

Mission Statement

- **Background:** Coagulopathy is major cause of morbidity & mortality in trauma patients.
- **ROTEM** is a Point-of-Care Viscoelastic Assay that gives rapid, real-time information on **clot kinetics**.
- It allows for **goal directed** blood product transfusion instead of fixed ratio transfusion of 1:1:1
- **KTPH** has **ROTEM guided MTP guidelines** since 2021
- **Aim:** To increase the proportion of major trauma patients requiring Massive Transfusion Protocol (MTP) activation who had ROTEM done within **60 min** of OT arrival from **20% to 100%** within **6 months**.

Team Members

Name	Designation	Department	Role
Dr Chen Xinying	Consultant	Anaesthesia	Team Leader
Sister Malar	Peri-op Nurse Clinician	MOT	Member
Yang Hua	Anaesthesia Nurse	MOT	Member
Dr Soo Kian Shing	Senior Resident Physician	Anaesthesia	Member
Dr Naville Chia	Senior Consultant	Anaesthesia, Blood Transfusion Service	Member
Lim Woan Wui	Trauma Nurse Coordinator	General Surgery	Member
Dr Jerry Goo	Senior Consultant/ Trauma Surgeon	General Surgery	Member
Ritchelle Sagun	Senior Medical Technologist	Lab Medicine	Member

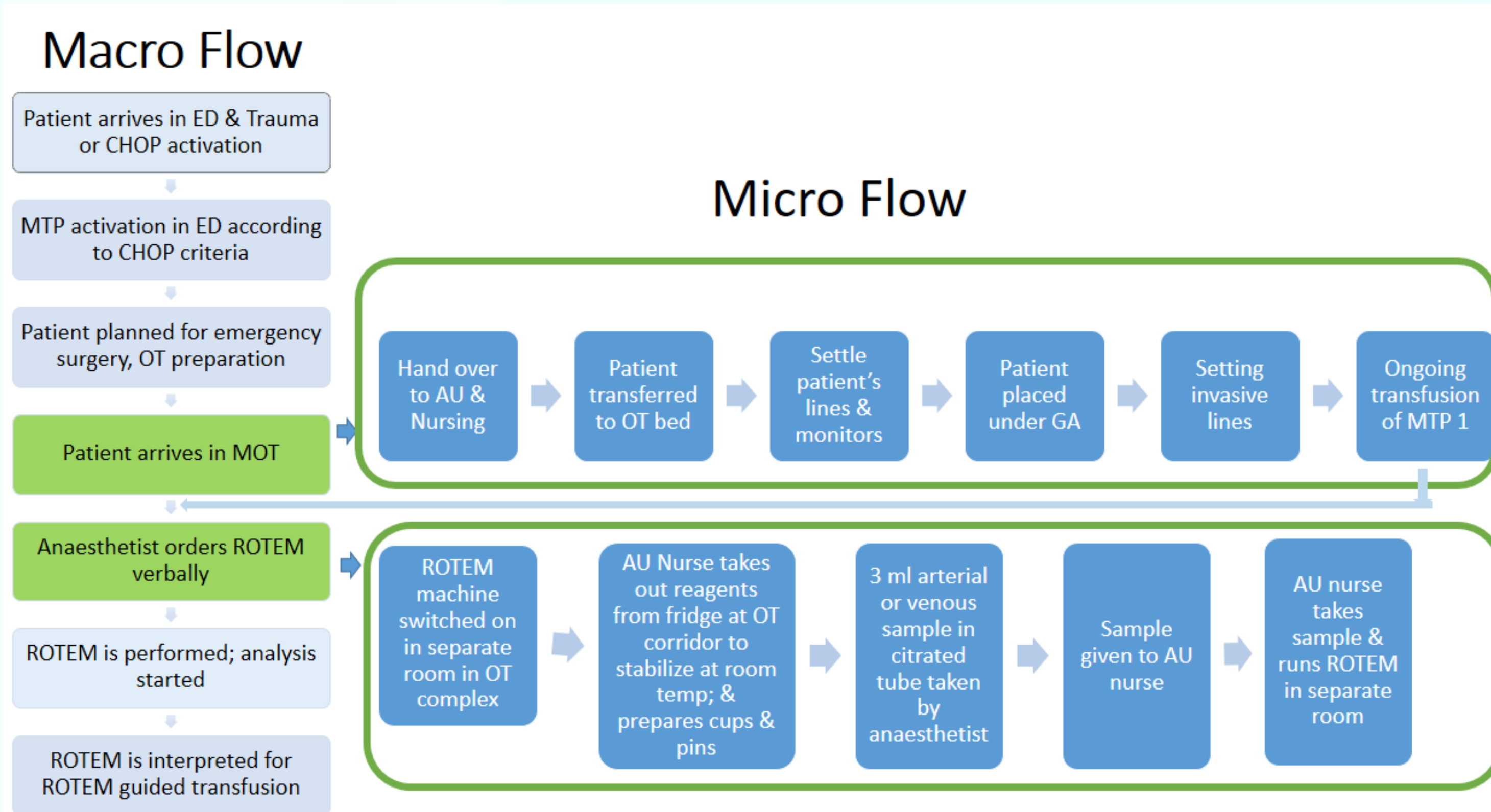
Evidence for a Problem Worth Solving

- Literature has shown that **goal directed ROTEM guided MTP improves survival** after injury, **promotes appropriate use of blood products** while **shortening ICU stay**
- Use of VHAs has been recommended during massive transfusion in **local & international trauma guidelines**

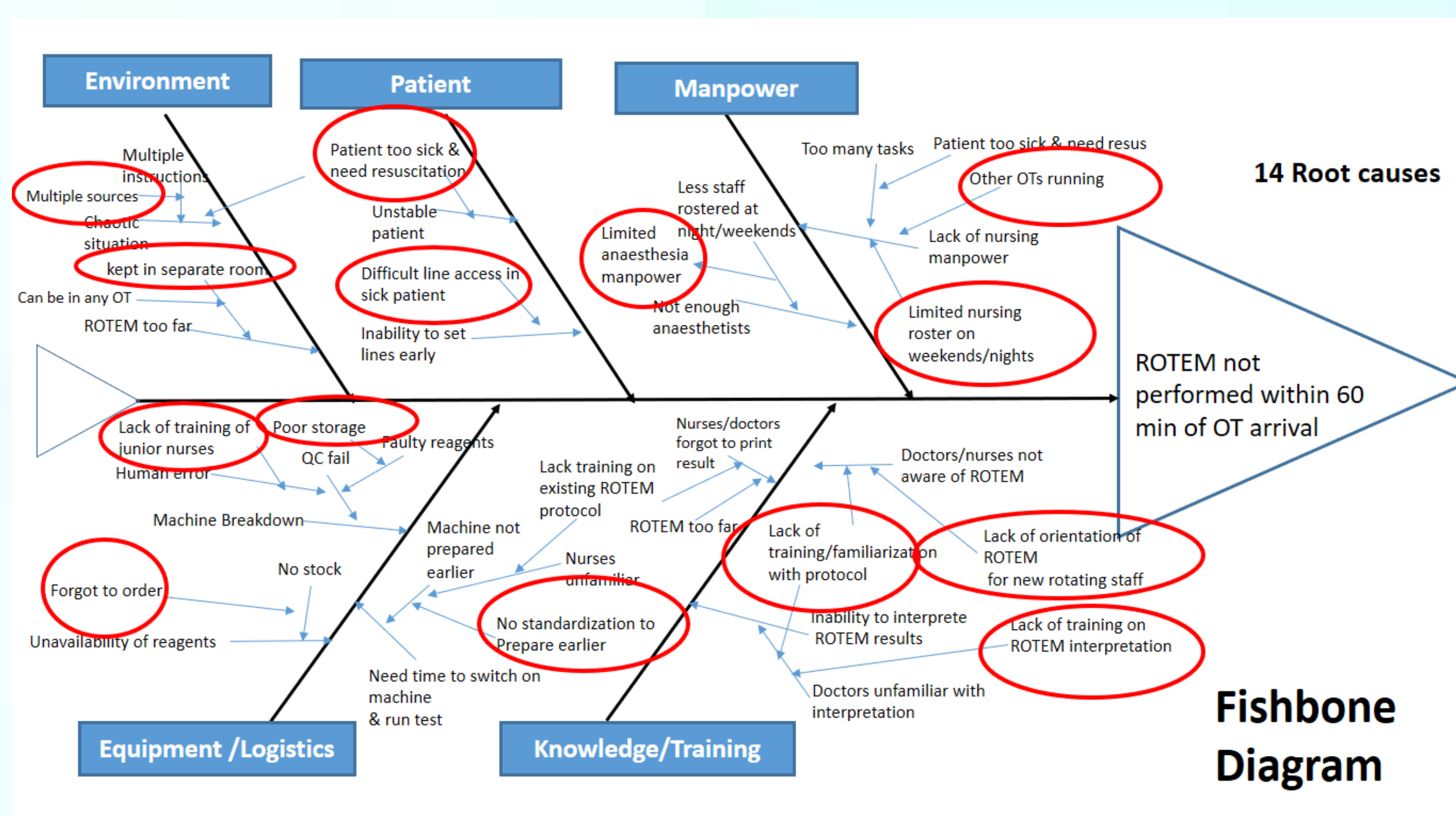
Current Performance of a Process

- Only **20%** of patients had ROTEM done within 60 min in 2019-2021

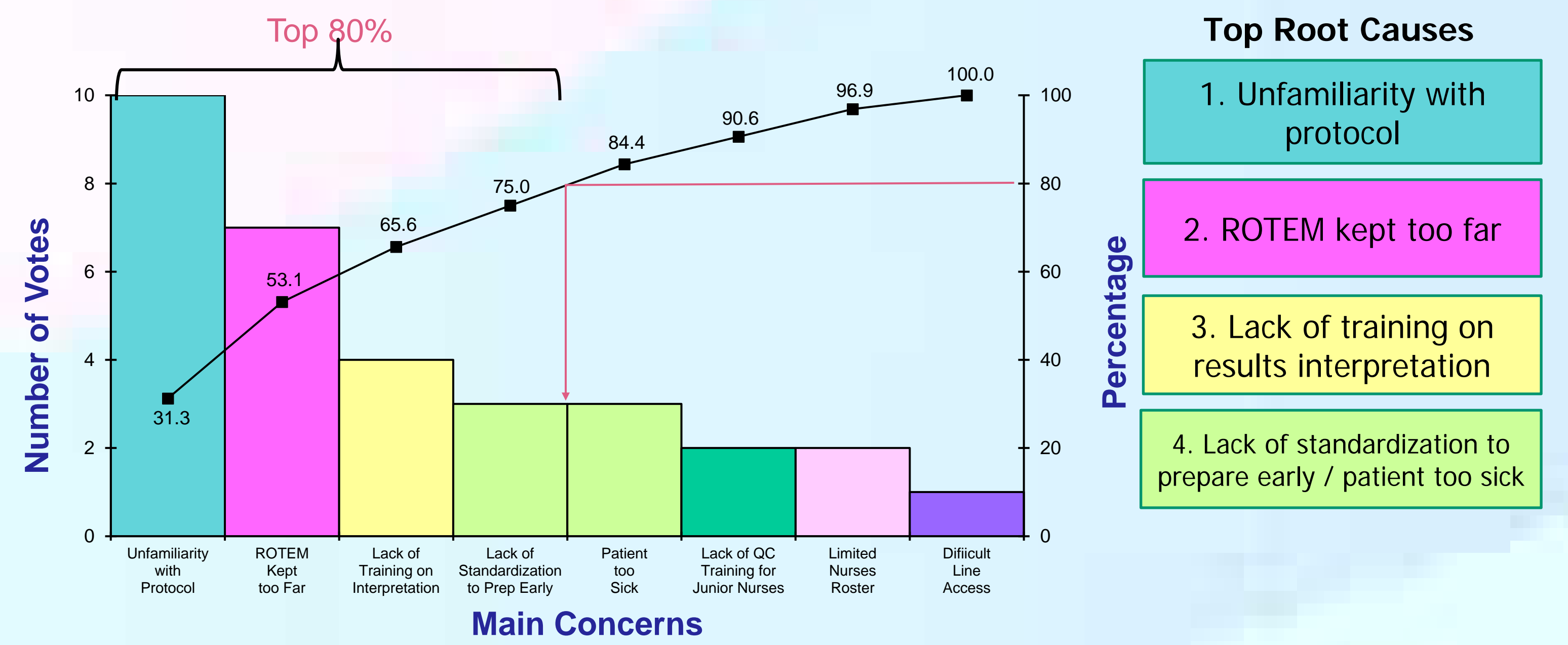
Flow Chart of Process



Cause and Effect Diagram



Pareto Chart

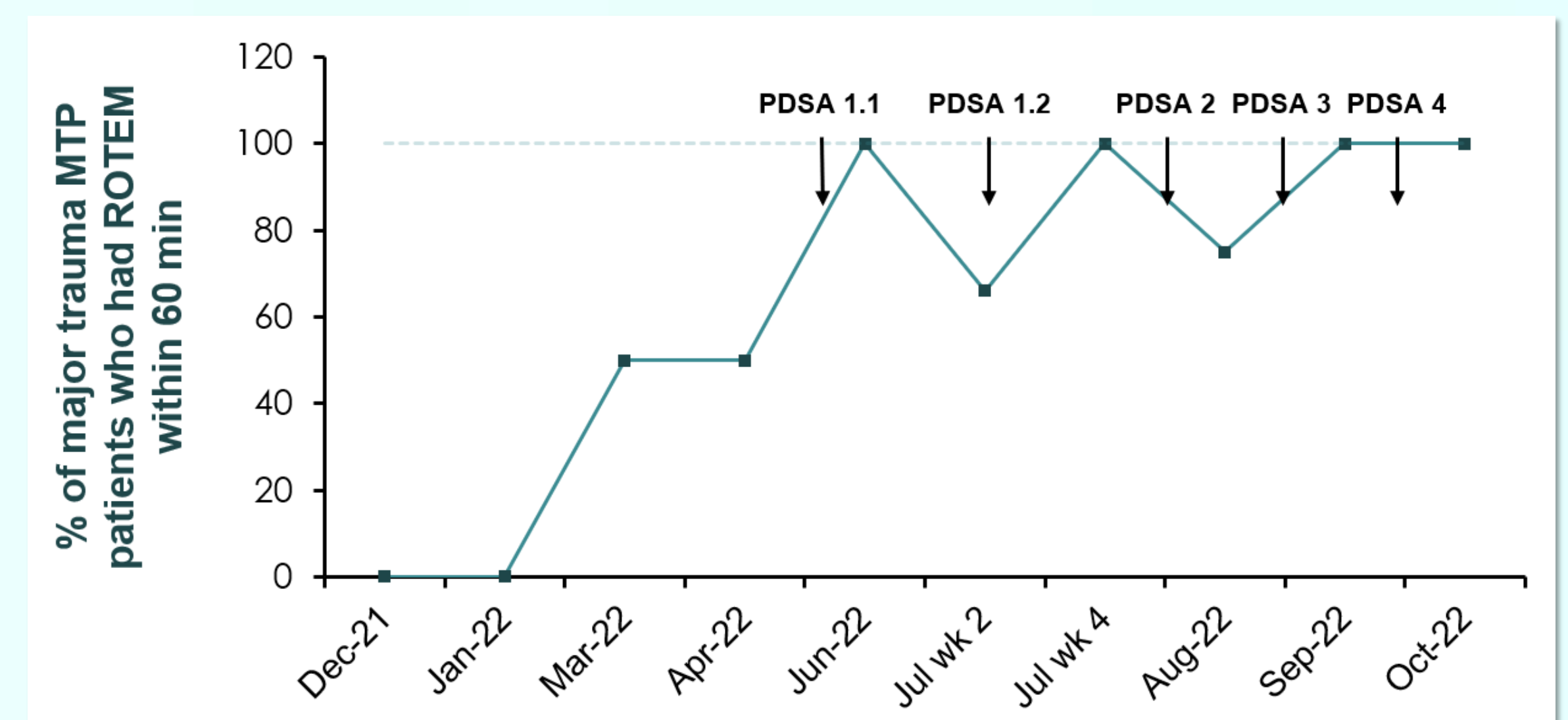


Implementation

CAUSE / PROBLEM	INTERVENTION	DATE OF IMPLEMENTATION
Unfamiliarity with existing ROTEM guided MTP protocol	• Re-education at Department M & M trauma case presentation	31 May 2022
	• Increase awareness for new staff through team based simulation practice	July 2022
Lack of training on ROTEM results interpretation	• Formal department teaching on existing protocol & interpretation with quiz	2 Aug 2022
ROTEM too far No standardization to prepare early	• Nurses to bring ROTEM analyser (together with attached protocol) into EOT & switch on early; incorporate into workflow & SOP	2 Sep 2022
Patient too sick	• Verbal prompt from blood bank when MTP cycle 2 & subsequent cycles are ordered	1 Oct 2022

Results

- 100% of actual major trauma patients had ROTEM done within 60 min of OT arrival by Oct 2022
- Average Timing of ROTEM was 42 min in 2022 vs 84 min in 2021



Cost Savings

Clinical Outcome	Cost savings to Patient (A class)	Cost Savings to Hospital per patient
Reduction in blood products by 1 MTP cycle	\$1550.12	\$1713.16
Reduction by 2 FFP	\$206.10	\$191.30
Reduction by 1 pooled platelets	\$274.87	\$542.34
Reduce ICU LOS by 2 days	\$2362.62	\$4177.66

- Cost savings to Hospital for 10 patients per year ~ **Up to \$58908.20**

Problems Encountered

- Difficult to change general mindset of doing things the usual way
- Trauma patients are small in number, challenging to perform PDSA cycles; this was overcome by performing simulations
- Staying focused on the mission & keeping the momentum within 6 months is only possible with like-minded team members

Strategies to Sustain

- **Regular** teaching sessions / simulation practice / reminders
- **Standardization:** Interventions incorporated into the actual workflow & SOP
- **Review/Monitoring:** Continue to monitor the progress 6 monthly or yearly
- **Update** department regularly on targets and the good work done ie better clinical outcomes, more cost savings to hospital/patient
- **Spread:** Sharing at Hospital Trauma Committee & local/international courses/conferences