

Safety Without Restraints in Surgical Intensive Care Unit (Sustainability Phase)



Adding years of healthy life

Ms Yang Xuelian, Ms Li Qin & Mr Wang Lin Ward 3B

Mission Statement

To reduce the inappropriate* use of wrist-restrainers for intubated surgical patients in TTSH SICU from 41% to 15% over a sustained period Inclusion Criteria: Patient who is alert, able obey comments, not confused. Exclusion Criteria:

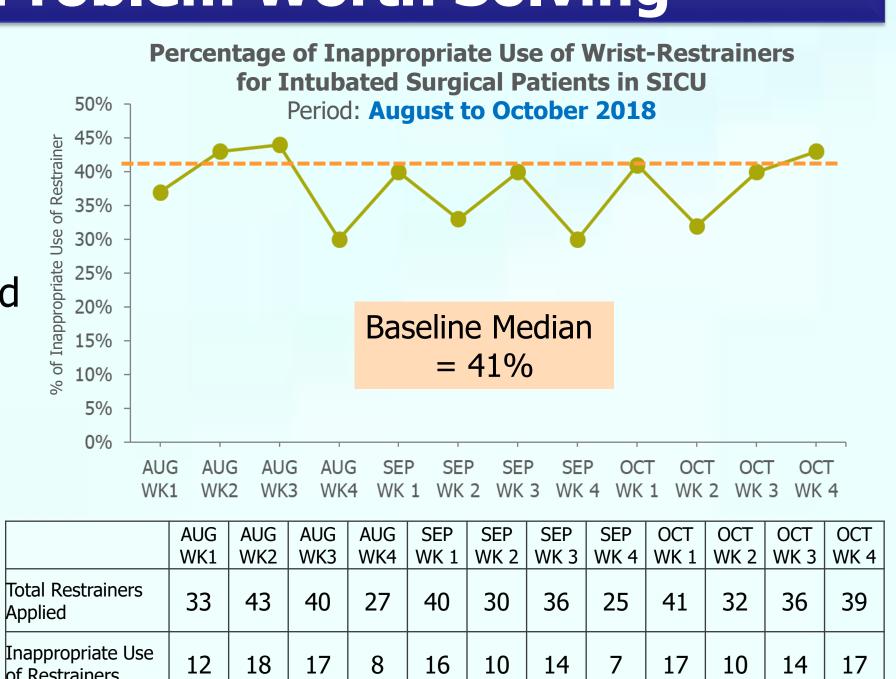
- CAM ICU +ve
- RASS > +2 (Patients in Confused & Agitated State)
- Nasal intubation; Intubation grade >3

Team Members									
	Designation	Department							
Team Leader	Yang Xuelian	Nurse Clinician	Previous: SICU Current: Ward 6D						
Team	Li Qin	Senior Nurse Clinician	SICU						
Members	Wang Lin	Assistant Nurse Clinician	Previous: SICU Current: Ward 6A						
	Rasidah	Senior Staff Nurse	SICU						
	Lee Pei Khim	Senior Staff Nurse	SICU						
	Jaclyn Chow	Physiotherapist	Physiotherapy						
	Xu Min Ling	Assistant Nurse Clinician	SICU						

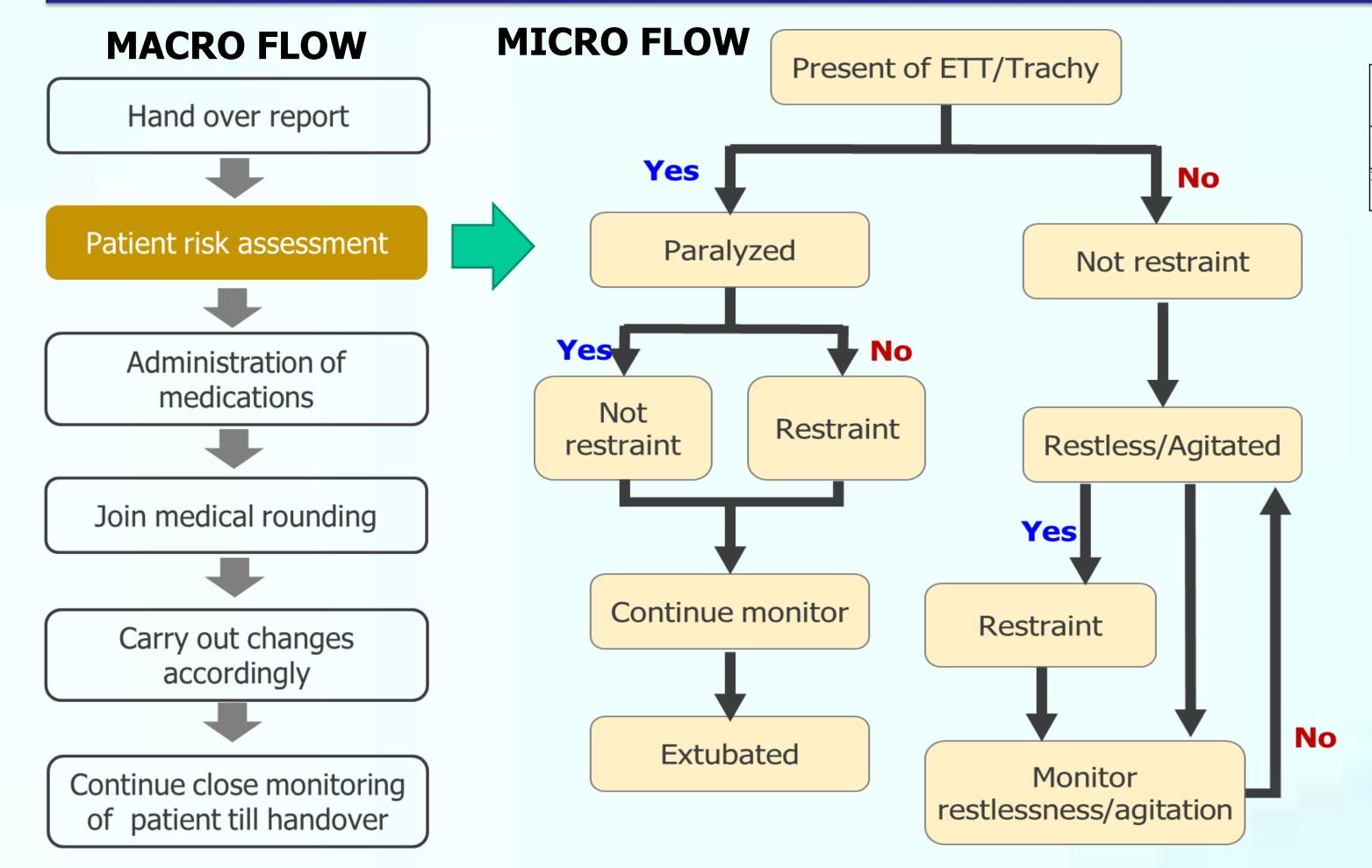
Sponsors: Dr Nelson Chua & Ms Tay Meow Hoon

Evidence for a Problem Worth Solving

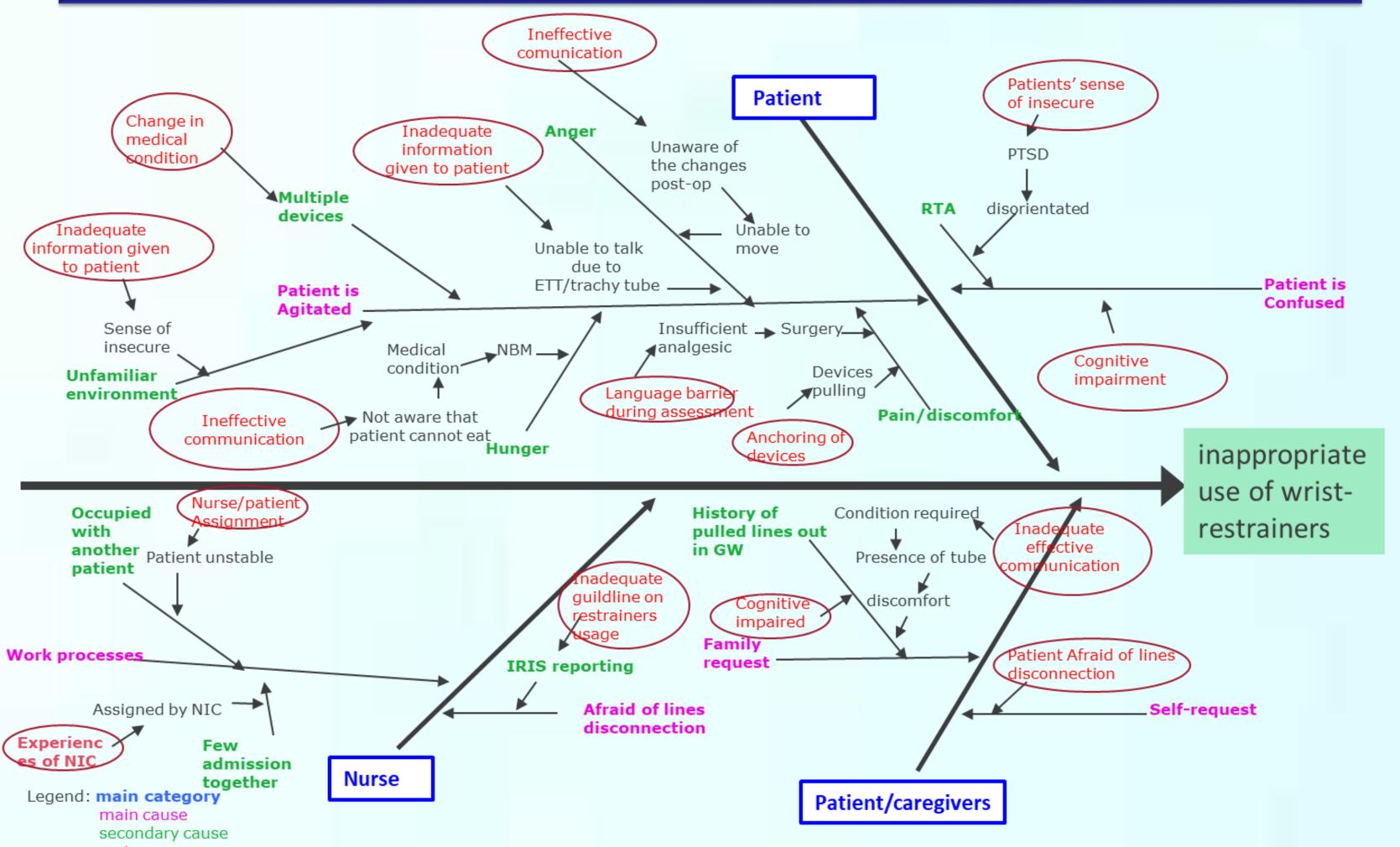
- In Africa, Langley, Schmollgruber & Egan (2011) reported in their qualitative study that 48.9% of the ICU patients were restrained.
- Kooi et al. (2015) in their study conducted in Netherlands also found out that 23% of the patients are restrained.
- Martin & Mathisen (2005) in their bilcultural study discovered that restraints used in the United States is 39 out of 109 patients (36%), however 0 restrainer use in Norway.



Flow Chart of Process



Cause and Effect Diagram



Pareto Chart Causes of Inappropriate Use Inadequate guideline on restraint Cause A of Wrist-Restrainers Cause B Inadequate information given to patient Language barrier during assessment Cause C Nurse/patient assignment Cause D Anchoring devices Cause E Experiences of nurses Cause F Medical condition of patient Cause G

Implementation											
Root Cause	Intervention	Implementation Date									
Cause B: Inadequate information given to patient	PDSA 1: Use a small mirror to show patient the presence of lines and explain the importance of lines	20 May 2019									
Cause A : Inadequate guideline on restraint	PDSA 2: Use Decision Wheel to help the nurses to determine the needs to apply wrist-restrainers	1 July 2019									

Results

Percentage of Inappropriate Use of Wrist-Restrainers for Intubated Patients in SICU

Period: August 2018 to March 2021 Only Surgical Patients were **ALL SICU Patients were Assessed** Assessed depending on the sedation level, device level and behavior level. Decision will then be made to use restrainer or hand mitter 35% Post-Intervention Pre-Intervention Median Median (Aug to Oct 2018) (May 2019 to Mar 2021) **= 41%** = 0% **PDSA 1**: Use a small mirror Wheel to help the nurses to show patient the presence of lines and explain the to determine the needs to importance of lines apply wrist restrainers AUG WK1
AUG WK3
AUG WK4
AUG WK4
SEP WK 1
SEP WK 2
SEP WK 3
SEP WK 3
SEP WK4
JUN WK2
JUN WK4
JU

																																															<u>/</u>		
	Year 2018									Year 2019								Year 2020															Year 2021																
	AUG	AUG	AUG	AUG	SEP	SEP	SEP	SEP	ОСТ	ОСТ	ОСТ	OCT	MAY	MAY	JUN	JUN	JUN	JUN	JULY	JULY	SEP	SEP	SEP	SEP	SEP	OCT	ОСТ	OCT	OCT	NOV	NOV	NOV	NOV	DEC	DEC	DEC	DEC	JAN	JAN	JAN	JAN	JAN	FEB	FEB	FEB	FEB	MARI	MAR	MΑ
	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	WK	W
	1	2	3	4	1	2	3	4	1	2	3	4	3	4	1	2	3	4	1	2	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3
Total																																																	
Restrainers	33	43	40	27	40	30	36	25	41	32	36	39	17	19	17	18	19	14	16	13	19	24	27	15	9	3	6	10	18	18	16	18	19	15	21	24	18	19	7	21	8	10	18	18	16	17	23	16	2
Applied																																																	
Inappropriate																																															/ //		
Use of	12	18	17	8	16	10	14	7	17	10	14	17	3	4	3	4	4	3	3	2	4	6	7	0	0	0	0	1	7	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Restrainers																																																	
										_							_			_		_							_																				

Since April 2021 onwards, the interventions have been incorporated as part of Ward 3B daily workflow. Compliance to all interventions was ensured with regular briefing and roll calls. Sampling audits will be carried out to see if interventions are ongoing and results sustained. PDSA cycles will kick in to make refinement to the existing intervention when necessary.

Cook Covings

Cost Sa	vings						
	Pre-Intervention (Aug to Oct 2018)	Post-Intervention (Jan to Mar 2021)					
Average No. of Restrainers Applied (Per Week)	35	17					
Median % of Inappropriate Use of Restrainers	41%	0%					
No. of Inappropriate Restrainers Used	14	0					
Restrainer Cost + Nursing Manhour Cost	$(14 \times \$35) + (14 \times \$0.97 \times 6)$ =\\$571.48	\$0					
Potential Cost Avoidance of inappropriate use of Retrainers (Per Week)		18 – 0 71.48					
Potential Cost Avoidance of inappropriate use of Retrainers (Per Month)	571.48 x 4 = \$2,041.48						
Potential Cost Avoidance of inappropriate use of Retrainers (in 1 Year)	441.4 = \$23,6	8 x 12 501.48					

<u>Note</u>: Each pair of restrainer cost = \$35; Number of minutes required to apply restrainers to patient by nurse = 6 mins; Weighted Ave Cost per min for Senior Staff Nurse = \$0.97

Lessons Learnt

- 1. Assessing the need for restraints, multiple approach will enhance nurses' decision making process.
- 2. Appropriate interventions are required to improve patient outcomes
- 3. ICU nurses must keep vital therapies intact while maintaining human dignity

Strategies to Sustain

- 1. To educate patients at pre-operation phase (to tell in advance show video that patients will have tube in their mouth etc.)
- 2. Involve relatives during their visitation period, to encourage them to interact with patient, like holding hands, off restrainers if they are around.
- 3. Explore more alternatives instead of physical restraint, like simple activities to occupy patients' mind.
- 4. Nurses to change mindset