

## **Project Title**

Nurse-Performed Bedside Dysphagia Screening for Post-Extubated Patients in ICUs

## **Project Lead and Members**

Project lead: Yong Ying Bing

Project members: Chua Hsu Fung Cindy

## **Organisation(s) Involved**

National University Hospital, NUHS

## **Project Period**

Start date: May 2018

Completed date: March 2019

## **Aims**

This quality improvement initiative aimed to achieve 80% of the nurses trained and competent in performing NPS for post-extubated patients within 12 months. It aimed to improve resumption of oral intake within 48 hours post extubation, reduced reintubation events, post-extubation pneumonia rates and length of hospitalisation in post-extubated patients within 12 months. It was targeted to achieve 75% of nurses' compliance rate to the NPS PED protocol over 12 months.

## **Background**

Post-extubation dysphagia (PED) refers to the inability to safely transfer food and liquid from mouth to stomach after extubation. This occurs in 62% of intensive care unit (ICU) patients following endotracheal intubation for 48 hours or longer. PED predisposes patients to risk of aspiration, resulting in increased pneumonia, reintubation and prolonged hospitalisation. The high-risk patients in ICUs were directly referred to speech therapists for formal assessments. There was no standardised NPS PED protocol across the multiple care settings. As a result, patients were not receiving accurate and prompt routine screening after extubation. Moreover, swallowing

evaluations were delayed following extubation with the assumption that swallowing function improves over time. There were 69% of ICU patients who resumed oral intake more than 48 hours post-extubation. Delayed oral resumption commits patients to feeding tube dependence, thus prolonging patients' recovery. This resulted in reintubation events, pneumonia and increase length of hospitalisation within 12 months. It is essential to have a NPS PED protocol to standardise dysphagia screening practices across ICUs so as to allow nurses to screen post-extubation patients timely and accurately.

## **Methods**

Refer to attachment

## **Results**

Refer to attachment

## **Lessons Learnt**

Introducing a new change in a healthcare setting that includes a diverse mix of specialty providers and differing practice styles pose challenges. Specifically, variability to training needs of end users, execution of implementation, and staffing arrangement display planning and logistical challenges, and require flexibility in how we approach the process. Hence, it is imperative to align and have a building consensus on implementing practice change and gain approvals from senior management and clinicians for any critical decisions.

## **Conclusion**

Empowering nurses in PED screening improves early resumption of oral intake, decreases reintubation events, pneumonia rates and length of hospitalization. Measures will be put in place to modify the implementation and education methods with booster sessions to improve sustainability of nurses' compliance with the NPS PED protocol. Implementation of NPS for PED is safe and effective, hence enhances patients' outcomes.

### **Additional Information**

PED affects not only patients but also their caregivers. It causes disruptions in their rehabilitation and is also associated with reduced quality of life. While improving standardisation of NPS PED allows healthcare professionals to screen in a more consistent and timely manner, yet we ought to ensure balance safety and efficiency, in order to adopt a safe feeding strategy for patients.

### **Project Category**

Care Redesign

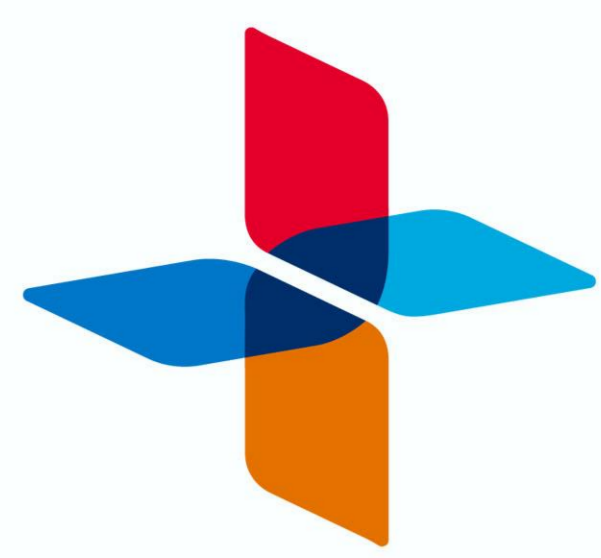
### **Keywords**

Care Redesign, Quality Improvement, Clinical Improvement, Quality Improvement Tools, Cause and Effect Analysis, Plan Do Study Act, Workflow Improvement, Work Protocol Streamlining, Staff Training, Structured Training Programme, Staff Empowerment, Change Management, Intensive Care Unit, Nursing, Allied Health, National University Hospital, Nurses Compliance to Protocol, Nurse-Performed Dysphagia Screening Protocol, Dysphagia Screening, Post-Extubation Dysphagia, Intubation, Reintubation, Post-Extubation Pneumonia, Oral Resumption

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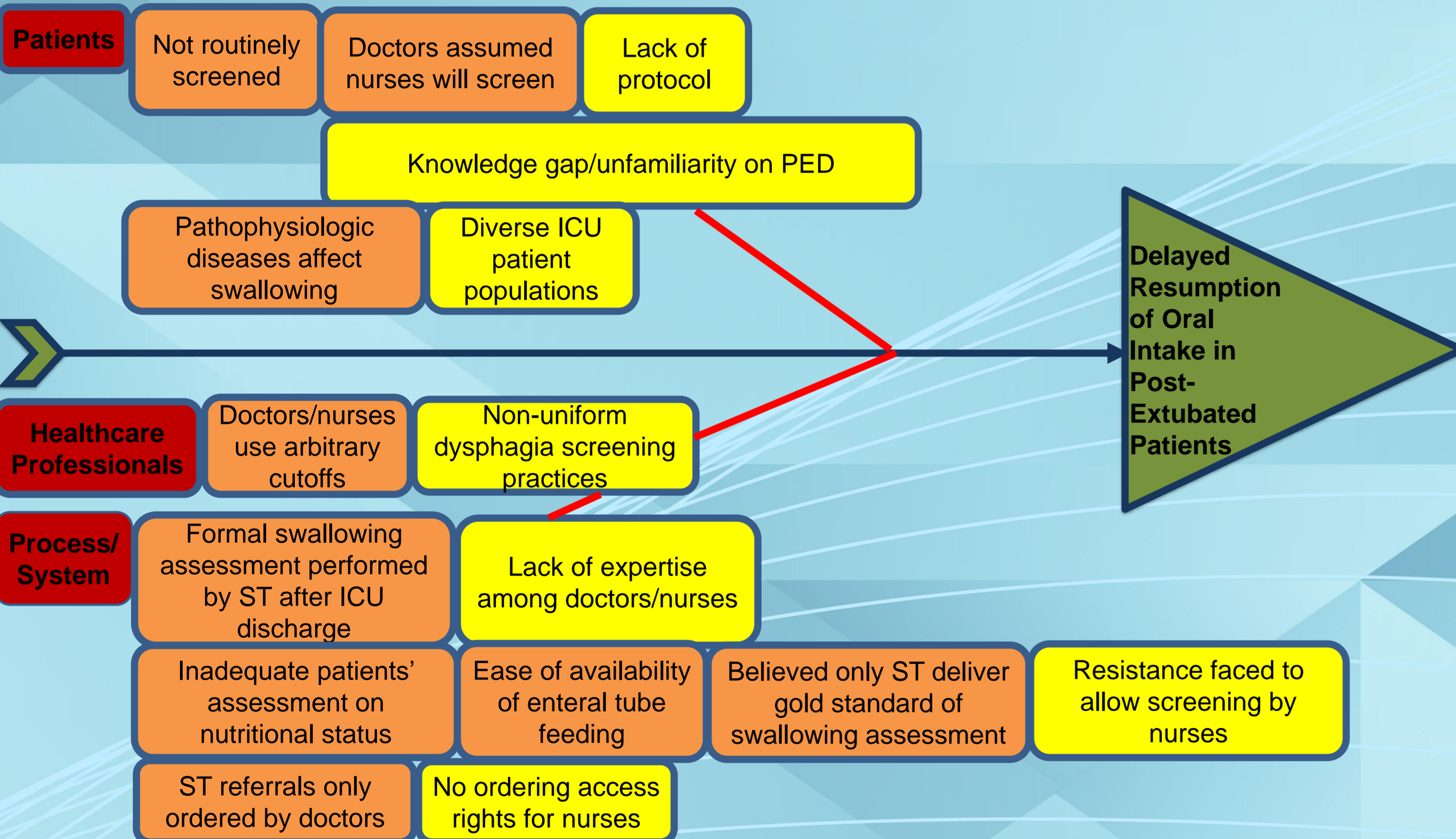
## INTRODUCTION

- Post-extubation dysphagia (PED) occurs in 62% of intensive care unit (ICU) patients following endotracheal intubation for 48 hours or longer, delaying oral intake.
- PED predisposes patients to risk of aspiration, resulting in increased pneumonia, reintubation and prolonged hospitalization.
- Moreover, swallowing evaluations are delayed following extubation with the assumption that swallowing function improves over time. There are 69% of ICU patients whom resumed oral intake more than 48 hours post-extubation.
- A cause and effect analysis was utilized to identify root causes for delayed resumption of oral intake in post-extubated patients (Diagram 1).
- The team voted 5 of the root causes from the cause and effect analysis to focus on, namely lack of protocol, non-uniformity of dysphagia screening practices, knowledge gap/unfamiliarity on PED among doctors and nurses and resistance faced to allow screening by nurses.
- Currently, there is no standardised nurse-performed screening (NPS) and high-risk patients are directly referred to speech therapists (ST) for formal assessment.
- By streamlining NPS PED protocol, it aids nurses in early identification of PED and reduces unintended complications.

## AIMS

This quality improvement initiative aimed to achieve 80% of the nurses trained and competent in performing NPS for post-extubated patients within 12 months. It aimed to improve resumption of oral intake within 48 hours post extubation, reduced reintubation events, post-extubation pneumonia rates and length of hospitalisation in post-extubated patients within 12 months. It was targeted to achieve 75% of nurses' compliance rate to the NPS PED protocol over 12 months.

Diagram 1: Cause & Effect Analysis



## METHODS

|                             |   |
|-----------------------------|---|
| <b>Design</b>               | Plan-Do-Study-Act (PDSA) (Figure 1)   |
| <b>Setting</b>              | 5 adult ICUs restructured hospital  |
| <b>Ethics consideration</b> | Not required, project was conducted in accordance to hospital's clinical quality improvement policy   |
| <b>Inclusion Criteria</b>   | (1) ICU patients whom have tolerated extubation for at least 1 hour   |
| <b>Exclusion Criteria</b>   | (1) Known dysphagia on modified diet/fluids<br>(2) Requires continuous non-invasive ventilation > 6 hours post extubation<br>(3) Tracheostomy<br>(4) Terminal extubation/palliation |

Figure 1: PDSA cycle

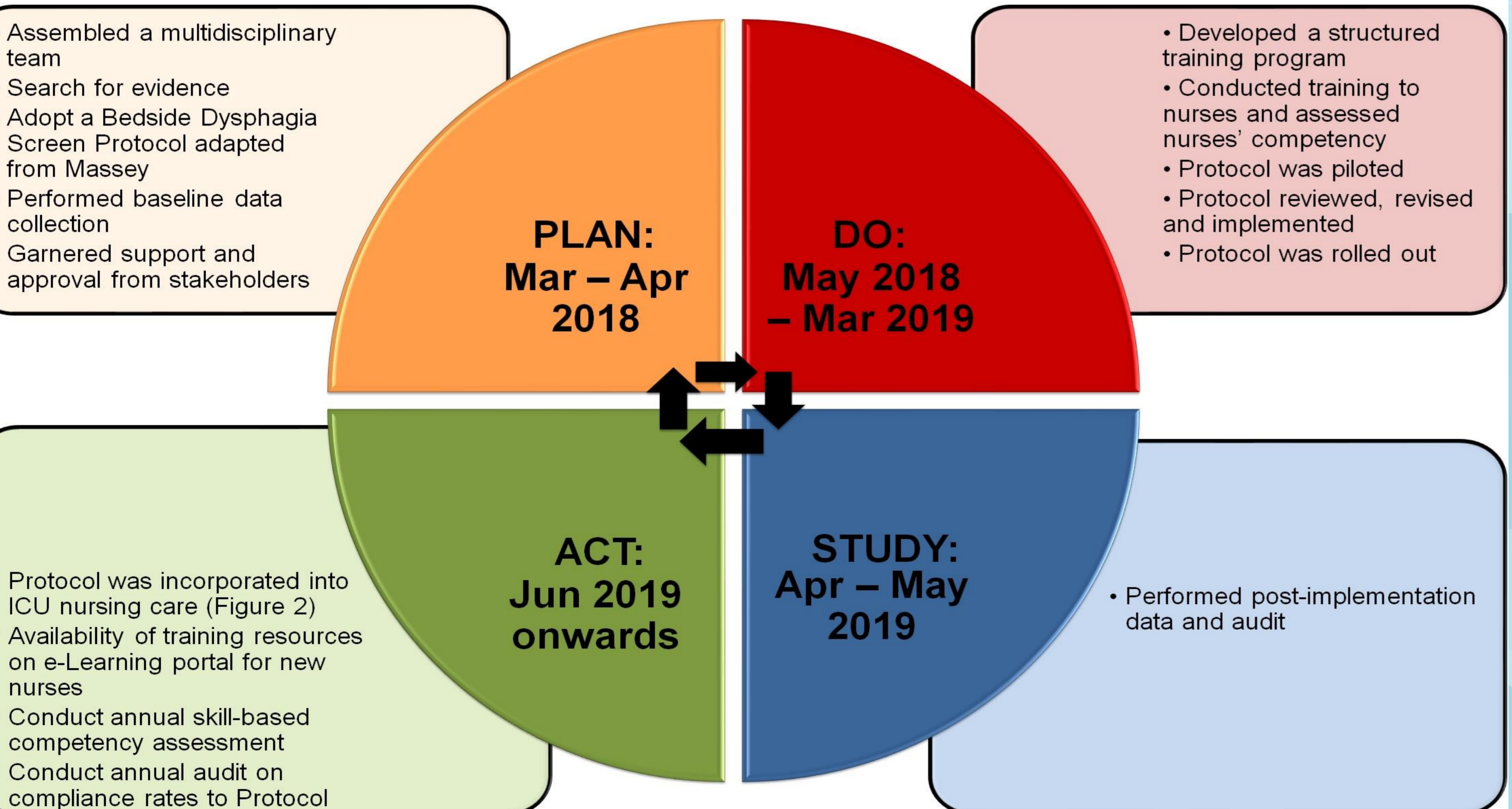
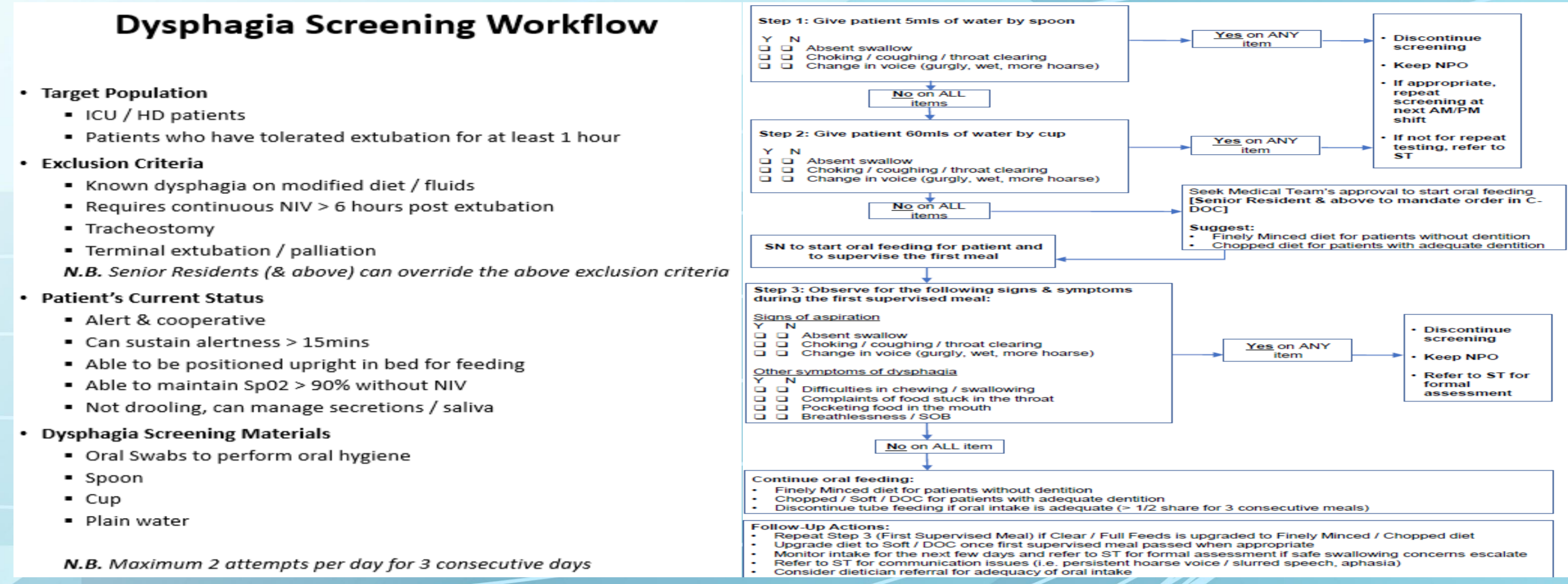


Figure 2: Nurse-Performed Dysphagia Screening Protocol



## RESULTS

Results revealed:

- 100% of the ICU nurses were trained and competent in NPS PED screening
- Oral intake within 48 hours post extubation had increased from 32% to 76% (Figure 3)
- Reduction of reintubation events secondary to pneumonia from 71% to 12% (Figure 4)
- Reduction of post extubation pneumonia rates by 7% (Figure 4)
- Median length of hospitalisation was 21 days (IQR: 9.0-27.0) for pre-implementation; 14 days (IQR: 9.0-26.0) for post-implementation
- 54% of the nurses complied to all components in the audit criteria (Table 1)
- 82.9% of the nurses followed the screening criteria, which was the highest compliance rate among the 3 components (Table 1)
- 73% and 68.5% of nurses did not follow the standardised guidelines and performed inconsistent documentation respectively (Table 1)

Figure 3: Resumption of Oral Intake Post-Extubation

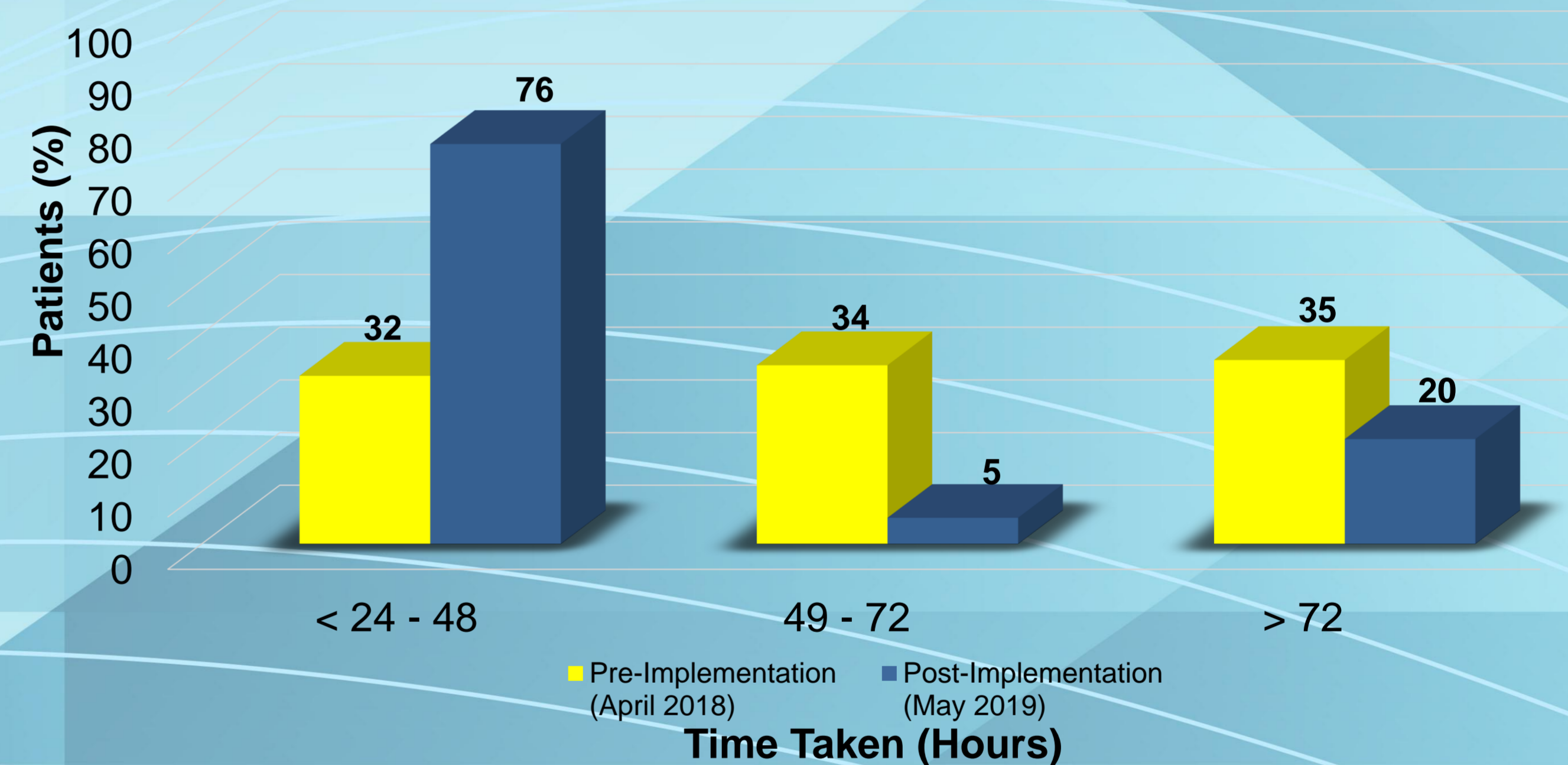


Figure 4: Patients' Outcomes

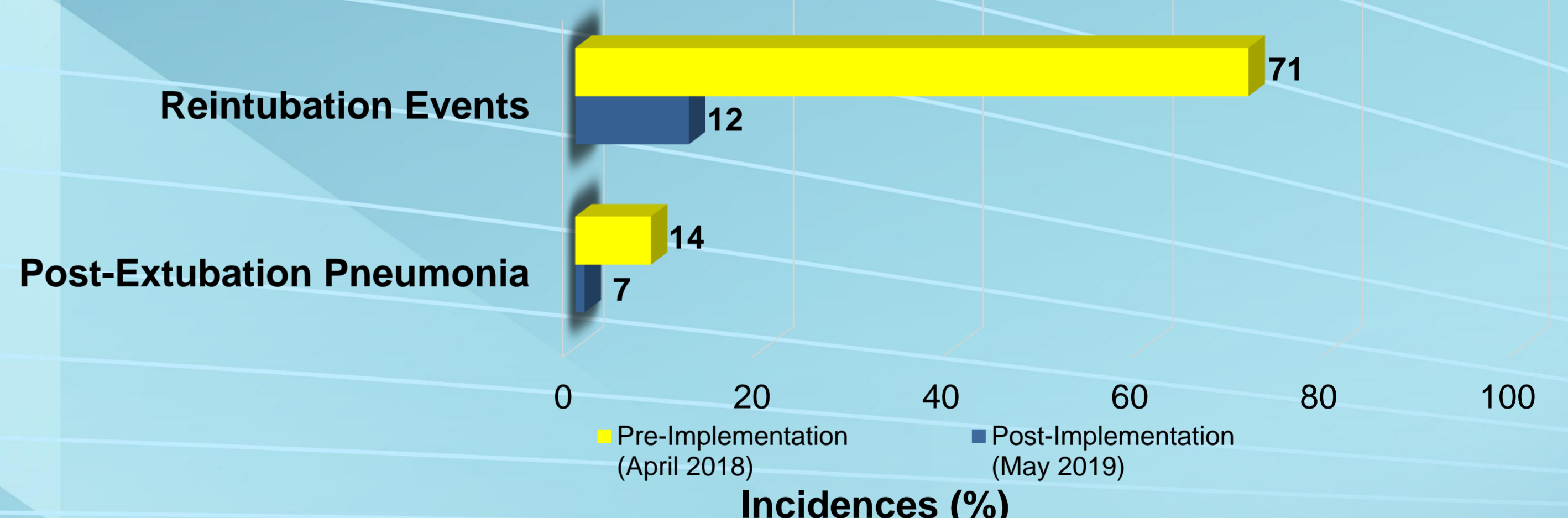


Table 1: Audit Results

| Nurses' Compliance to Protocol Audit Results   | Pre-implementation Group April 2018 N = 136                                 | Post-implementation Group May 2019 N = 111 |
|--|---|--|
| <b>1. Nurse Follow Screening Criteria (Nurses who met criteria 1.1, 1.2 &amp; 1.3)</b>                     | Not applicable. Nurses assess all patients with their own clinical judgment | <b>92 (82.9%)</b>                          |
| 1.1 Nurse adhere to inclusion and exclusion criteria   |   | 105 (94.6%)                                |
| 1.2 Nurse adhere to patient's current clinical status prior to screening                                   |   | 104 (93.7%)                                |
| 1.3 Nurse perform dysphagia screen at least 1 hour post-extubation   | High risk patients were referred to speech therapists directly              | 95 (85.6%)                                 |
| <b>2. Nurse Follow Standardised Guidelines (Nurses who met criteria 2.1, 2.2 &amp; 2.3)</b>                | Not applicable. There was no standardized protocol for nurses to follow     | <b>81 (73%)</b>                            |
| 2.1 Nurse perform correct number of water attempts before the next escalation                              |   | 89 (80.2%)                                 |
| 2.2 Nurse perform correct number of diet attempt before each ST referral                                   |   | 82 (73.9%)                                 |
| 2.3 Nurse complete follow through of bedside dysphagia screening before patient's self-feeding             |   | 86 (77.5%)                                 |
| <b>3. Documentation (Nurses who met criteria 3.1 &amp; 3.2)</b>  | Not applicable. There was no standardized template for nurses               | <b>76 (68.5%)</b>                          |
| 3.1 Nurse complete documentation by putting up bedside dysphagia screening template in cDOC post screening |   | 79 (71.2%)                                 |
| 3.2 Nurse document in A STRIP-OFF for any follow-up of dysphagia screening                                 |   | 81 (73%)                                   |
| <b>Nurses' overall compliance rate to all 3 components of the audit</b>                                    |   | <b>60 (54%)</b>                            |

## CONCLUSION

Empowering nurses in PED screening improves early resumption of oral intake, decreases reintubation events, pneumonia rates and length of hospitalization. Measures will be put in place to modify the implementation and education methods with booster sessions to improve sustainability of nurses' compliance with the NPS PED protocol. Implementation of NPS for PED is safe and effective, hence enhances patients' outcomes.