

#### **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



#### CHI Learning & Development System (CHILD)

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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## **Nurse-Performed Bedside Dysphagia** National University Screening for Post-extubated Patients in ICUs Yong Ying Bing<sup>1</sup> & Cindy Chua Hsu Fung<sup>1</sup> Hospital <sup>1</sup>Nursing Department, National University Hospital, Singapore

### 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 Results revealed:

Figure 2: Nurse-Performed Dysphagia Screening Protocol

### **Dysphagia Screening Workflow**

- Target Population
- ICU / HD patients
- Patients who have tolerated extubation for at least 1 hour
- Exclusion Criteria
- Known dysphagia on modified diet / fluids
- Requires continuous NIV > 6 hours post extubation
- Tracheostomy
- Terminal extubation / palliation N.B. Senior Residents (& above) can override the above exclusion
- Patient's Current Status
- Alert & cooperative
- Can sustain alertness > 15mins
- Able to be positioned upright in bed for feeding
- Able to maintain Sp02 > 90% without NIV Not drooling, can manage secretions / saliva
- Dysphagia Screening Materials
- Oral Swabs to perform oral hygiene
- Spoon
- Cup
- Plain water

N.B. Maximum 2 attempts per day for 3 consecutive days

	Absent swallow     Cheking / coughing / throat clearing	item	screening			
	Change in voice (gurgly, wet, more hoarse)		Keep NPO			
		]	If appropriate,     repeat			
	NO ON ALL items		screening at			
			next AM/PM			
		1	shift			
	Step 2: Give patient 60mls of water by cup	Yes on ANY	If not for repeat     testing, refer to			
	Y N	item	ST			
	Absent swallow     Cheking / coughing / threat clearing					
	Change in voice (gurgly, wet, more hoarse)					
		Seek Medical Team's appro	oval to start oral feeding			
	<b>•</b>	Senior Resident & above to mandate order in C-				
	No on ALL	DOC]				
	litems					
		<ul> <li>Suggest:</li> <li>Einely Minced diet for particular</li> </ul>	atients without deptition			
	SN to start oral feeding for patient and	Chopped diet for patients with adequate dentition				
	to supervise the first meal					
ion critoria						
ion chiena	$\downarrow$					
	Step 3: Observe for the following signs & symptoms	s				
	during the first supervised meal:					
	Signs of aspiration					
	Y N					
	Absent swallow		Discontinue     screening			
	Choking / coughing / throat clearing	Yes on ANY	Screening			
	Change in voice (gurgly, wet, more hoarse)		• Keep NPO			
	Other symptoms of dysphagia		Defeate ST fee			
	Y N		• Refer to ST for			
	Difficulties in chewing / swallowing		assessment			
	Complaints of food stuck in the throat     Recketing food in the mouth					
	Breathlessness / SOB					
	No on ALL item					
	Continue oral feeding:					
	<ul> <li>Finely Minced diet for patients without dentition</li> <li>Chopped / Soft / DOC for patients with adequate der</li> </ul>	otition				
	<ul> <li>Discontinue tube feeding if oral intake is adequate (&gt;</li> </ul>	1/2 share for 3 consecutive meals)				
	Follow-Up Actions:	Feede is upgraded to Finals Minard	Channed dist			
	<ul> <li>Repeat Step 3 (First Supervised Meal) If Clear / Full</li> <li>Upgrade diet to Soft / DOC once first supervised meal</li> </ul>	Feeds is upgraded to Finely Minced all passed when appropriate	/ Chopped diet			
	<ul> <li>Monitor intake for the next few days and refer to ST f</li> </ul>	for formal assessment if safe swallow	ving concerns escalate			
	<ul> <li>Refer to ST for communication issues (i.e. persistent</li> </ul>	t hoarse voice / slurred speech, apha	sia)			
	<ul> <li>Consider dietician referral for adequacy of oral intake</li> </ul>	e				

Yes on ANY



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**



(3) Tracheostomy

(4) Terminal extubation/palliation

Delayed Resumption

- 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:

Patients

# **Resumption of Oral Intake Post-Extubation**



Healthcare Professionals	rses ary Non-uniform dysphagia screening	30 20 10 0 < 24 - 48 49 - 72 >72
Process/ System Formal swallor assessment perf by ST after I discharge	wing formed CU Lack of expertise among doctors/nurses	Pre-Implementation (April 2018) Post-Implementation (May 2019) Time Taken (Hours)
Inadequate para assessment nutritional sta ST referrals on ordered by doct	tients' on atus Ease of availability of enteral tube feeding Believed only ST deliver gold standard of swallowing assessment No ordering access rights for nurses	Ito     Patients' Outcomes       71       Reintubation Events       12
METHODS		Post-Extubation Pneumonia
Design	Plan-Do-Study-Act (PDSA) (Figure 1)	
Setting	5 adult ICUs restructured hospital	0 20 40 60 80 100
Ethics consideration Not required, project was conducted in accordance to hospital's clinical quality improvement policy		Clinical Pre-Implementation (April 2018) Pre-Implementation (May 2019)
Inclusion Criteria (1) ICU patients whom have tolerated extubation for at least 1 hour		Dur Table 4 Apolit Descrite
Exclusion Criteria	<ul> <li>(1) Known dysphagia on modified diet/fluids</li> <li>(2) Requires continuous non-invasive ventilation &gt; 6 hours post e</li> </ul>	extubation

Nurses' Compliance to Protocol Audit Results	Pre- implementation Group April 2018 N = 136	Post- implementation Group May 2019 N = 111
1. Nurse Follow Screening Criteria (Nurses who met criteria 1.1, 1.2 & 1.3)	Not applicable.	92 (82.9%)
1.1 Nurse adhere to inclusion and exclusion criteria	Nurses assess all	105 (94.6%)
1.2 Nurse adhere to patient's current clinical status prior to screening	patients with their	104 (93.7%)
1.3 Nurse perform dysphagia screen at least 1 hour post-extubation	own clinical judgment	95 (85.6%)

### **Figure 1: PDSA cycle**

