

### **Project Title**

Improving Prone Ventilation Methods and Nursing Practices in the ICU

### **Project Lead and Members**

Project lead: Grace Teh

Project members: Sim Ping Hua, Li Jia Xin, Melvine Pepito, Aneesh John, Wee Zhen Chian, Alaine Teu, Norafifah Binte Maon

### **Organisation(s) Involved**

Ng Teng Fong General Hospital

### **Healthcare Family Group Involved in this Project**

Nursing

### **Applicable Specialty or Discipline**

Intensive Care Medicine

### **Project Period**

Start date: Oct 2018

Completed date: Jul 2019

### **Aims**

To educate and equip all ICU nurses with the knowledge and skills to assist in prone positioning. To design a standardized checklist to facilitate the provision of nursing care for patients on prone ventilation

### **Background**

See poster appended/ below

### **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Lessons Learnt**

Standardised guidelines and new prone positioning method improve the standard of care and has a better outcome for patient. In turn, it reduces complications such as pressure injuries and corneal ulceration.

## **Conclusion**

See poster appended/ below

## **Project Category**

Care & Process Redesign, Quality Improvement, Clinical Practice Improvement

## **Keywords**

Prone Positioning, Ventilated Patients

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# IMPROVING PRONE VENTILATION METHODS AND NURSING PRACTICES IN THE ICU

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- ✓ SAFETY
- ✓ PRODUCTIVITY
- ✓ PATIENT EXPERIENCE
- ✓ QUALITY
- ✓ VALUE

## Define Problem, Set Aim

Acute respiratory distress syndrome (ARDS) is a severe form of respiratory failure which significantly affects morbidity and mortality of patients in the Intensive Care Unit (ICU). According to recent PROSEVA trials, the use of prone positioning led to significant physiological improvements and reduced mortality compared to those in supine. This established proning as a recommended treatment measure for patients in ARDS. However, complications such as pressure ulcer over lips, facial edema, skin tear and corneal ulceration may occur in patients who are on prone ventilation method.

In NTFGH ICU, prone positioning is performed by a multidisciplinary team consisting of the respiratory therapist, ICU physician, and a group of 4 to 6 nurses. The main barriers experienced by ICU nurses included inadequate knowledge related to their role during the manoeuvre, providing pre and post prone nursing care and non-standardization of prone positioning technique within the team. In a recent cross-sectional survey conducted within the unit, 69.2% of nurses reported non-standardized technique as a barrier to effective prone position and 66.7% cited lack of experience and guidance on prone positioning.

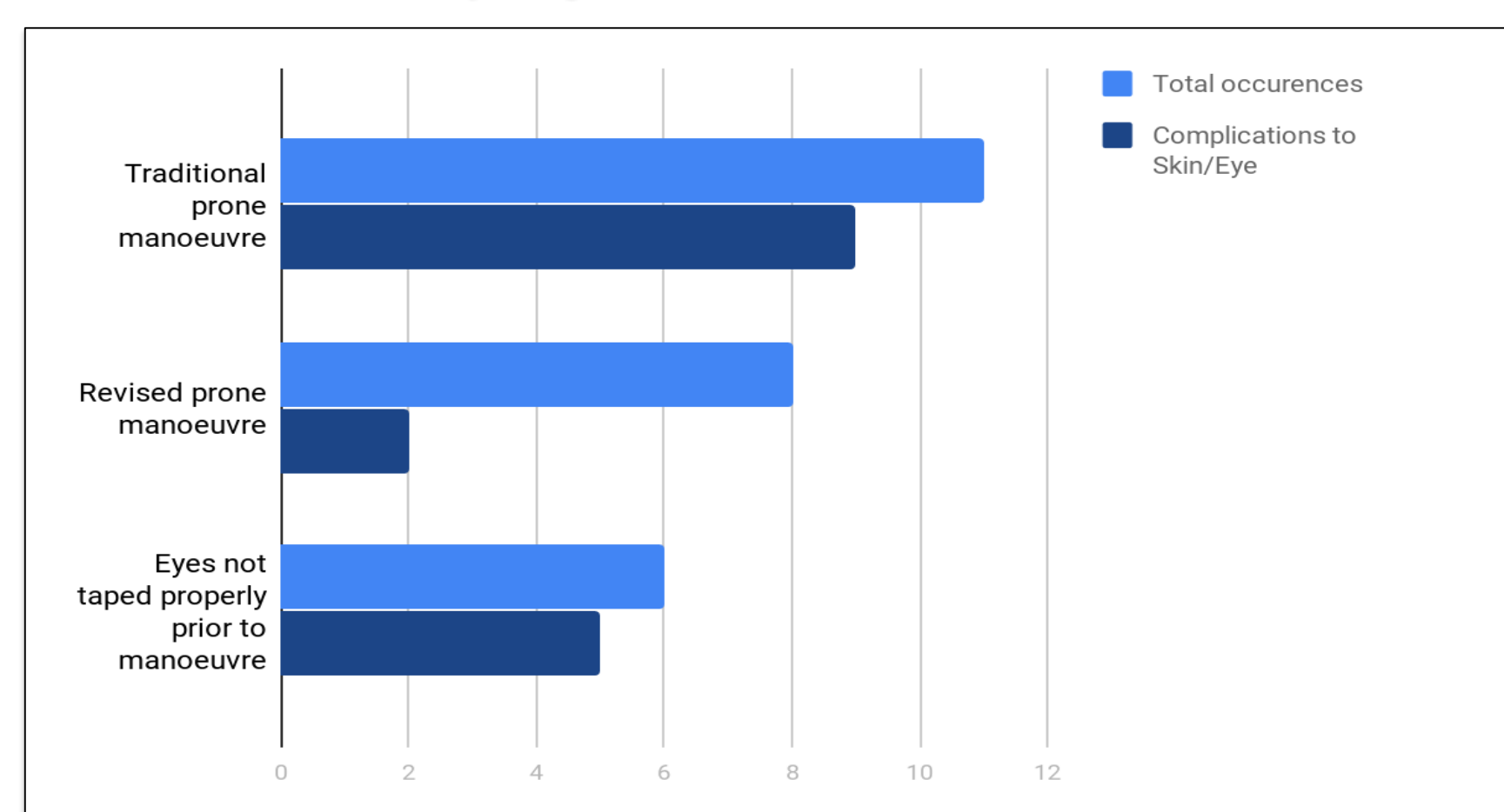
This QI project serves to establish standardized nursing care for prone patients and to educate nurses on the process of prone positioning, and reduce complications resulting from prone ventilation in patients.

### Aims

- To educate and equip all ICU nurses with the knowledge and skills to assist in prone positioning
- To design a standardized checklist to facilitate the provision of nursing care for patients on prone ventilation

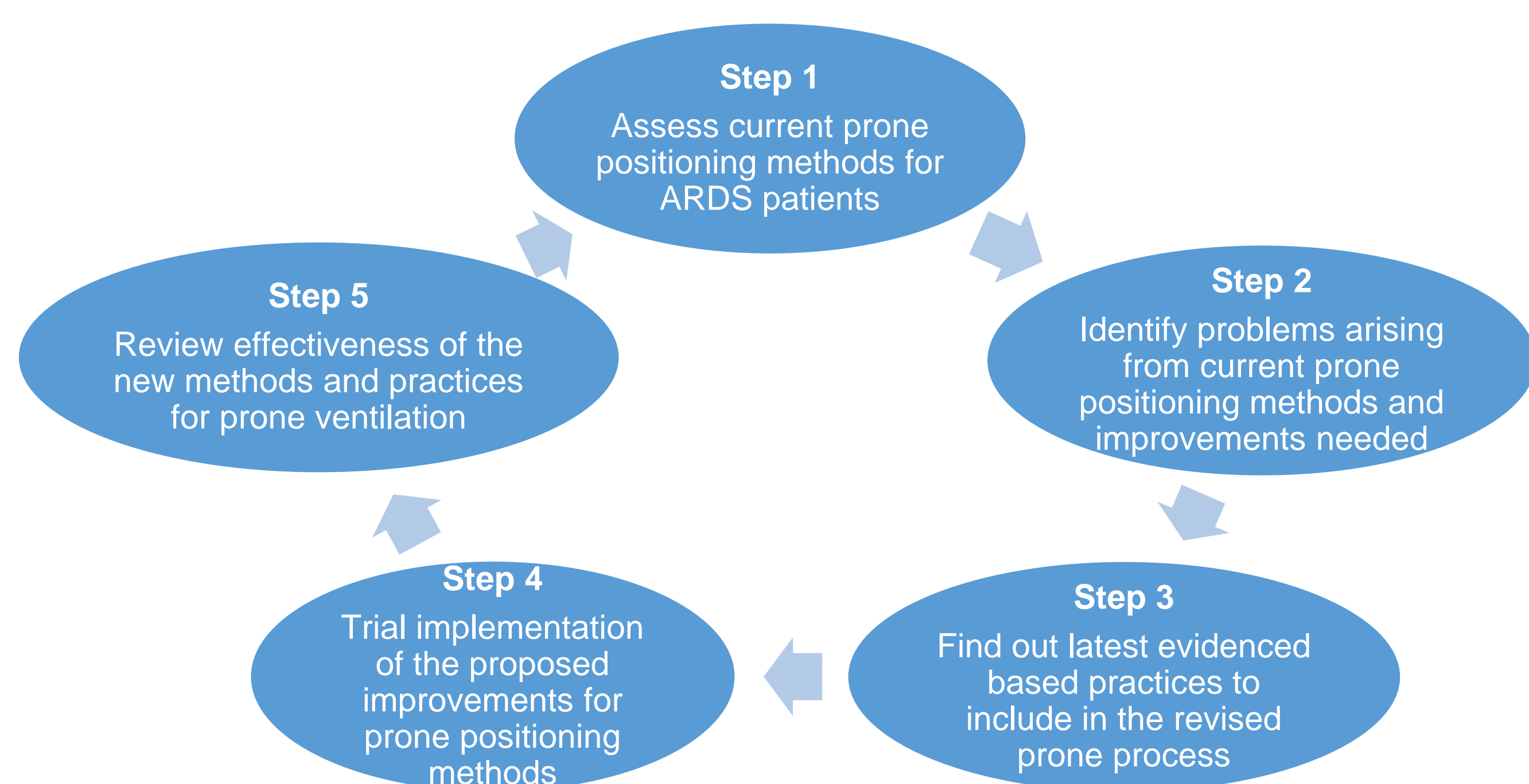
## Establish Measures

18 patients were receiving prone ventilation over the course of 9 months from October 2018 to July 2019. The revised prone manoeuvre was conducted only in the presence and guidance of the QI project team members.

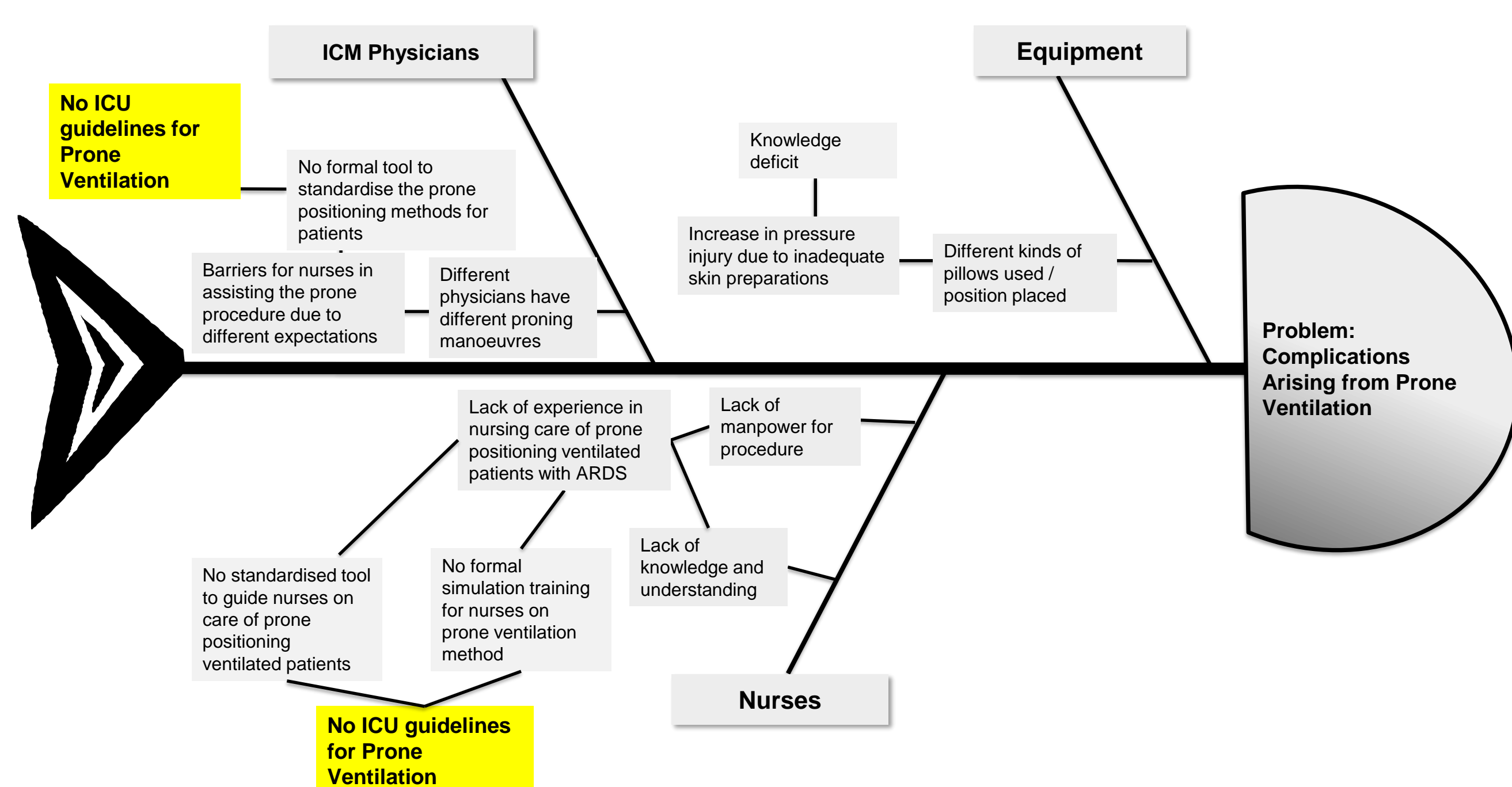


## Analyse Problem

### Current Process



### Root Cause Analysis



## Select Changes

From the data collected, most of the nurses found that the traditional prone positioning methods are challenging due to :

- Manpower constraints and energy consuming
- No standardized guidelines in pre and post prone ventilation nursing care resulting in increased incidences of pressure injuries, corneal ulceration
- Lack of experience and guidance in pre and post prone ventilation nursing care

Based on the root cause analysis, it is suggested that formulating a standardised prone checklist and guidelines will enable nurses to provide care of prone positioning ventilated patients more effectively. Hence, a new prone positioning method is designed to optimize the manpower required and less effort used for turning.

## Test & Implement Changes

### Plan

- Conduct a cross-sectional survey among nurses to investigate their knowledge, attitudes and perception towards prone positioning.
- Perform a root cause analysis to identify barriers towards prone positioning method.
- Create a guideline for prone positioning method to streamline the process.

### Do

- Explore various methods of evidence-based of nursing care of prone positioning ventilated patients
- Propose new guideline of prone positioning in the unit based on the above findings
- Educate the ICU nurses and multidisciplinary team members through roadshows, video presentations and simulation exercises
- Implement nursing care for prone positioning ventilated patients based on the proposed guidelines

### Check

- Measure the incidences of pressure ulcers, corneal ulceration after implementation of new guideline of prone positioning for effectiveness.

### Act

- Review the data collected to ensure that the proposed guidelines are successful - e.g. reduction of incidence of pressure ulcers and corneal ulceration
- QI project team members to do surveillance whenever there is patient on prone ventilation to ensure compliance of guidelines; and be the resource people to other nurses
- Conduct simulation to the ICU nurses to improve knowledge and skills in providing nursing care of prone positioning ventilated patients
- Conduct post-educational and post-simulation cross-sectional survey to measure ICU nurses knowledge, attitude and perception towards prone positioning

## Spread Change/ Learning Points

### Strategies to spread change

- Roadshows were conducted in May to June 2019 to introduce the new prone positioning method and the new guideline on nursing care.
- Feedback will be collected from the ICU nurses to improve the guideline.
- When prone positioning is initiated, a member from the team will be present whenever possible to observe the process.
- Involving ICU nurses to practice prone positioning method so as to gain their feedback in improving the process.

### What are the key learnings?

Standardized guidelines and new prone positioning method improves the standard of care and better outcome for patient. In turn, it will reduce complications such as pressure injuries and corneal ulceration.