Clinical Deterioration: A High reliability journey using artificial intelligence – Focusing on Better Patient Outcomes

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Statement of the Problem: In 2014/15, according to CIHI and CPSI, 5.6% patients experienced harm during their hospital stay – that is 1 in 18 hospitalizations. Of these patients, 20% experienced more than 1 harm event while in hospital. Furthermore, 138,000 patients suffered potentially preventable harm. HRH's experience was similar and the organization embarked on a high reliability journey to reduce preventable harm incidents during patient hospitalizations.

Methodology & Theoretical Orientation: HRH began their high reliability organization journey in 2018 with the implementation of their Generation 2 - NASA style Command Center. This journey led to the development of the Humber River - Early Warning Score (HR-EWS). Early warning scoring (EWSs) systems as tools in the hospital context involve an algorithmic approach to predicting clinical deterioration or death in admitted patients. The HR-EWS generates point of care alerts to clinicians with standardized steps for escalation of care. The command center acts as both a centralized, yet de-centralized backstop, ensuring clinical teams have adequate supports in real-time at the bedside. This study demonstrates the impact of centralized patient monitoring along with the use of an early warning system.

Findings: The organization measured a 41% reduction in code blues on medical-surgical units with a 30% increase in monitoring frequency of full sets of vital sign reads and assessments on medical-surgical, paediatric and mental health units overall. These findings were sustained for 4 years, despite the increased volume and acuity of in-patient during the COVID-19 pandemic.

Conclusion & Significance: Over a course of 4 years we show that HR-EWS performs favorably, wherein we observed a decrease in critical events and an increase in observation frequency. However, much of the success of the tool lies in the process re-engineering of bedside nursing protocols and change management approach. The end to end digitization of clinical care processes, along with closed loop communication, led by an overarching digital vision have led to successful adoption

Biography

Jhanvi Solanki has a keen interest in innovation and system disruption in the healthcare sector. As a seasoned leader with 15 years of experience in acute and ambulatory care, she has led many multidisciplinary teams to maximize operational capacity, enhancing service delivery models to improve patient and provider experience alike and create systems that are targeted at improving patient outcomes using a high reliability approach. Jhanvi currently is currently Vice President – Clinical Programs at Humber River Hospital.

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