

Improve Escalations In Medical Intensive Care Unit (MICU)

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BACKGROUND

The National University Hospital is a complex tertiary 1000 bed hospital with increased high complexity case mix with a 24 bed Medical Intensive Care Unit (MICU) managing complex patients including solid organ transplants, haematogenous stem cell transplants with acute critical care emergencies that require a complex **inter-professional multi-disciplinary team** of medical clinicians (junior & senior residents & intensivists), nursing clinicians, respiratory therapists and MICU pharmacists.

The dedicated and delicate inter-professional teamwork in MICU team is crucial & pivotal in providing, coordinating and optimizing patient safety and outcomes in every MICU patient.

There had been increasing instances of ineffective communication within the MICU team and missed opportunity to expedite escalation resulting in suboptimal patient outcomes that was the impetus for enhancing and optimizing patient safety and outcomes, streamlining and minimizing gaps in MICU and most **importantly engaging all key stake-holders** regarding barriers and hurdles to the ease and recognition of deteriorating patients and timeliness in escalation. The project hence aimed to improve escalations in MICU through a **better synergy of the close collaboration of the inter-professional multi-disciplinary team members especially breaking down the barriers and flattening the hierarchy through clear escalation thresholds and effective communications within the MICU team.**

The **3 main domains** of patient safety targeted for the project are as listed.

1. Inter-professional working relationship **through human development cum morale** within the MICU team members, i.e. securing rapport and trust in the inter-professional working relationship.
2. Procedural escalation through quality of **compliance for procedural escalations** of common and major vascular lines insertion (central venous line, arterial line, dialysis line) considered as routine & standard care.
3. **Timeliness of mechanical ventilation within 4 hours of trigger threshold** (disease specific) and **perception** within MICU team members of **delayed escalation.**

METHODS & INTERVENTIONS

The project utilized the approach of a **Rapid Improvement Event (RIE)** with application of the **lean principles for effective change management**. Firstly, a RIE workshop was conducted from 10-13 March 2015 that actively engaged all stakeholder representatives equally for team building and brainstorming sessions. **Key changes** included creation of a new escalation protocol, revised procedural checklist and a new framework of a team based night rounds (after office hours) to address the 3 domains of patient safety for improvement.

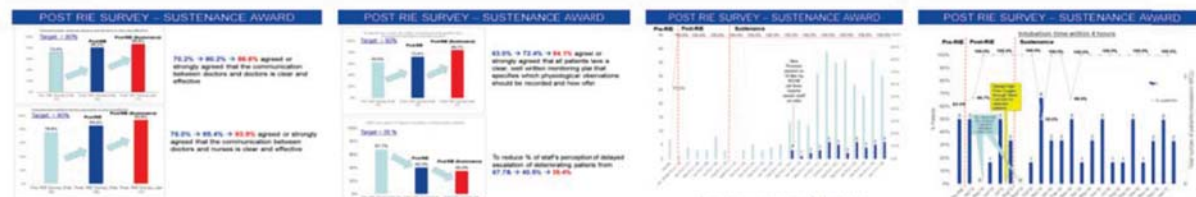
Data after new initiatives had been implemented was tracked monthly for evaluation. Reports at 3 months, 1 year and 2 years post implementation were generated to assess results of the project. **Pre-RIE data** (i.e. initial state) was collected to address the 3 domains (see background) targeted for improvement by the following **methods**.

1. A staff survey to understand the percentage of staff who agreed or strongly agreed that communication is clear and effective between doctors and doctors, between doctors and nurses and that all MICU patients have a clear and well written monitoring plan that specifies which physiological observations should be recorded as a tool to detect early deterioration of the patients.
2. Quality of compliance of procedural escalations - data collection 6 months before the workshop as base reference.
3. Timeliness of mechanical ventilation within 4 hours of trigger threshold (disease specific) and perception within the MICU team members of delayed escalation data collection 6 months before the workshop as base reference.

Targets for improvement were set specifically for the 3 domains (see above) at the end of the workshop i.e.

1. Staff survey target of **80 %** of staff in strong agreement that communication is clear and effective in the 3 specific statements (see above on methods).
2. Procedural escalation compliance rate target of **100 %** from 57 % (base reference).
3. Timeliness of mechanical ventilation within 4 hours target of **80 %** (from 62% base reference) and reduction target to **35%** of staff's perception of delayed escalation of deteriorating patients (from 67 % base reference).

RESULTS



CONCLUSION

Improve escalations in MICU project is the **first clinical quality improvement RIE** in the institution's MICU that **successfully** harnessed the tight collaboration of the complex multi-disciplinary inter-professional team utilizing breaking down of barriers and achieving a flattened hierarchy to focus on patient safety optimization **at all times** in the MICU, **particularly in early escalation for deteriorating patients**. The project **successfully attained all targets set with sustenance of results over 2 years**.

This demonstrated uniquely the strengths of a unified team approach in a high risk complex MICU using **lean principles as powerful, fundamental & instrumental change agents for sustenance of results over 2 years**.

This project had **numerous achievements** illustrating the impact of sustained optimization of patient safety in an ICU environment. It was awarded **Outstanding Award** for clinical quality improvement project in 2015 by NUH. This continued on with the **Sustenance Award – Merit in 2017** for achieving sustained results for 2 years consistently. The project had local & international opportunities to **spread & share** as listed.

1. 2015 NUH Nursing quality award -Recognition award (amongst all ICUs including Surgical ICU ,Cardiothoracic ICU)
2. 2015 NUH inaugural Patient & Safety week -- Symposium session + Poster presentation
3. **2015 NUH Quality Improvement Project - Outstanding award**
4. 2016 American Association for Respiratory Care Congress, San Antonio, Texas, United States of America
 - Poster presentation - A Respiratory Therapist QIP in MICU improves communication using escalation protocol & team based night rounds
 - Oral presentation Open forum
5. **2017 NUH Quality Improvement Project - Sustenance Award - Merit**
6. **2017 Asian Hospital Management Awards (AHMA –Patient Safety Category)**