Implementation of the Epic Deterioration Index Tool and Algorithm on a Medical Surgical Unit

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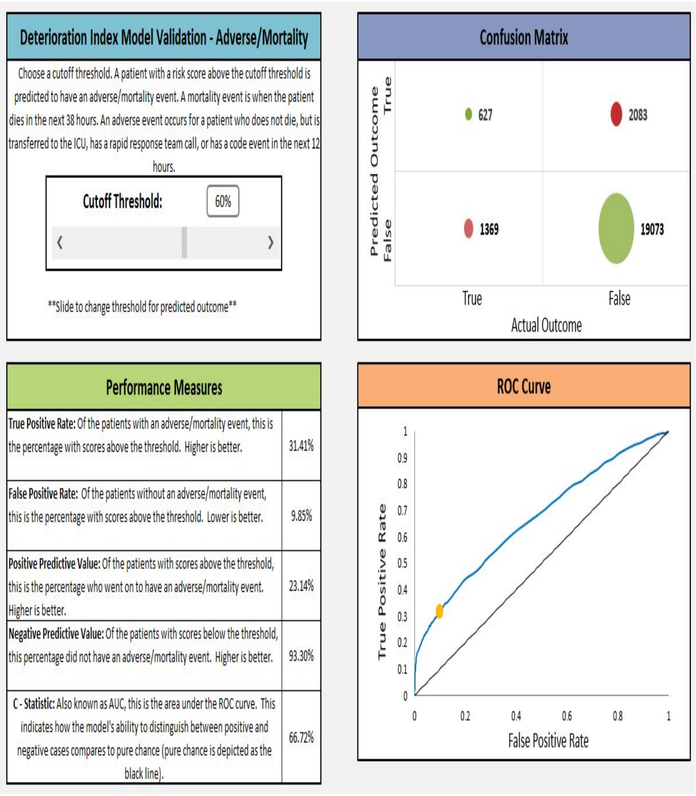
Introduction

- *Clinical deterioration* is the movement of a patient from one clinical state to a worsening state. Early detection is key to preventing clinical deterioration.
- EPIC has an automated early warning score (EWS) tool to assist clinicians in identifying patients at risk for deterioration. The EPIC Deterioration Index (EDI) tool uses 17 variables, including the patient's demographics, vital signs, nursing assessment, and prior data, to automatically generate a risk score.
- Implementation of the EDI tool can serve as a guide in the early identification and intervention of those at risk for deterioration. While EWS tools are well studied, more data regarding the EDI is needed.

Pre-Implementation EDI Tool Validation



Purpose

This project aimed to determine if implementing the Epic Deterioration Index tool and algorithm results in the early detection of and response to patient deterioration on a medical/surgical unit.

Methods

Project Design

- From 3/19/24 to 5/19/24, an IRB-exempt pilot study was conducted on a 32-bed blended-acuity Medical/Surgical unit at a university-affiliated academic health center.
- Staff on the trial unit were assigned a learning module that included education about the EDI tool and signs of clinical deterioration.

Data Collection

- Pre-trial data on the number of rapid responses and upgrades that occurred nine weeks before the trial (1/15/24-3/18/24) and during the same time frame the previous year (3/19/23-5/19/23) were collected as baseline data.
- Thresholds for the EDI tool were determined using an EPIC validation tool. Based on the validation results, the Best Practice Advisory (BPA) threshold was set to fire for a score of ≥ 30.
- To assist in the data collection, EPIC was programmed to send in-basket messages to the primary investigator every time the BPA fired on a patient with an elevated EDI score.

Results

Epic Documentation

- There was a 72% compliance rate in the early identification of deteriorating patients.
- Only 8% of RNs documented on the rapid response criteria flowsheet.

EDI Tool Performance

- Age was the highest contributor (31%) to the EDI score.
- 88% of the rapid response calls were related to a cardiac, respiratory, or neurological change in the patient's condition.
- 42% of the rapid responses on the trial unit occurred within the first 24 hours of admission.
- The number of rapid responses increased during the trial period compared to the pre-trial data. This was accompanied by a rise in the number of intermediate care unit upgrades and a decrease in the number of intensive care unit (ICU) upgrades.

References

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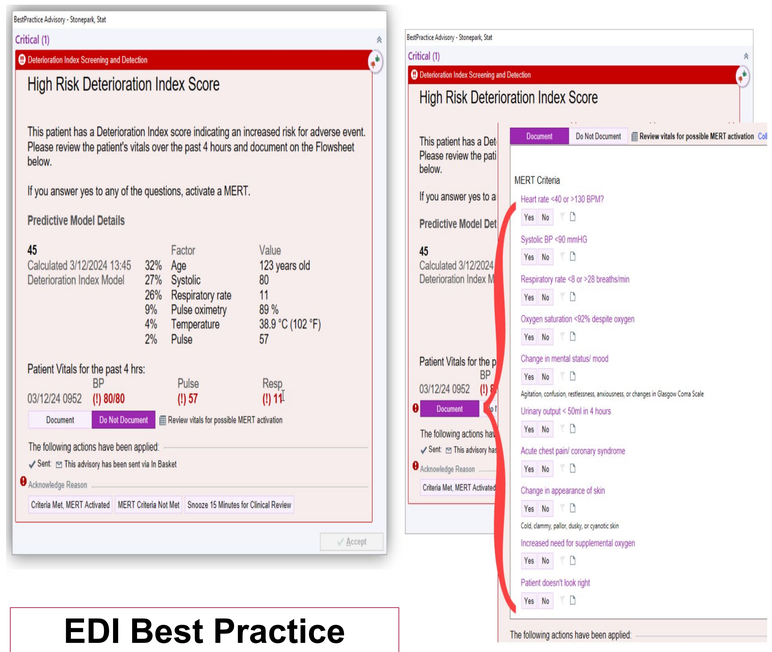
Discussion

- RNs who utilized the EDI tool had a high compliance rate in early identifying deteriorating patients, demonstrating that this tool can easily be implemented with adequate education in the medical/surgical setting.
- There was a lack of compliance in documenting the rapid response criteria flowsheet despite the RNs' ability to identify deteriorating patients. Recommendations include the removal of the rapid response criteria flowsheet tab.
- The EDI education needs to be updated to highlight cardiac, respiratory, and neurological issues as the most frequent causes of patient deterioration and to educate RNs on the importance of closely monitoring patients during the first 24 hours of admission.
- The increase in rapid responses and decrease in upgrades to an ICU level of care demonstrate that RNs can effectively utilize the EDI tool to identify deterioration earlier and prevent the need for an ICU upgrade.



EDI Best Practice Advisory

Conclusion

- The EPIC Deterioration Index tool is an effective tool to aid nurses in the early identification of deterioration.
- When combined with rapid response criteria, the tool holds great potential in aiding the early intervention of deteriorating patients, thereby preventing the need for ICU-level care.
- Further research is necessary to investigate the impact of RN education on the early identification of deterioration in the Medical/Surgical population.
- Additional recommendations for EPIC include reevaluating the weight of age in the EDI score to increase the accuracy of the EDI tool among the aging population.