders could be placed prior to being seen by the admitting hospitalist with a goal of improving ED Length of Stay (LOS) without increasing adverse events.

Methods

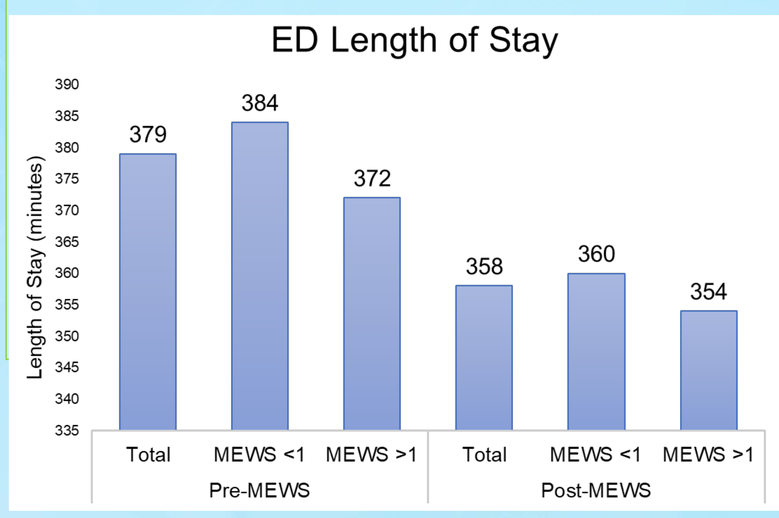
- Retrospective, observational, cross-sectional analysis of inpatient admissions from ED
- Level 1 Trauma Center in NE PA
- Inclusion criteria: ≥18 yo and admitted to the hospital medicine service
- mMEWS is MEWS without AVPU Score
- Pre-mMEWS vs. a Post-mMEWS enhanced time period
  - Pre-mMEWS: 2/19/2017-2/18/2019
  - Post-mMEWS: 2/19/2019-2/19/2020
- Post-mMEWS enhanced process:
  - Patients with a low mMEWS score (0-1) were admitted with an abbreviated order set
  - Those with higher mMEWS scores remained in the ED until they were seen by the admitting team
- Metrics:
  - Demographics, ED LOS (minutes)
  - Rapid Response Teams (RRTs) within 24 hours of admission

Results

- Pre-mMEWS
  - 28,624 (63.63%) admissions
  - Average age 68.66±17.31
  - 51.78% female
- Post-mMEWS
  - 16,362 (36.37%) admissions
  - Average age 68.30±17.21
  - 51.85% female

Results

- Rapid Response Events
  - RRTs: 681
  - RRT-24hr: 236 (34.65%)
  - Pre-mMEWS vs Post-mMEWS:
    - **No significant difference in RRT-24hr**
    - 143(33.26%) vs 93 (37.05%); p=0.32



Conclusions

The use of a mMEWS enhanced admission process to the hospital medicine service was associated with a significant decrease in ED LOS without a significant increase in adverse outcome as measured by RRT events within 24 hours of admission.

SELECT Connections:

- LOS/RRT and systems-based thinking
- Iron triangle of healthcare
  - Reduced costs
  - Improved quality