Project Title

Increasing percentage of acute mild stroke patients achieving independent walking on discharge from the acute stroke unit (ASU)

Project Lead and Members

Project lead: Christina Chia Hui Ling

Project members: Tai Chu Chiau, Goh Lee Yin, Joanna Tay, Zhang Yanxia, Devon Chng, Trudy Teh Jia Yi, Carol Tham Huilian

Organisation(s) Involved

Tan Tock Seng Hospital

Project Period

Start date: Oct-2017

Completed date: Mar-2019

Aims

To increase percentage of acute mild stroke patient achieving walking independence at discharge from ASU, from 42% to 67% in 6 months

Background

Physical activity levels are low in people with acute stroke with >90% of time spends sedentary. In a very early rehabilitation trial (AVERT), 67% of stroke patients were able to achieved unassisted walking at 2 weeks after stroke. In Acute Stroke Unit (ASU) in Tan Tock Seng Hospital, median 42% of mild acute stroke patient achieved independent walking on discharge from ASU with median hospitalization stay of 7 days. We embarked on a quality improvement project to address this issue as a multi-disciplinary team.

Methods

Study design: Quality improvement

A multidisciplinary team involving the neurologist, nurses, physiotherapists and occupational therapist was formed. Patients' perspectives were obtained through interview. Fish bone diagram was used to do root causes analysis (RCA).

Inclusion Criteria: Acute infarct and haemorrhagic stroke on stroke care path in the Acute Stroke Unit (ASU), motricity index leg ≥ 57 (hip flexion, knee extension and ankle dorsiflexion) of the paretic leg, good sitting balance and able to obey 2 commands.

Exclusion Criteria: Patients with transient ischemic attack, able to walk independently on admission to ASU, require assistance to walk premorbid, has worsen stroke, on palliative care and medically unstable were excluded.

Interventions include

i)   patient empowerment using a patient stroke education tool to improve patient knowledge and encourage active involvement in rehabilitation including outside of therapy hours and collaborative goal-setting,

ii)   standardizing mode of communication between therapy staff and nursing through patient headboard re-design and

iii)   empowering nursing in patient mobilization outside of therapy hours through education and training session on manual handling and walking aid use.

Results

75% of acute mild stroke patients achieved independent walking at discharge from baseline 42%. 70% of acute mild stroke patients were discharge to home, an improvement from 50%. Acute mild stroke patients who have received stroke rehabilitation education were 3.04 times more likely to achieve independent walking. The logistic regression model correctly classified 61.5% of cases ($p<.001$). No statistically significant difference between groups in terms of age, severity of stroke and average length of stay. Both groups received median 4 physiotherapy sessions.

Lessons Learnt

Key lessons learnt include understanding patients' perspectives in order to validate the fish bone diagram and identify the root causes. Secondly, frequent huddle sessions are crucial to identify any barriers and issues early such that the Plan-Do-Study-Act (PDSA) cycle can be act upon timely. Lastly, early engagement of stakeholders is important to drive strategies for sustainability.

Conclusion

Stroke education on functional recovery should be incorporated early. Increase knowledge in stoke rehabilitation may have led to increase patient participation and activation to drive their functional recovery. Collaborative practice can improve patient outcomes. More patients achieved walking independence and were able to go home directly from hospital through a multi-disciplinary approach. This resulted in system saving for community rehabilitation and better allocation of resources for stroke patients with more complex rehabilitation needs.

Additional Information

Received NHG Quality Improvement Award 2019 - Improving and Sustaining Quality and Safety

Project Category

Care Redesign, Clinical Improvement, Quality Improvement

Keywords

Care Redesign, Clinical Improvement, Quality Improvement, Rehabilitation Care, Patient Education, Lean Methodology, Fishbone Diagram, Root Cause Analysis, Pareto Chart, Nursing, Neurology, Allied Health, Tan Tock Seng Hospital, Stroke Education, Acute Stroke Unit, Early Mobilisation, Nurse-Led mobilisation

Name and Email of Project Contact Person(s)

Name: Christina Chia Hui Ling

Email: christinaHL_CHIA@ttsh.com.sg

INCREASING PERCENTAGE OF ACUTE MILD STROKE PATIENT ACHIEVING INDEPENDENT WALKING AT DISCHARGE FROM ACUTE STROKE UNIT

Christina Chia Hui Ling
Department of Physiotherapy

Tan Tock Seng HOSPITAL

National Healthcare Group
Adding years of healthy life

Mission Statement

To increase percentage of *acute mild stroke patient achieving at least **independent indoor walking at discharge from Acute Stroke Unit (ASU), from 42% to 67% in 6 months

*Acute stroke determined by radiological finding (acute infarct or hemorrhage with motricity index leg ≥ 57 (hip flexion, knee extension and ankle dorsiflexion of the paretic leg), good sitting balance > 30 seconds, unable to walk independently and able to obey 2 commands (NIHSS LOC commands)
**Patient can transfer, turn and walk independently on level ground, but requires supervision or physical assistance to negotiate any of the following: stairs, inclines, or uneven surfaces. Walking aid can be used.
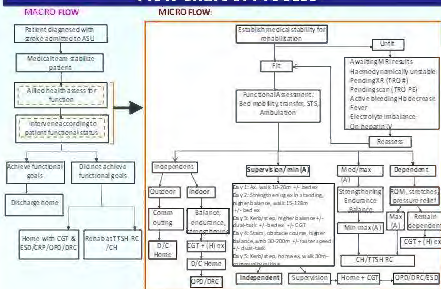
Pareto Chart

Why are stroke patient not achieving Independent indoor walking at discharge from ASU?

A	No consistency in delivering stroke education on therapy benefits and functional recovery goals
B	Lack of communication from therapist to team about functional ability
C	Nurses not familiar with mobilisation techniques a use of walking aid for stroke patient
D	No involvement of caregivers to provide support & assistance

Team Members

	Name	Designation	Department
Team Leader	Christina Chia Hui Ling	Principal Physiotherapist	Physiotherapy
Team Members	Tai Chu Chiau	Senior Physiotherapist	Physiotherapy
	Goh Lee Yin	Senior Physiotherapist	Physiotherapy
	Joanna Tay	Ward Resource Nurse	Nursing
	Devon Chng	Staff Nurse	Nursing
	Trudy Teh Jia Yi	Occupational Therapist	Occupational Therapy
	Zhang Yanxia	Nurse Clinician	Nursing
	Carol Tham Huilian	Consultant	Neurology

Implementation

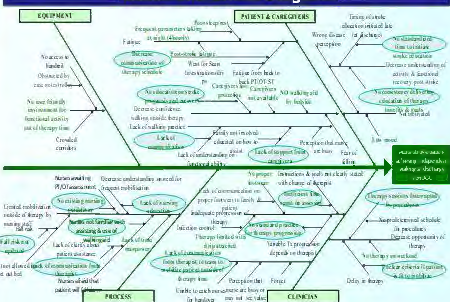| PROBLEM	INTERVENTIONS	DATE OF INTERVENTION
No consistency in delivering stroke education on therapy benefits and functional recovery goals	**Patient Empowerment (Patient Stroke Education Tool)** • Improve patient knowledge and encourage active involvement in rehabilitation including outside of therapy hours and collaborative goal-setting	21 Sept 17 (PDSA 1) 7 Oct 17 (1b) 4 Nov 17 (1c)
Lack of communication from therapist to team about functional ability	**Standardizing mode of communication between therapy staff and nursing** • Patient headboard redesign, aligned understanding of terminology used for level of assistance	23 Oct 17 (PDSA 2) 7 Nov 17 (2a)
Nurses not familiar with mobilisation techniques and use of walking aids for stroke patients	**Empowering nursing in patient mobilisation outside of therapy hours** • Education on nursing role in functional recovery based on National Clinical Guideline for Stroke • Training session on manual handling and walking aid use	

Evidence for a Problem Worth Solving

Physical activity levels are low in people with acute stroke with 22.8 hours of sedentary time (Fini et al, 2017). In A Very Early Rehabilitation Trial (AVERT Phase II RCT 2011), 67% of stroke patients were able to achieved unassisted walking at 2 weeks after stroke. In the ASU in TTSH, median 42% of mild acute stroke patient achieved at least independent indoor walking on discharge from ASU with median hospitalisation stay of 7 days.
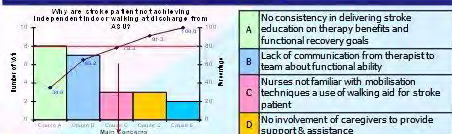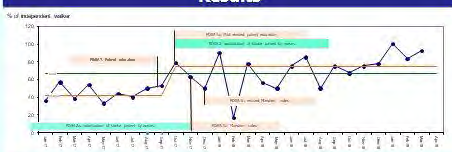
Flow Chart of Process

Results

• **75%** of acute mild stroke patients achieved independent walking at discharge from baseline 42%.
• **70%** of acute mild stroke patients were discharge to home, an improvement from 50% (Jan to Nov 2017)
• Acute mild stroke patients who has received this program were **3.04 times** more likely to achieve independent walking. The logistic regression model correctly classified 61.5% of cases **(p<.001)**.
• No statistically significant difference between groups in terms of age, severity of stroke and average length of stay. Both groups received median 4 physiotherapy sessions.

Problems Encountered

• Eligible patient who follow only 1 step commands with reduced cognition are not able to understand stroke education fully
• Eligible patient with safety awareness issues are not able to achieve target.

Cause and Effect Diagram

Strategies to Sustain

• Walking aid by bedside to improve accessibility and use
• Clear handover from therapist to nurses, during nursing rounds to next shift nurses. Patient's ambulatory status are also clearly documented in the nursing notes
• Use of microlearning to train and empower new nurses
• Health library for stroke education