Project Title

Sit Out of Bed in a Surgical Unit of an Acute Care Hospital: A Quality Improvement Project

Project Lead and Members

Project leads: Ms K Suvaseni & Ms U Amutha Valli
Project members:

- Zhang Yabo
- Angela Ng
- Remegio Rozanne Soy
- Tan Jiali Charmaine
- Adeline Chi
- Dr. Low Jee Kim
- Dr. Ishara Maduka

Organisation(s) Involved

Tan Tock Seng Hospital

Project Period

Start date: January 2018

Completed date: November 2019

Aims

To increase the percentage of eligible patients who meet "Sit out of bed" target from baseline median of 20% to 100% in 6 months, for post-operative patients who are not under the Enhanced Recovery After Surgery (ERAS) protocol in Ward 11D

The following criteria are used to define achieve meet "Sit out of Bed" target (adopted ERAS protocol, with slight modification):
Met 2 out of 3 Post-Operative Days (POD)s target:

a) POD 1 = 4 Hours or
b) POD 2 = 6 Hours or
c) POD 3 = 6 Hours

Inclusion Criteria

All post-operative surgical patients who are not under ERAS protocol in Ward 11D

The following criteria are used to define eligible patients:

a) CNS: Obeys command, muscle power ≥ 4/5
b) Respiratory system: RR ≤ 20 breaths/minute, SpO2 ≥ 95%, Fraction of Inspired Oxygen ≤ 50%
c) CVS: No vasopressor support; no new arrhythmia; no complain of chest pain past 24 hours; no postural blood pressure drop
d) No open wound
e) No active bleeding
f) Pain score ≤ 5 (at rest)
g) In addition, perform a quick check to ensure: Hb: no drop of > 2g/dL; Hb > 8g/dL; Serum Potassium & Sodium levels within normal range

Background

It is important to be aware of the potential issues facing post-surgical patients as well as what can be done to help prevent complications. Early ambulation after surgery is one of the most crucial things we can do to prevent post-operative complications. There is a possibility of losing 2% of muscle mass a day if patients lie down in bed for 24 hours, as well as developing other complications like pneumonia and deep vein thrombosis. Early Recovery after Surgery (ERAS) was designed to achieve better outcome for post-operative patients and has proven to reduce complications and hospital stay. ERAS was implemented in TTSH in 2016 for colorectal surgical patients. One of the key principles for ERAS protocol is on early ambulation.

Based on our data from January to December 2017, the compliance rate for sitting ERAS protocol patients out of bed was 88%, the other 12% of non-compliance was due to patient refusal, patient in pain or patient with unstable condition. Not all post-operative patients fall under ERAS protocol, therefore the compliance of sitting out non-ERAS group patients were not consistent. In March 2018, 4 weeks' point prevalence data was collected in Ward 11D for post-operative patients who were not under ERAS protocol. Results had shown that only 20% of the post-operative non-ERAS group of patients were sat out of bed.

Methods

Quality Planning Tools (which include Macro/Micro Flowchart, Affinity Diagram, Cause and Effect Diagram, Pareto chart and Run chart) were used to diagnose the problem, identify root causes, plan interventions and determine if changes led to improvement.

The following were identified to be the main causes resulting in post-operative general surgery patients who did not sit out of bed:

a) Nurses have competing priorities to carry out
b) No information for family / caregivers on the importance to sit patient out of bed

Based on the root causes, the team rolled out the following interventions progressively:

a) Standardized schedule for nurse to sit patient out of bed on POD 1, 2 & 3 in the electronic system (i.e. Trendcare system) and indicated number of hours' patient sat out of bed for each post-operative day in the Ambulation Care Form.
b) Formulated pictorial script for nurses to educate patient, family/caregivers on the importance of sitting patient out of bed after surgery.

Results

The baseline median percentage of eligible patients who meet "Sit out of Bed" target from March 2018 to April 2018 was 20%. Post interventions, there was an 80% increase in percentage of eligible patients who meet "Sit out of Bed" target, from median 20% to 100% from May 2018 to December 2018, and sustained in Year 2019.

This project resulted in a substantial amount of cost avoidance due to increased conscientious efforts to ensure that the post-operative patients were sat out of bed regularly.

There was a reduction in the number of patients who required rehabilitation after surgery from 7 patients (January to March 2018 pre-intervention period) to 2 patients (May to July 2018 post-intervention period), thus avoided transferring 5 patients to rehabilitation center.

Lessons Learnt

Challenges Encountered

a) Difficult to get team together for discussion as members belong to multidisciplinary group
b) Promoting culture to change workflow takes time, effort & reinforcement.
c) Data collection is tedious and needs dedication

Lessons Learnt

a) Leadership & teamwork is imperative for successful planning & implementation of interventions.
b) Staff commitment & assertion is essential to sustain this project.
c) Change in current workflow is challenging, yet most satisfying as it anchors the success of improving patient care.

Conclusion

We have achieved our targets for process measures. We have observed periods of data improvement shift of > 6 points in sitting patient out of bed on 1st, 2nd & 3rd POD who

are not under ERAS protocol. Staff gained knowledge in improvement methodology and are motivated to sustain the change. As such, we have reduced the frequency of process measure monitoring to once a month as the change is now daily work practice.

Additional Information

Received 2019 NHG Quality Improvement Award – Service Redesign and Delivery (Best Award)

Project Category

Care Redesign, Clinical Improvement, Quality Improvement, Process Improvement

Keywords

Care Redesign, Clinical Improvement, Quality Improvement, Process Improvement, Workflow Improvement, Improvement Tools, Pareto Chart, Cause and Effect Diagram, Post-Operative, Enhanced Recovery After Surgery Protocol, Cost Savings, Nursing, Tan Tock Seng Hospital, Sit Out of Bed, Early Ambulation

Name and Email of Project Contact Person(s)

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Sit Out of Bed in a Surgical Unit of an Acute Care Hospital (Sustainability Phase)

Ms K Suvaseni & Ms U Amutha Valli

Ward Level 11

Mission Statement

To increase the percentage of eligible# patients who meet "Sit out of bed" target* from baseline of 20% to 100% for post-operative General Surgery patients in Ward 11D over a sustained period

Eligible Patients for Sit out of Bed

- Premorbid Independent
- CNS: Obeys command, muscle power ≥ 4/5
- Respiratory system: RR ≤ 20 breaths/minute, SpO2 ≥ 95%, Fraction of Inspired Oxygen ≤ 50%
- CVS: No vasopressor support; no new arrhythmia; no complain of chest pain past 24 hours; no postural blood pressure drop
- No open wound
- No active bleeding
- Pain score ≤ 5 (at rest)
- In addition, perform a quick check to ensure Hb: no drop of > 2g/dL; Hb > 8g/dL; Serum Potassium & Sodium levels within normal range

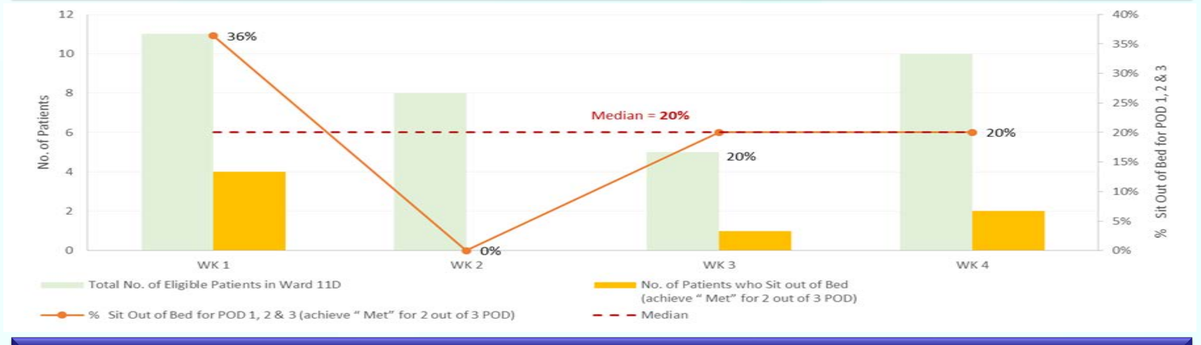
*Target: Achieve "Met" for 2 out of 3 PODs: either POD1=4Hours; POD2=6Hours; POD3=6Hours

Team Members

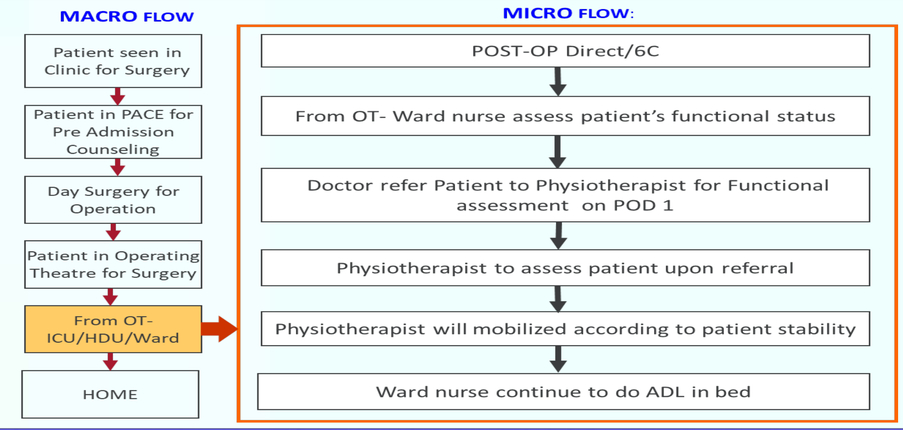
SN	Name	Designation	Department	Role
1.	Ms K Suvaseni	Unit Nurse Manager	Ward Level 11	Leader
	Ms U Amutha Valli	Senior Nurse Manager	Ward 11C&11D *	Co-Leader
2.	Dr. Low Jee Kim	Senior Consultant	General Surgery	Member
3.	Dr. Ishara Maduka	Medical Officer	General Surgery	Member
4.	Ms Zhang Yabo	Senior Staff Nurse	PACE	Member
5.	Ms Angela Ng	Senior Staff Nurse	Clinic 2A	Member
6.	Ms Remegio Rozanne Soy	Assistant Nurse	Ward 11D	Member
7.	Ms Tan Jiali Charmaine	Senior Staff Nurse	Ward 11D	Member
8.	Ms Adeline Chi	Senior Physiotherapist	Allied Health	Member
Mentors: Adj A/Prof Tan Hui Ling (Assistant Chief Medical Board), Ms Sui Huangbo (Senior Nurse Manager, Ward Level 5)				

* Note: Present department is at Level 13

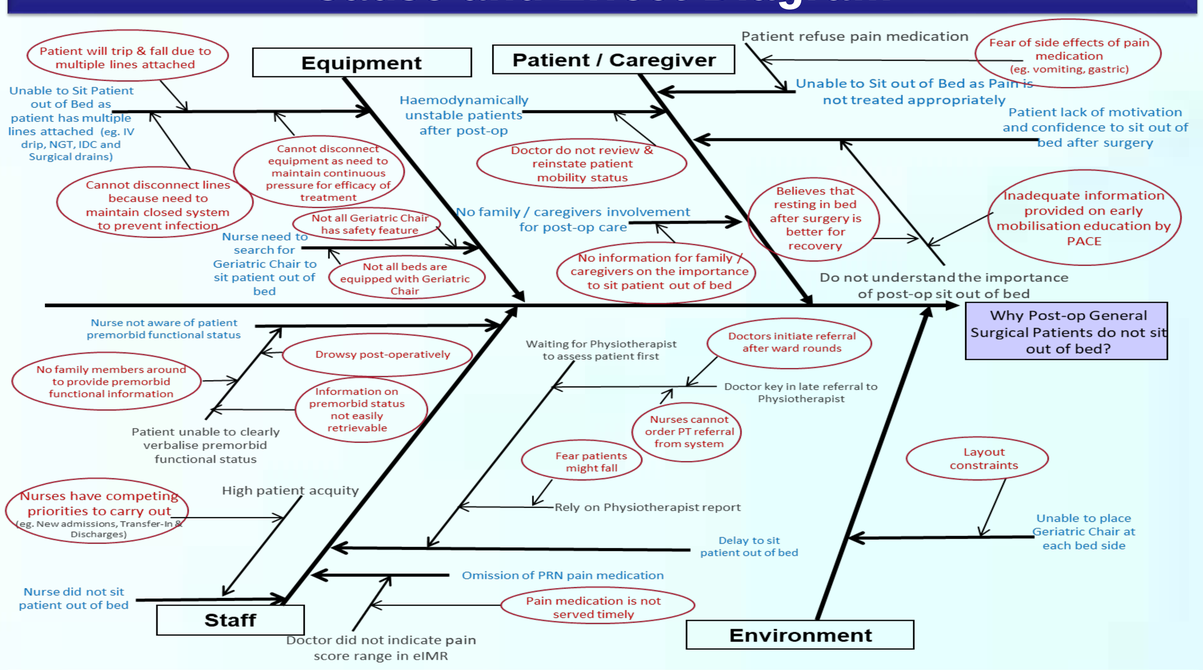
Evidence for a Problem Worth Solving



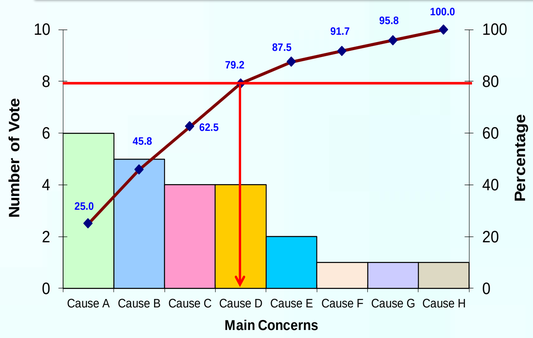
Flow Chart of Process



Cause and Effect Diagram



Cause and Effect Diagram



Cause A	Nurses have competing priorities to carry out
Cause B	Inadequate information provided on early mobilisation education by PACE
Cause C	No information for family / caregivers on the importance to sit patient out of bed
Cause D	Fear of side effects of pain medication (eg. vomiting, gastric)
Cause E	Cannot disconnect equipment as need to maintain continuous pressure for efficacy of treatment
Cause F	Cannot disconnect lines because need to maintain closed system to prevent infection
Cause G	Information on premorbid status not easily retrievable
Cause H	Pain medication is not served timely

Implementation

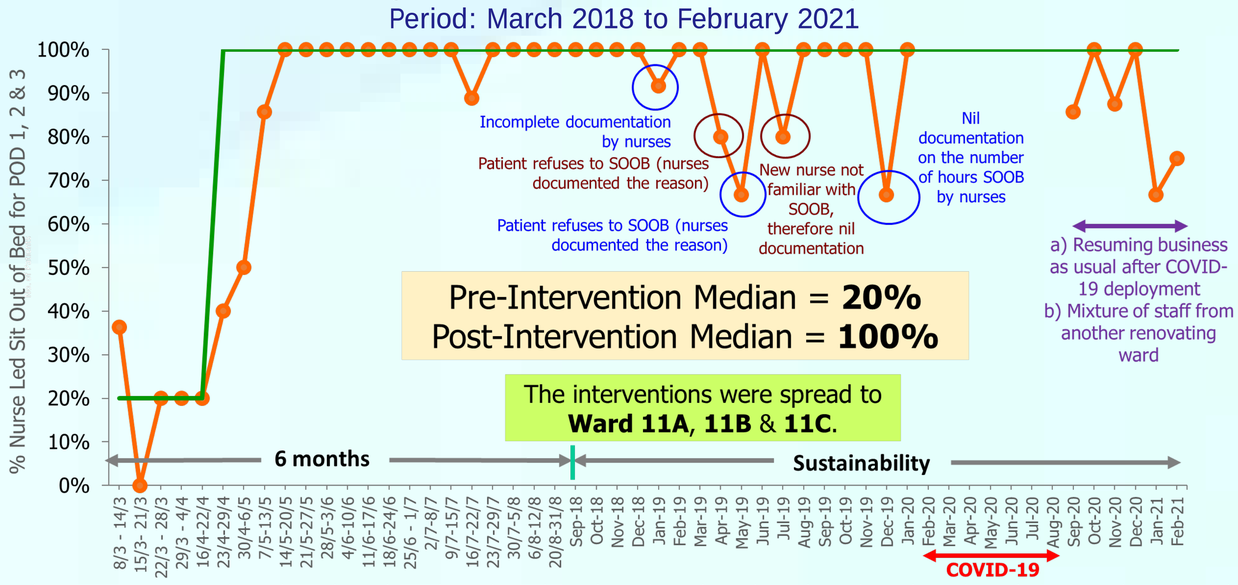
CAUSE / PROBLEM	INTERVENTION	DATE OF IMPLEMENTATION
Cause A: Nurses have competing priorities to carry out	**PDSA 1**: Standardisation of Schedule for Nurse Led Sit Out of Bed on POD 1, 2 & 3 in the Trend-care and indicate hours patient sat out of bed in the Ambulation Care Form.	16 April 2018
Cause C: No information for family / caregivers on the importance to sit patient out of bed	**PDSA 2**: Implemented pictorial script for PN/EN to educate patient, family/caregivers.	7 May 2018

Results

Sustainability Phase: % Nurse Led Sit Out of Bed for POD 1, 2 & 3

(achieve " Met" for 2 out of 3 POD)

Period: March 2018 to February 2021



Week	8/3-14/3	15/3-21/3	22/3-28/3	29/3-4/4	16/4-22/4	23/4-29/4	30/4-6/5	7/5-13/5	14/5-20/5	21/5-27/5	28/5-3/6	4/6-10/6	11/6-17/6	18/6-24/6	25/6-1/7	2/7-8/7	9/7-15/7	16/7-22/7	23/7-29/7
No. of Patients who fulfilled Nurse Led Sit out of Bed (achieve " Met" for 2 out of 3 POD)	4	0	1	2	1	4	4	6	6	4	4	4	5	9	3	2	3	8	8
Total No. of Eligible Patients in Ward 11D	11	8	5	10	5	10	8	7	6	4	4	4	5	9	3	2	3	9	8

Week	30/7-5/8	6/8-12/8	20/8-31/8	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19
No. of Patients who fulfilled Nurse Led Sit out of Bed (achieve " Met" for 2 out of 3 POD)	10	5	6	6	4	5	6	12	5	3	4	2	2	4	4	2	5	4
Total No. of Eligible Patients in Ward 11D	10	5	6	6	4	5	6	12	5	3	4	2	2	4	4	2	5	4

Cost Savings

Assumption: Same patient profile in terms of pre-op functional status

Period	Pre-Intervention	Post-Intervention
No. of Patients who required Rehab Post-Op (in 3 months)	7 patients	2 patients
Assume average length of stay for patients required Rehab = 16 days		
Cost of Care at Rehab (Per Month)	(7 patients x 16 days x $420) / 3 = $15,680	(2 patients x 16 days x $420) / 3 = $4,480
Total Cost of Care at Rehab (Annualized)	$15,680 x 12 = $188,160	$4,480 x 12 = $53,760
Potential Cost Avoidance	$188,160 - $53,760 = **$134,400**	

Note: Cost Per Patient Day (at Rehab) = $420

Problems Encountered

1. Difficult to get team together for discussion as members belong to multidisciplinary group
2. Promoting culture to change workflow takes time, effort & reinforcement.
3. Data collection is tedious and needs dedication

Lessons Learnt

1. Leadership & teamwork is imperative for successful planning & implementation of interventions.
2. Staff commitment & assertion is essential to sustain this project.
3. Change in current workflow is challenging, yet most satisfying as it anchors the success of improving patient care.

Strategies to Sustain

1. Identify ward champion to monitor the progress.
2. Continue to hold meetings & feedback sessions regularly to provide updates, successes & challenges.
3. Listen and document any concerns & have a timeline to address concerns.
4. Educate new nurses on the workflow and how change will affect patients.
5. Show appreciation for efforts by celebrating successes.