

IMPROVING QUALITY OF TRACHEOSTOMY CARE USING SIMULATION-BASED CLINICAL TRAINING PROGRAM

Mission Statement

To dramatically enhance tracheostomy patient care and reduce adverse events at NUHS, a revolutionary new Tracheostomy Training Program (TTP) utilizing simulation, hands-on scenarios, and online learning was implemented. The Tracheostomy Training Program (TTP) aimed to improve the efficiency and effectiveness of tracheostomy care training at NUHS. The existing 1.5-day lecture program was transitioned to a 1.5-hour simulation and e-learning program for 99 staff. This resulted in 1,485 manhours saved.

TTP included simulation for hands-on practice and online self-directed learning. This innovative approach increased efficiency and effectiveness compared to traditional lecture-based training. After TTP implementation, analysis showed tremendous improvements - tracheostomy-related complications and ICU readmissions were significantly reduced. Overall, TTP enhanced staff knowledge, skills, and confidence in caring for tracheostomy patients, resulting in improved patient outcomes, fewer adverse events, shorter hospital stays, and reduced healthcare costs. TTP set a new standard for high-quality tracheostomy education to better equip staff for outstanding patient care.

Goal:
To create joy at work by having staff having ample rest and receive quality training while supporting the staffing needs in the ward. The hands-on simulation session conducts during staff's handover time and reduce the need for staff to attend training during their off days.

Team Members

Salutation & Name	Designation	Organisation
Mr. Ong Wei Jun Dan	Senior Respiratory Therapist	Ng Teng Fong General Hospital
Ms. Eleanor Dela Pena	Head, Respiratory Therapy	Ng Teng Fong General Hospital
Ms. Julipie Manalansan	Senior Respiratory Therapist	Ng Teng Fong General Hospital
Ms. Anna Kristina Trajico	Senior Respiratory Therapist	Ng Teng Fong General Hospital
Ms. Imelda Pasion	Senior Respiratory Therapist	Ng Teng Fong General Hospital
Ms. Fauziah Jabil	Assistant Director of Nursing, Nursing Administration	Ng Teng Fong General Hospital
Ms. Clarice Wee	Assistant Director of Nursing, Nursing Administration	Ng Teng Fong General Hospital
Dr. Amit Kansal	Senior Consultant, Intensive Care Medicine	Ng Teng Fong General Hospital
Dr. Adeline Tan Yit Ying	Senior Consultant, Respiratory medicine	Ng Teng Fong General Hospital

Evidence of Problem Worth Solving

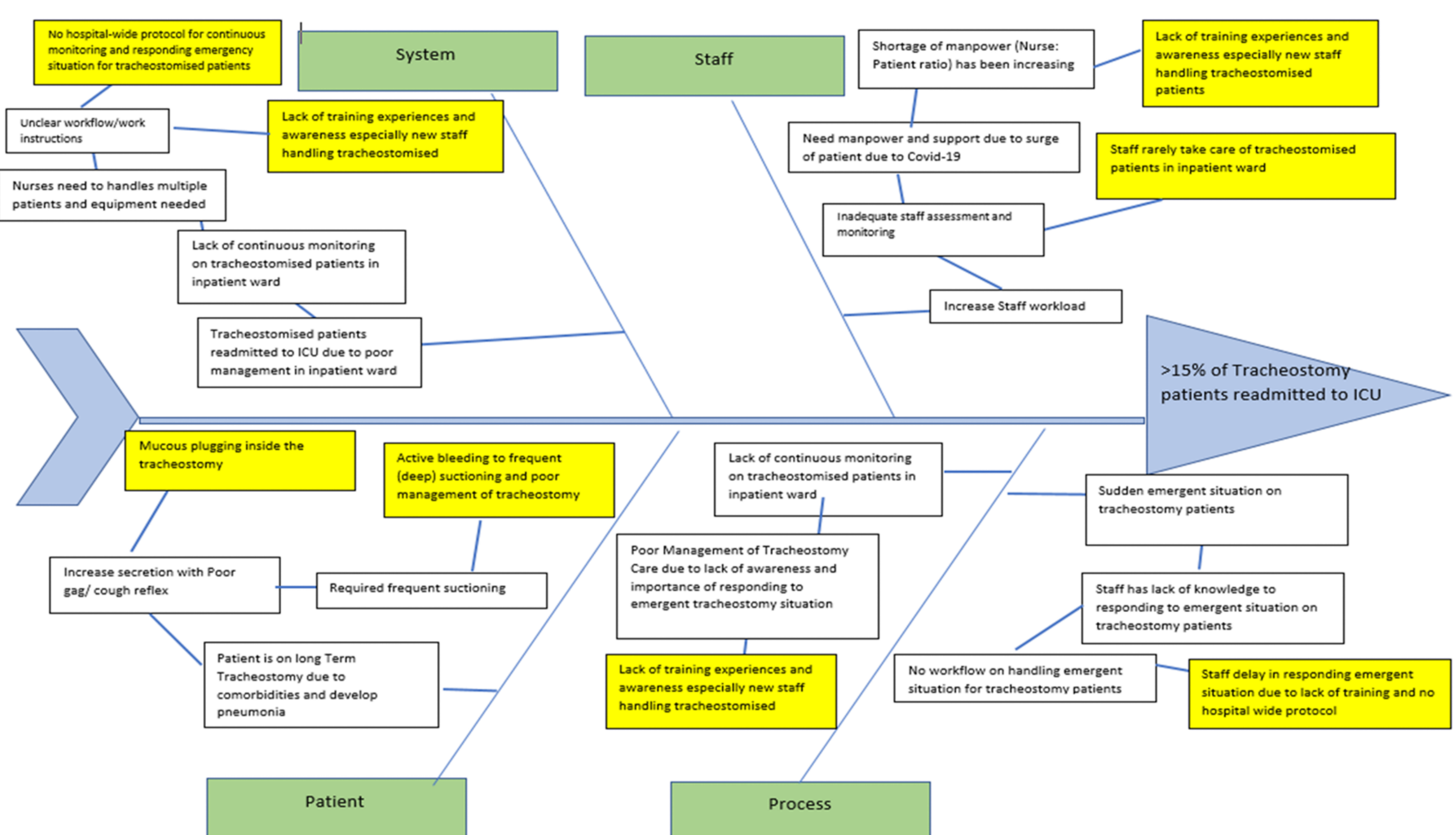
- Tracheostomy-related complications are common, occurring in 15.5% of patients, and can lead to prolonged hospital stays, increased healthcare costs, and mortality (Freeman et al., 2019).
- Healthcare professionals often lack the necessary knowledge and skills to properly care for patients with tracheostomies, leading to suboptimal care and an increased risk of complications (Shinnick et al., 2019).
- Improved training programs are needed to ensure that healthcare professionals are adequately prepared to care for patients with tracheostomies and reduce the incidence of complications.

Opportunity for Improvement

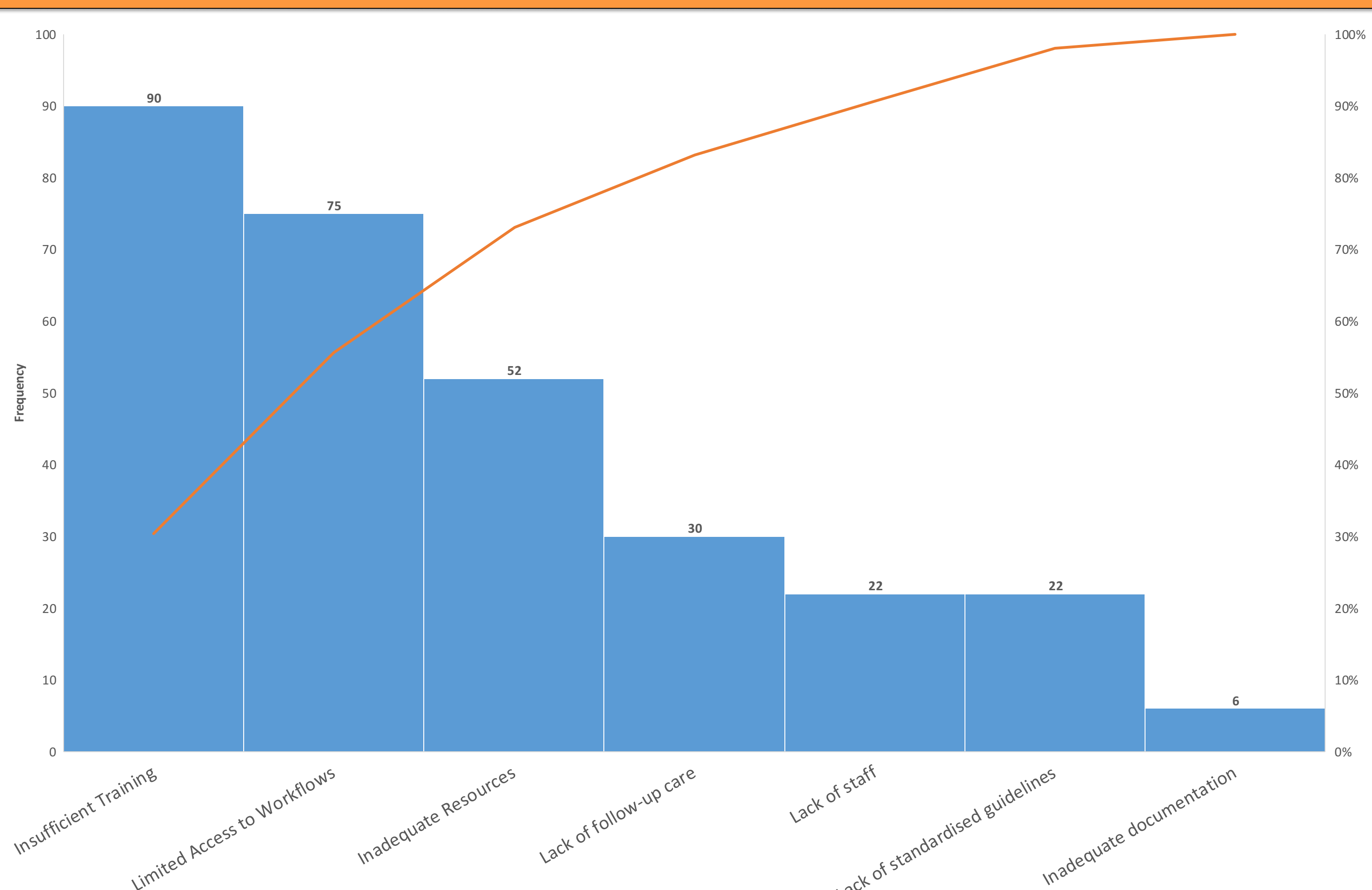
- The suboptimal tracheostomy care and management for patients with complex medical conditions. This is due to the lack of comprehensive and regular training for healthcare professionals, which has resulted in adverse events such as mucous plugging, tracheostomy tube dislodgement, ICU readmissions, and fatalities.
- The traditional tracheostomy training, which was part of the foundation training, was time-consuming (1.5 days) and was discontinued in 2020 due to the Covid pandemic and staffing shortages. This discontinuation has further exacerbated the lack of preparedness among healthcare professionals.
- Addressing these issues through a more efficient and effective training program is essential to improve patient outcomes, reduce adverse events, and mitigate potential medical liability and reputation risks for the hospital.

Cause and Effect Diagram

A root cause analysis was performed. The scope of the problem are that staff are not confident and inexperienced due to lack of training.



Pareto Chart



Implement Changes

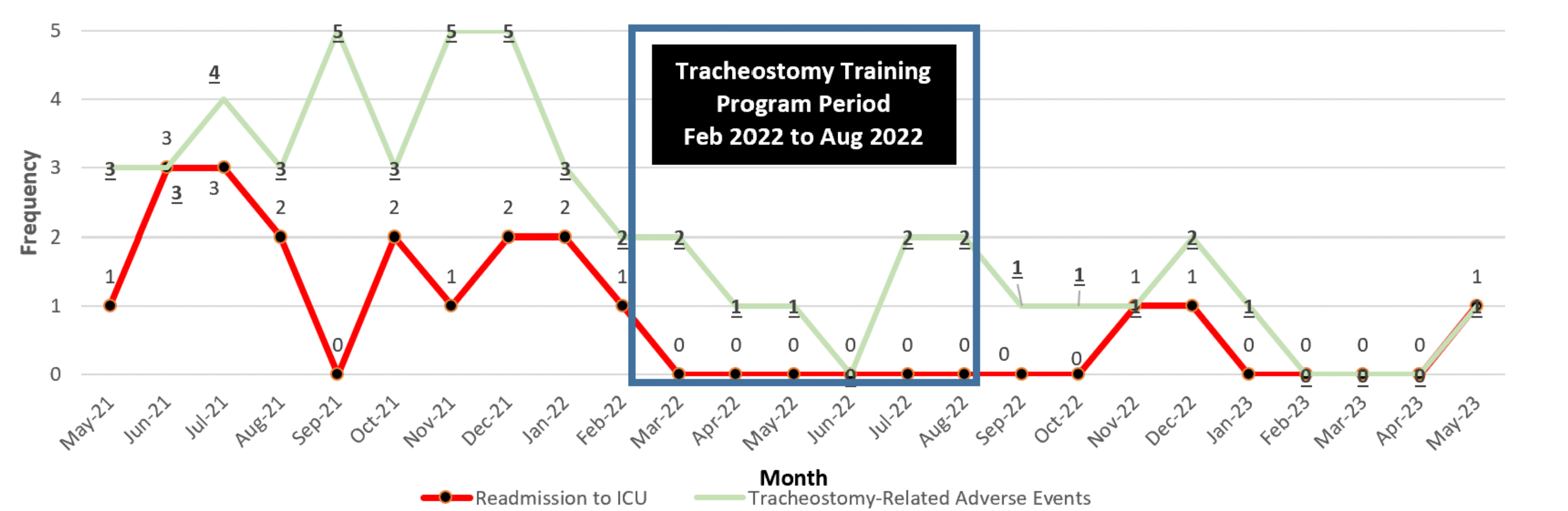
Root Cause	Potential Solutions
Poor tracheostomy management due to lack of knowledge, skills and confidence by staff	PS1 Tracheostomy brochure and bed-head sign
	PS2 E-Learn tracheostomy resources
	PS3 On-the-job training by respiratory therapist
	PS4 E-Learn + Hands-on Simulation Training
	PS5 Dedicate tracheostomy wards
	PS6 Increase staff manpower

Impact	Hard Implementation	Easy Implementation
High	Do Last (PS3)	Do First (PS4)
Low	Never Do (PS5)	Do Next (PS1)

Problem	Intervention	Process/ Balance Measure	Date
Lack of tracheostomy training in foundation program	Reinstate tracheostomy training via tracheostomy training program and e-Learn	Staff completion rate	February 2022
Inadequate training and competency assessment	Implement regular training and competency assessment for staff	Staff passing competency assessment	May 2022
Poor communication among healthcare team	Improve communication among team members	Feedback on communication effectiveness	August 2022
Insufficient monitoring and follow-up care	Enhance monitoring and follow-up care by RT	Number of tracheostomy patients seen by RT	September 2022
Inconsistent tracheostomy care protocols	Develop standardised tracheostomy care protocol	Protocol implementation rate	November 2022

Results

The implementation of the TTP resulted in notable improvements in both the number of complications and ICU readmissions among tracheostomy patients. Prior to the TTP, there were 36 complications recorded among 32 tracheostomy patients, with 17 cases of ICU readmission. In contrast, after the TTP was introduced, the number of complications decreased significantly to 7 among 34 patients, with only 2 cases of ICU readmission. This demonstrates a substantial reduction in both complications and ICU readmissions following the implementation of the TTP, highlighting its effectiveness in improving patient outcomes and reducing healthcare resource utilisation.



Spread Changes, Learning Points

- The project demonstrated that using E-Learn is essential coupled with having hands-on and open communication experiences enhances the educational value of web-based education in training psychomotor skills, increase in knowledge and confidence.
- Alter the 'see one, do one, teach one' philosophy to a safer 'see one, simulate many, do one, teach one' empowerment- Theory of Change model.

