

Artificial Intelligence Predictive Analytics for Sepsis and other Conditions

Objective: An increasing number of high-complexity patients are admitted to hospitals each year, leading to increased morbidity, mortality and costs. Since sepsis is a leading cause of hospitalization and of complications of hospital stay, we focused on this clinical syndrome and one correlate of cost – Length of Stay (LOS). This study seeks to evaluate the impact on LOS when Healthcare Providers (HCPs) use Peach ACE, an Acute Care Early-warning app that utilizes Artificial Intelligence and Machine Learning (AI/ML) technology to predict a patient’s health and provide risk stratification, prior to signs of sepsis.

Methods: The study was conducted at the National University Hospital (NUH), a 1,250-bed tertiary hospital, and focused on patients in ICU and High Dependency wards that require the greatest resources. ACE received patient information from the hospital's electronic data recording system at regular intervals and provided Real-Time or near Real-Time analytics on smart devices. The LOS during nine months of ACE use was compared to the same period one year before, in 6 wards including Cardiac ICU, Cardiothoracic ICU, General ICU, Medical ICU, Surgical ICU, and Surgical High Dependency.

Results and Conclusions: Patient LOS was reduced approximately 30% during the 9-month period when ACE was available. When ACE was phased out, LOS returned to levels observed before ACE was introduced. The app displayed future trajectories of patient health and risk stratification that could support care escalation, early intervention, and resource allocation for sepsis and other conditions. It gave HCPs the ability to review patient data and receive AI/ML predictive scores, 24/7 and when they were on the move, without being restricted to a nurse station or patient bedside. By expanding HCP’s reach to patient information beyond standard monitors currently in use, ACE could offer greater convenience in care coordination. There were no safety concerns with the use of the app in all wards tested.