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Elderly Mortality After Trauma (EMAT) score

A validated scoring method for predicting mortality after trauma in elderly patients at admission.

IP Status: Pending US Patent; **Application #:** 16/864,887

A validated mortality risk scoring model for use at admission

Elderly trauma patients are at high risk of mortality even when presenting with minor injuries. Providing proper medical care is especially challenging as these patients are medically complex and generate many ethical, financial, and moral questions. To support clinical decision making, mortality risk score models such as the Geriartric Trauma Outcome (GTO) score can be used to predict mortality risk in severely injured elderly patients. However, the GTO score relies heavily on the injury severity score (ISS), which is retrospective, anatomically based, and fails to account for physiologic status and comorbidities. In addition to applying equal weightage for head injuries and extremity injuries, the GTO score depends heavily on whether the patient has received packed red blood cells in the last 24 hours or not.

Researchers at the University of Minnesota have developed and validated a novel prognostic scoring model called Elderly Mortality After Trauma (EMAT), that can be used to quickly and accurately calculate in-hospital mortality risk in elderly trauma patients at admission. Using a combination of factors including the patient's comorbidities, physiologic parameters, nature and severity of injury, and demographic information, the EMAT score has been shown to accurately estimate mortality risk. EMAT consists of a two-tiered scoring model:

- a quick EMAT (qEMAT) score for use within the 1st hour of admission using 8 independent predictors, and
- a full EMAT (fEMAT) score for use at tertiary examination using 26 independent predictors.

Area under the receiver operating characteristic curve value of 0.80 for qEMAT and 0.84 for fEMAT is observed. This validated EMAT score can be a critical tool in supporting clinical decision-making at admission and in evaluating suitable options such as transfer to tertiary referral center, patient/family counseling, and palliative care utilization.

Key Benefits & Differentiators

- **Admission ready**: uses data available at the time of admission, providing a baseline for care at the facility
- **Broadly applicable**: does not rely on injury severity or blood transfusion data
- **Quick estimation**: qEMAT relies on 8 readily available indicators; minimizes waiting time for additional lab results.
- **Accurate prognosis** with a wide range of independent indicators including patient's comorbidities and demographic information
- Quickly calculated using web- or device-based applications

Applications

Technology ID
2019-285

Category
Life Sciences/Health IT
Life Sciences/Human Health
Life Sciences/Medical Devices
Software & IT/Algorithms
Software & IT/Health IT
Software & IT/Mobile Apps
Gap Funding/Software & IT
Gap Funding/Medical Tech

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- In-hospital mortality risk
- Predictive risk model
- Geriatric trauma
- Clinical decision making
- Medical scoring model

Phase of Development

The EMAT risk scoring model was developed using a dataset containing >840,000 patients, and is validated using a dataset containing >400,000 patients. Both datasets were obtained from the National Trauma Data Bank, with no overlap.
App is available for download on the Apple Store (iPhone or iPad).

Researchers

Surgical Education and Training
External Link (med.umn.edu)

Publications

Predictors of elderly mortality after trauma: a novel outcome score.
Journal of trauma and acute care surgery (2019)

Ready for Licensing

The EMAT risk scoring model is currently available for download in the Apple App Store. The University is also accepting requests for integrated use of the model in electronic health records (EHR) . Please contact us to request an application.