Thought\\\ire

IMAGINE A HOSPITAL WITH ZERO CODE BLUES

Hospitals are facing an unprecedented level of change – with pressure from the general public to provide high quality service, but at the same time retaining top quality talent by preventing burnout. The challenge remains trying to provide better patient care without overwhelming clinicians with more connected devices, alarming systems, and analytics solutions.

Some challenges don't just cause harm to patients but they have major economic impact on the financial health of the hospital and society writ large. That problem for many hospitals is the growing number of "code blue" calls that ring throughout a ward to warn clinicians a patient is in cardiac arrest.

Preventing the risks associated with code blues is especially important when one considers the aging population placing an increased pressure on the healthcare system due to needs for long term care and chronic disease, and that wait times are rising as a result of increased demand and a lack of resources because of this.

Challenges in the way of achieving this goal include:

1. Complex and manual workflows involving multiple systems impedes productivity of doctors, nurses, and others in the health-care cycle

2. Siloed applications with little to no interoperability for patient data, nurse calls, portering, and more

3. Lacking relevant data at the right time in order to take proactive steps toward desired patient outcomes

4. Little to no expertise in predictive analytics to move from reactive to proactive and predictive actions

5. Data availability and stress on clinicians pushing facilities to consider AI with adoption is falling on CIOs

6. Systems information overload causing fatigue on the front line and demanding service innovation and optimization

7. High frustration levels as current systems are no longer able to support volume in facilities

Hamilton Health Sciences

THE CHALLENGE

Hamilton Health Sciences (HHS) have been working since 2010 to eliminate code blue alarms from their acute care facilities.

If a "code blue" does occur – where a patient enters cardiac arrest – there is only between a 17–25% chance they will leave the hospital alive.

Clinical research shows that there are early indicators of a patient's declining health that could be used to predict and prevent adverse events from happening.

The HHS team developed an algorithm to detect early indicators of declining patient health that could cause cardiac arrest – resulting in a code blue. The Hamilton Early Warning (HEWS) score drives a set of guidelines that helps critical care teams get to patients before they code. After deploying the algorithm, HHS saw an 11% decline in the number of code blues. They knew they could do more.

THE EARLY WARNING APPLICATION SOLUTION

"Before rapid response teams were in place, you would hear code blue calls on average once or twice a day in the hospital's wards," said Alison Fox-Robichaud, BSc, MSc, MD, FRCPC, Department of Critical Care, Hamilton Health Sciences Centre. *"Fast forward to 2016 and I can now go an entire week without hearing a code blue on the wards. While they have not been completely eliminated, we hear far fewer – and that means that patients are staying safe."*

Hamilton Health Sciences collaborated with ThoughtWire to find an innovative way to address the key factors that were inhibiting greater results within the EWS implementation. In order to better orchestrate the operational response before a patient codes, the communication of guidelines needed to be automated, helping to remove bottle-necks that slow down the process.

For example today, nurses capture vitals at the bedside on the mobile device which then populates Meditech and computes the EWS. Based on HHS's research, each EWS drives a standard set of notifications and responses from the appropriate members of the care team; standard work consistently executed using machine intelligence from the EarlyWarning application.

Leveraging ThoughtWire's EarlyWarning application solution, the team created a Mobile Early Warning Score application that works in concert with Meditech in real time. Using the EarlyWarning application, HHS is able to:

· Predict and preempt using the HEWS algorithm to identify patients whose condition is deteriorating and may 'code'

· Make recording vital signs fast and easy by enabling nurses to enter data on their mobile devices or automate vitals capture by connecting to vitals capture system

· Accelerate a process that is often manual and frequently delayed to enable better visibility for clinicians

· Optimize process by reducing the number of disparate workflows required to respond to critical HEWS events

· Real time mobile enabled communication and collaboration between doctors, nurses, ER teams, and more, for enhanced situational awareness

· Lower risk of alarm fatigue and burnout due to a barrage of alarms for multiple systems

Over the course of eight weeks the HHS team was able to define and refine requirements, test their ideas and pilot a working solution. The result was a highly engaged stakeholder community that felt the mobile application was their own. With the EarlyWarning application in place, nurses can now capture vital signs automatically through an integration with Phillips monitoring system or directly into a handheld device at the bedside, send the information directly to Meditech and have an EWS score immediately computed without leaving the patient's bedside.

Better still, the ThoughtWire application ensures that the appropriate response, driven by the EWS score, is reliably and consistently pushed to the hands of the right care team member.

With EarlyWarning, average response time is 8.8x faster and code blues have been reduced by over 60%.

The EarlyWarning application's capabilities include:

· Vitals capture
· HEWS calculation and audit
· Nurse code call and management
· Intelligent alerts and alarm management
· Closed loop communications

The app also helps coordinate the response as it offers visibility into the care team responses and actions that result from the EWS notification. In fact, care delivery can be better managed as team members can request, receive and store acknowledgements for role-based responses.

In essence, the EarlyWarning system enables clinicians and other staff members to more intuitively respond to patient care needs and to be more proactive in their efforts to prevent harm and improve outcomes.

KEY LEARNINGS

· Clinicians can take proactive and preemptive measures to ensure better patient outcomes and prevent harm
· Nurses can take and record patients' vital signs at bedside, increasing response time
· Automated orchestration of care teams removes the need for multiple streams of offline communication – collaborate centrally with more efficiency
· Care can be better managed by team members' input into role-based responses
· HHS was able to respond to these code blue events 8.8x faster, and reduce costly critical events by over 60%.

Find out how you can transform your health organization into a smart hospital today. We turn unrealized ROI from technology investments into real, people-driven results.