

OVERVIEW

The Veteran Affairs (VA) National TeleCritical Care Program is at the forefront of enhancing access to specialized critical care for Veterans, using advanced telehealth technologies to connect patient care and bedside clinical staff with remote healthcare providers for real-time consultations, monitoring, and support. Cogitativo has developed sophisticated machine learning capabilities to further elevate the program's effectiveness, focusing on generating novel algorithms for the categorization, prognostication, and management of the acutely ill.

The objective of the ICU vulnerability models is to enable improved patient outcomes and program effectiveness by allowing for earlier detection of clinical deterioration. This proactive capability empowers TeleCritical program personnel to design and implement timely interventions, moving beyond traditional practices.

SCOPE OF PROBLEM

Sepsis

Sepsis management continues to be a major challenge for healthcare systems worldwide. In the United States, over 970,000 sepsis cases are admitted annually, and the numbers have been rising year over year ⁽¹⁾. A two-decade study of U.S. hospitalizations identified an increase in the incidence of sepsis among hospitalized patients by 8.7% per year ⁽²⁾. Additionally, sepsis accounts for more than 50% of hospital deaths ⁽³⁾, and mortality increases dramatically with greater disease severity: 10–20% for sepsis, 20–40% for severe sepsis, and 40–80% for septic shock ⁽⁴⁾.

Respiratory Failure

Respiratory failure is a life-threatening condition that demands extensive healthcare resources and can lead to significant mortality, especially when mechanical ventilation is needed ⁽⁵⁾. While this intervention is vital for saving lives, it comes with high costs and the need for specialized care. Even for those who recover, long-term physical, mental, and cognitive challenges often remain.

OUR SOLUTION - Visión

Save lives with early detection, unleash proactive care at scale.

Machine learning-powered continuous monitoring of ICU patients that detects increasing clinical risk of unfavorable outcomes in the next 48-hours.

Clinical Endpoints

- Probability of respiratory failure within 48- hours
- Probability of progression from sepsis to septic shock within 48-hours

IMPACT

- Assisting remote and bedside staff in assessment of patient risk
- Early detection of most clinically vulnerable patients
- Evaluation of modifiable risk factors driving patient risk
- Reduction in ICU and hospital mortality
- Improvement of patient outcomes
- Identifying optimal care plans through causal machine learning

Precision Health for Septic Shock

Supporting clinicians in making informed decisions for septic shock treatment

Quantify the impact and effectiveness among guideline-based interventions of antibiotics, fluid resuscitation and vasopressors in septic shock survivors.

We deploy causal models to inform next-best-step decision-making by quantify-ing the impact of interventions on the clinical endpoints. This process results in a ranked list of interventions based on their contribution to clinical outcomes within the cohorts based on different treatment regimens.



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