

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

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

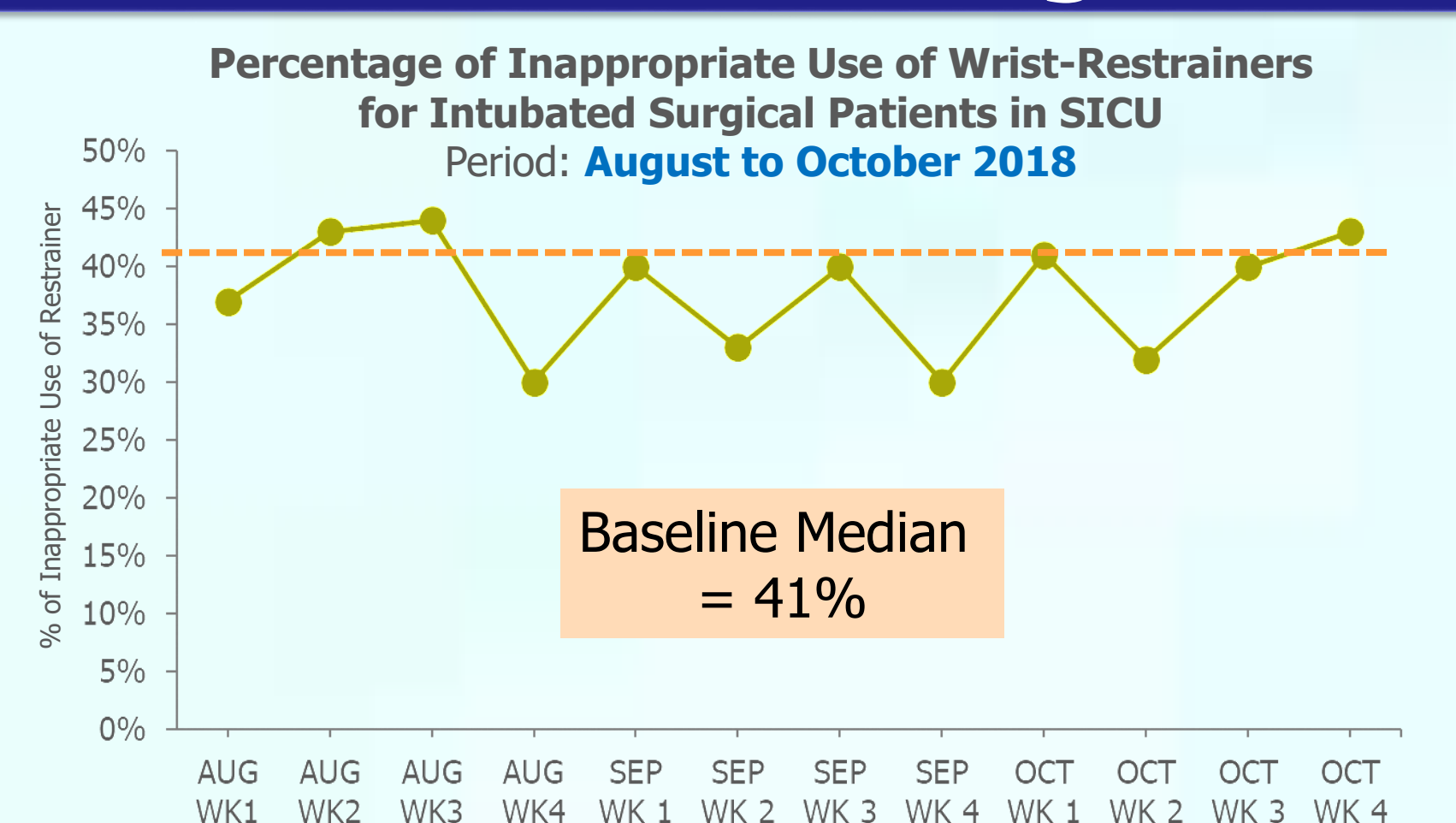
Team Members

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

Sponsors: Dr Nelson Chua & Ms Tay Meow Hoon

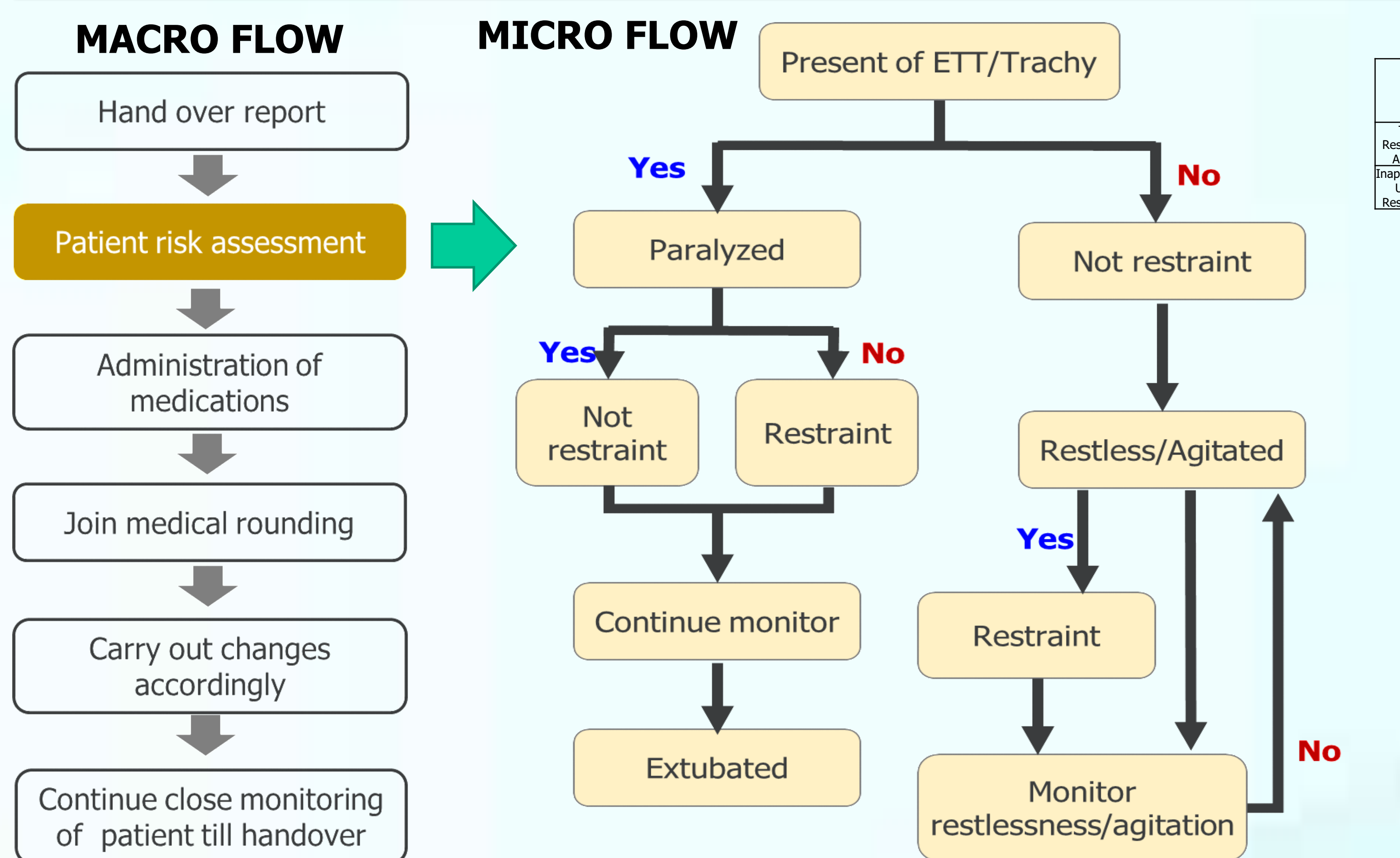
Evidence for a Problem Worth Solving

- In Africa, Langley, Schmolgruber & 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 restrainter use in Norway.**

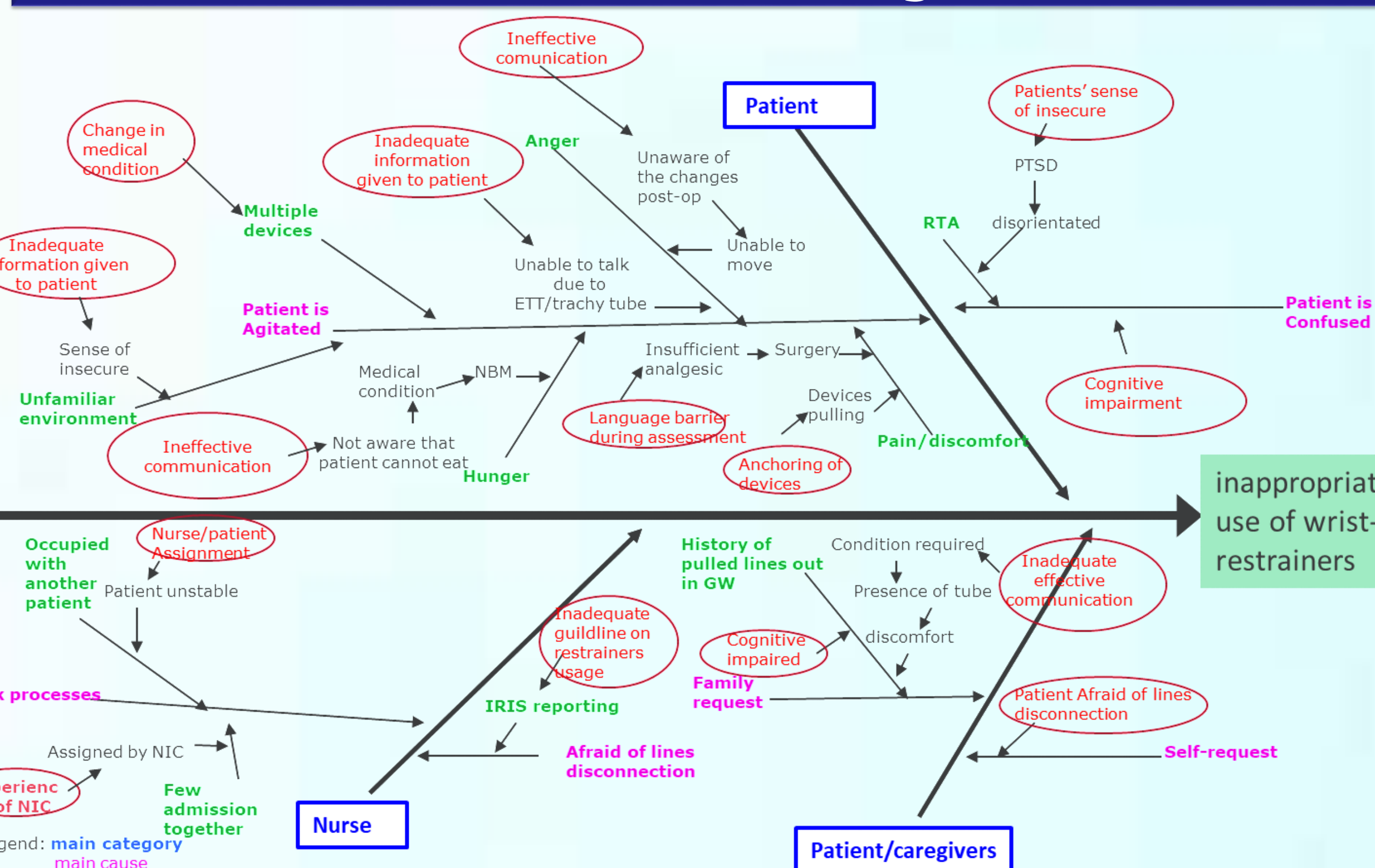


	AUG WK1	AUG WK2	AUG WK3	AUG WK4	SEP WK1	SEP WK2	SEP WK3	SEP WK4	OCT WK1	OCT WK2	OCT WK3	OCT WK4
Total Restraints Applied	33	43	40	27	40	30	36	25	41	32	36	39
Inappropriate Use of Restraints	12	18	17	8	16	10	14	7	17	10	14	17

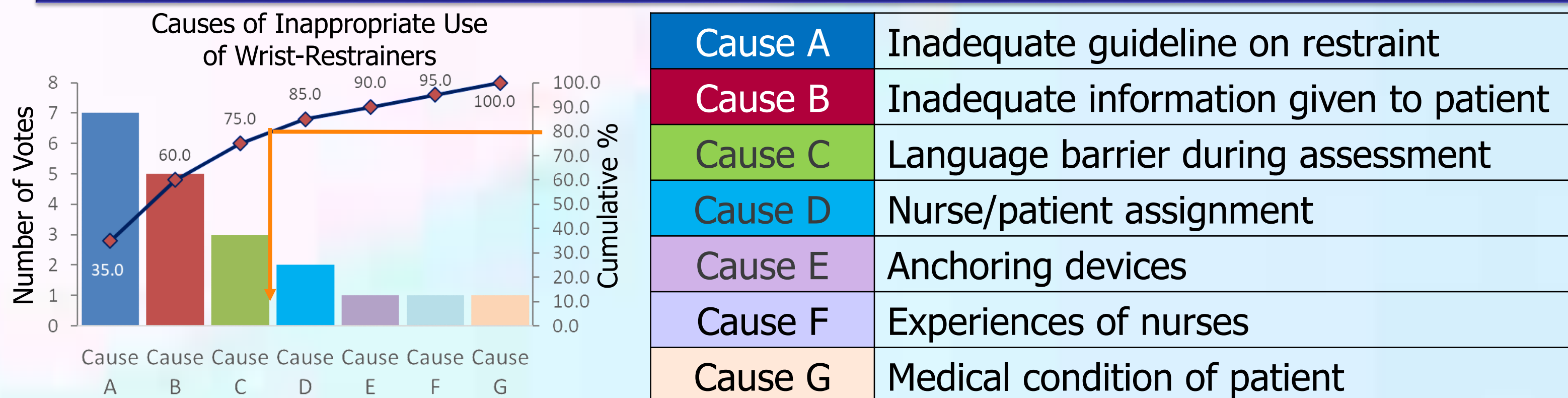
Flow Chart of Process



Cause and Effect Diagram



Pareto Chart

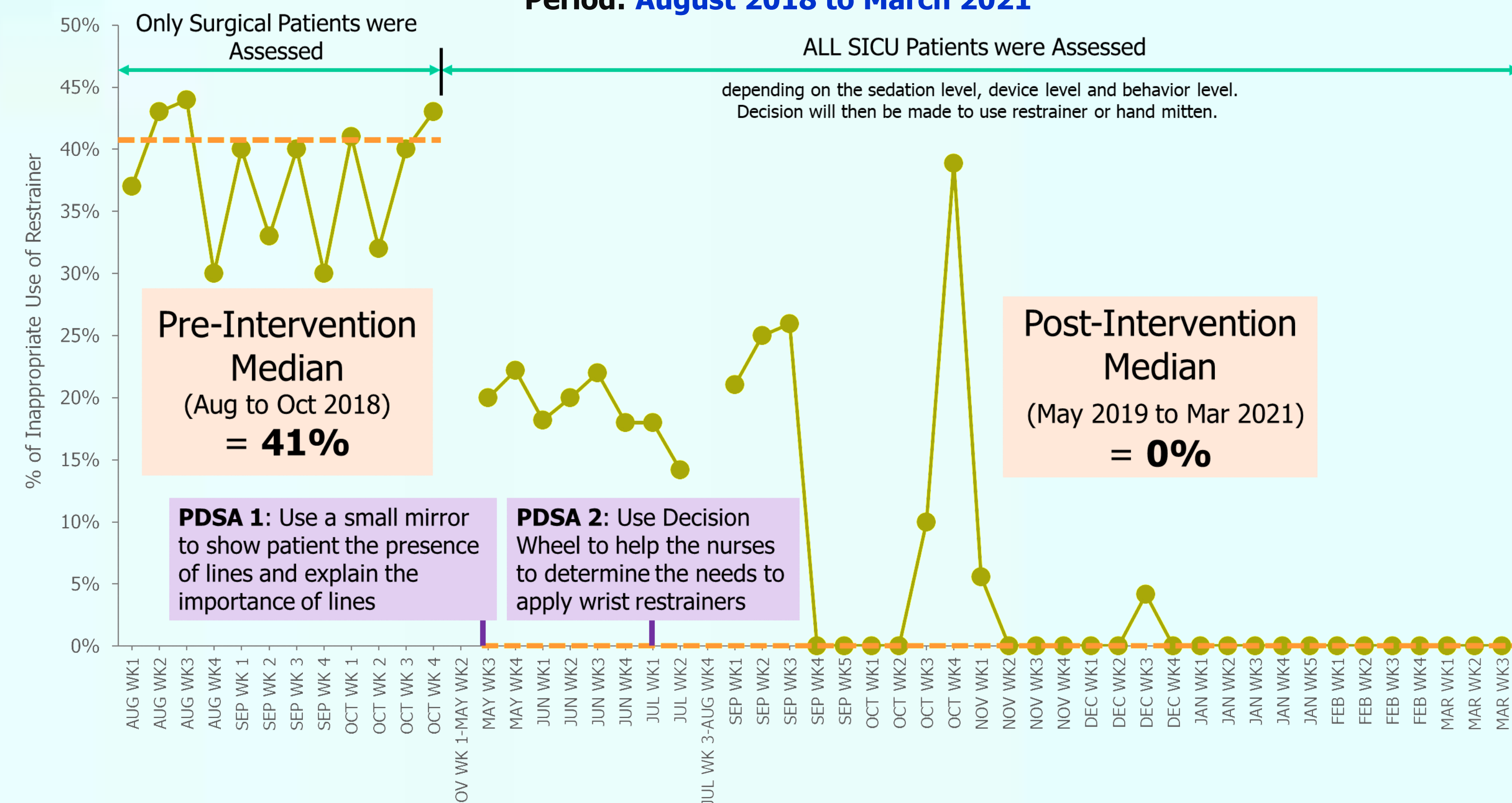


Implementation

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-Restraints for Intubated Patients in SICU
Period: August 2018 to March 2021



	Year 2018				Year 2019				Year 2020				Year 2021																																			
	AUG	SEP	OCT	NOV	AUG	SEP	OCT	NOV	AUG	SEP	OCT	NOV	AUG	SEP	OCT	NOV																																
Total Restraints Applied	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	16	17	23	16	27
Inappropriate Use of Restraints	12	18	17	8	16	10	14	7	17	10	14	17	3	4	3	4	4	6	7	0	0	0	0	1	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0								

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.

Cost Savings

	Pre-Intervention (Aug to Oct 2018)	Post-Intervention (Jan to Mar 2021)
Average No. of Restraints Applied (Per Week)	35	17
Median % of Inappropriate Use of Restraints	41%	0%
No. of Inappropriate Restraints Used	14	0
Restraint Cost + Nursing Manhour Cost	$(14 \times \$35) + (14 \times \$0.97 \times 6)$ = \$571.48	\$0
Potential Cost Avoidance of inappropriate use of Restraints (Per Week)		$571.48 - 0$ = \$571.48
Potential Cost Avoidance of inappropriate use of Restraints (Per Month)		571.48×4 = \$2,041.48
Potential Cost Avoidance of inappropriate use of Restraints (in 1 Year)		441.48×12 = \$23,601.48

Note: Each pair of restrainter 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