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Rewriting the future of healthcare

USING ARTIFICIAL INTELLIGENCE TO FOCUS ADVANCED CLINICIANS ON MORE CRITICALLY ILL PATIENTS

Keren Lipshitz, Avigdor Faians, Uri Keler, Danielle Jeddah, Itai Pessach, Omer Shaked
Clew Med, Israel

Introduction: Patient prioritization in the ICU is essential to ensure that the correct attention is given to the most critical patients. CLEW has developed an AI-based classification model that predicts which patients will not require intervention for a substantial period. The tool may assist in more efficient rounding in the ICU allowing providers to devote their time to the patients with the greatest need. **Methods:** The study included patients admitted to seven telemedicine monitored ICUs, across the UMass Memorial network, from July 2006 to September 2017. An automated prospective mathematical classifier model was trained using clinical parameters available in the electronic medical records. The model differentiates patients that will not require intervention for a period of 14 hours. The model was trained and evaluated on separate retrospective cohorts and tested on a separate prospective cohort. **Results:** The study cohort was 5,167 stays, and the model achieved a sensitivity and precision of 0.61, 0.98 respectively in predicting those stable periods (AUC 0.80). 2,951 twelve-hour shifts were correctly marked as no-need for intervention, 1,659 (32%) stays correctly predicted to require no significant intervention throughout the entire stay. **Conclusions:** Our model identified more than 60% of episodes where patients did not require intervention within 14 hours. Applying this strategy may allow 25% of all ICU patients to be automatically monitored and flagged as low risk (no need for significant intervention), thus allowing providers to focus on the remaining, less stable, patients.