IMPROVE RESPIRATORY CARE OF NEUROMUSCULAR DISEASE PATIENTS

Christopher Ng, Physiotherapy Department
Louis Ang, Research & Development Office, Collaboration & Partnership, NHG

Tan Tock Seng Hospital

National Healthcare Group
Adding years of healthy life

Mission Statement

To improve the respiratory care* of Neuromuscular Disease (NMD)** patients in level 10 (Neurology) TTSH from 0% to 100% in 6 months.

*Proper respiratory care within 24hrs
- Assessment of cough strength (Peak Cough Flow)
- Appropriate intervention (Cough assist)

**NMD
- Amyotrophic lateral sclerosis, Motor neuron disease variants, Muscular dystrophy, Myasthenia gravis

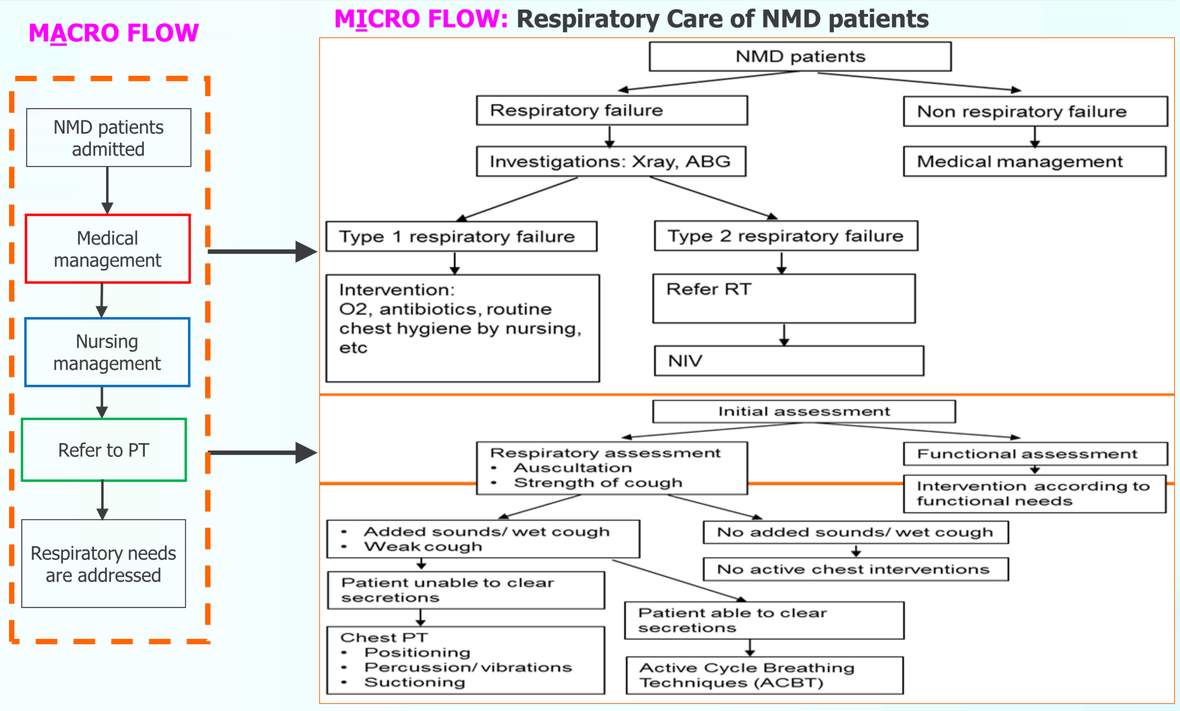
Team Members

SN	Name	Designation	Department	Role
1	Christopher Ng	Senior Principal Physiotherapist	Physiotherapy	Leader
2	Louis Ang	Deputy Director	Research & Development Office, Collaboration & Partnership, NHG	Co-Leader
3	Dr Mavis Ang Kexin	Associate Consultant	Neurology	Member
4	Gan Yiming	HOD, Physiotherapy	Physiotherapy	Member
5	Lawrence Xu	Principal Physiotherapist	Physiotherapy	Member
6	Rachel Yzelman	Principal Physiotherapist	Physiotherapy	Member
7	Kamilah Bte Shekh Jabin	Nursing Officer	Nursing (TTSH)	Member
8	Leo Si Yan	Staff Nurse	Nursing (NNI)	Member
9	Hasfizah Mohd Hanef	Nurse manager (Ward 10)	Nursing (TTSH)	Member
10	Anura Tamar Peters	HOD, Respiratory Therapy	Respiratory Therapy	Member
11	Jayachandran Balachandran	Principal Physiotherapist	Physiotherapy	Facilitator
12	Chan Yeow	Senior Consultant Director, Home Ventilation & Respiratory Support Svc	Anaesthesiology, Intensive Care & Pain Medicine	Advisor
13	Susan Niam	Chairperson	AHS&P	Sponsor
14	Umapathi Thirugnanam	Senior Consultant	Neurology	Sponsor

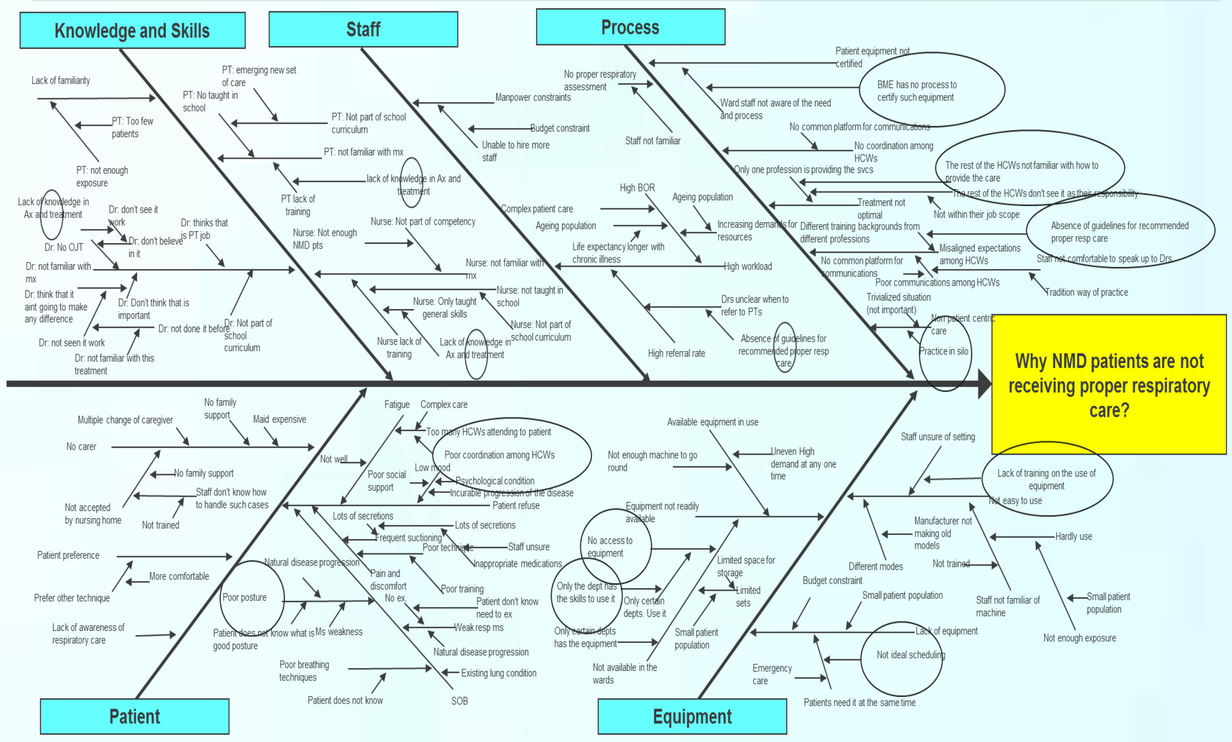
Evidence for a Problem Worth Solving

- Neuromuscular Disease (NMD) patients have increased risk of chest infection (Lechtzin N et al. 2001, Fishburn MJ et al. 1995) and ineffective cough is a major cause of respiratory infection (Senent et al. 2011). Proper respiratory care reduces the risk of respiratory infection and in turn reduce the need for hospitalization (M Toussaint et al. 2009, Vianello A et al. 2005, Sancho J et al. 2003).
- Currently, there are about 150 admissions relating to respiratory infection in NMD patients in TTSH per year and not all NMD patients received proper respiratory care.

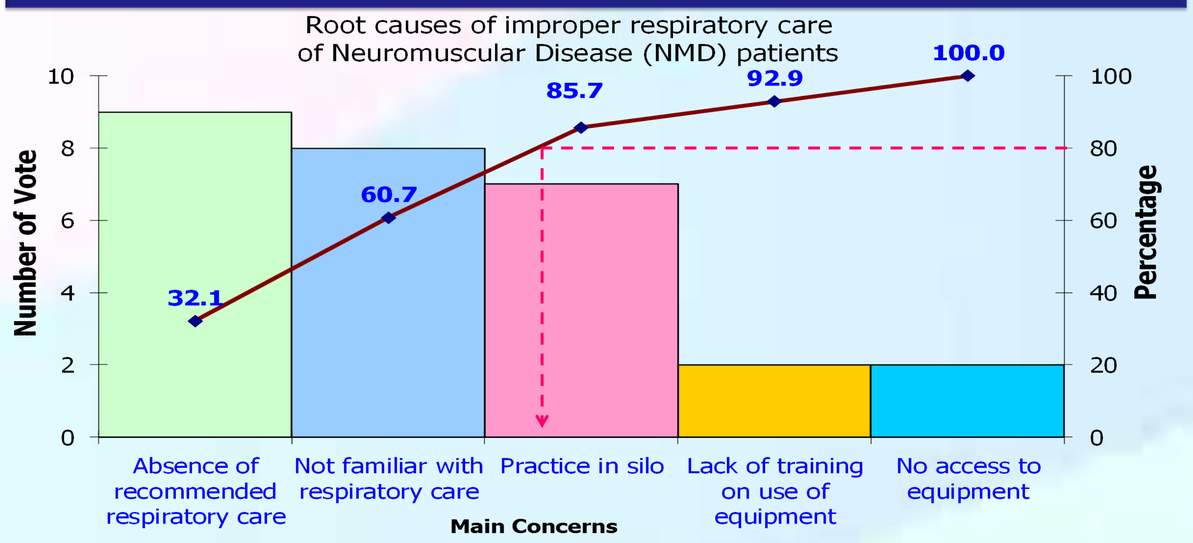
Flow Chart of Process



Cause and Effect Diagram

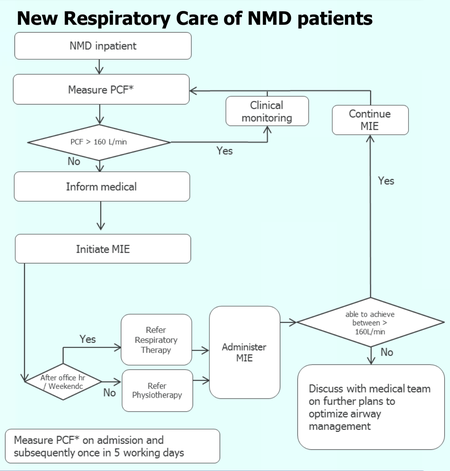


Pareto Chart

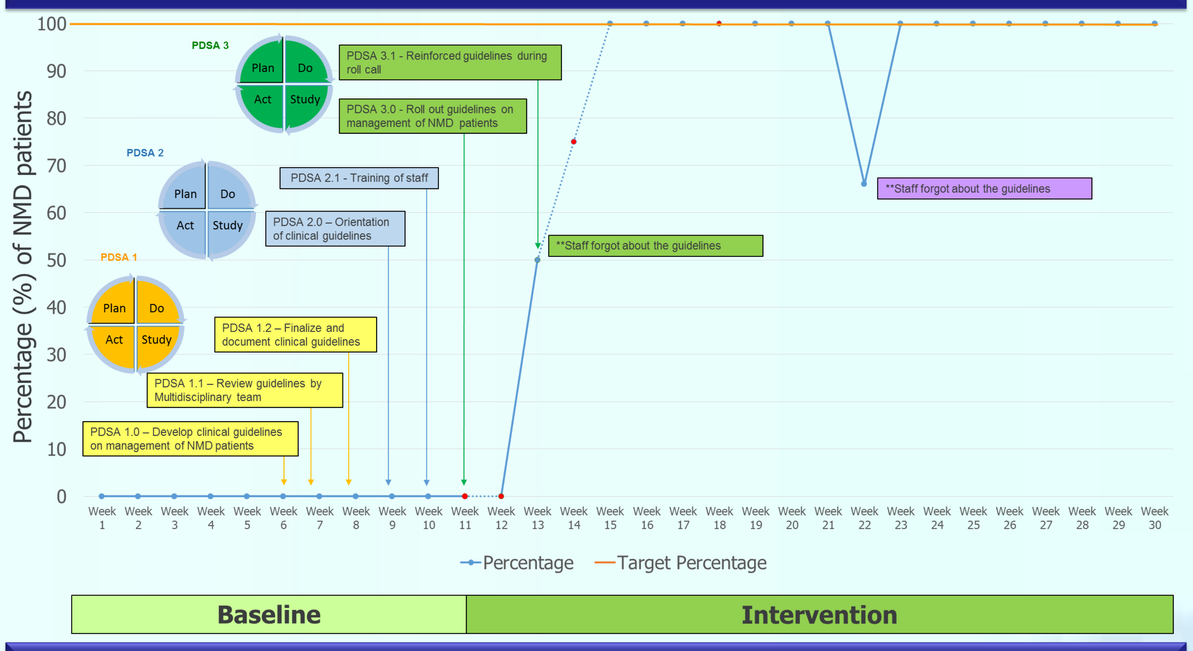


Implementation

CAUSE / PROBLEM	INTERVENTION	DATE OF IMPLEMENTATION
1) Absence of recommended respiratory guidelines	▪ Development of a common clinical guidelines on the respiratory management of NMD patients	10 Oct 2016
2) Not familiar with respiratory care	▪ Orientation to the respiratory clinical guidelines ▪ Multi-disciplinary training	17 Oct 2016 27 Oct 2016 (230pm to 530pm in Level 10 training room)



Results



Cost Savings

Potential Cost Avoidance Year	
Number of NMD patients admitted to ICU yearly	20
Average ICU LOS for chest infection in NMD patients	5 days
Number of bed days saved a year	100 days
Cost of ICU admission/day	$1,000.00
Potential cost avoidance a year	$100,000.00

With improved respiratory care, NMD patients avoid ICUs admissions resulting in an estimated saving of **100 ICU bed days** per year. This helps to free up beds for other critical cases leading to better utilization of resources.

Problems Encountered

- As the guideline is new, not all staff are familiar with the guidelines and use of equipment despite training and orientation. There needs to be constantly mentoring and reminded;
- One of the scenarios was not known to the team. Patient on tracheostomy was not able to perform PCF as there was no suitable connectors.

Strategies to Sustain

- Clinical guidelines are formalized so that all stakeholders are familiar with the protocol;
- Common and continuous training sessions are conducted to the multi-disciplinary team (Doctors, Nurses, Physiotherapists) which includes the use of the related equipment (eg. Cough assist machine and Peak Cough Flow, PCF);
- Clinical guidelines are incorporated into new staff orientation training program;
- Regular in-service / roll call on process flow for NMD patients;
- Video on use of equipment (eg. PCF and Cough assist).