Reduce preanalytical error involving multi level transportation of samples to the lab

Liew Li Huey and Yeo Hui Yun, Laboratory

Mission Statement

Reduce preanalytical error involving multi level transportation of samples to the lab at PIO NHGD within 6 months		
What are you measuring? 1. Patient complaint 2. No of rework	***Numeric Goal:*** 1. <3 patient complaint on Turnaround time (TAT) 2. < 5 rework in 2 weeks	***Time frame for completion*** Within 6 months
	Stretch goal: 1. Zero patient complaint on TAT 2. < 3 rework in 2 weeks	

Team Members

	Name	Designation	Department
Team Leader	Yeo Hui Yun	Medical Technologist	Laboratory
Team Member	Nur Suraiya binte Mohamed Taib Kavikani K K D/O Karunaniti	Medical Technologist CSA	Laboratory
Facilitator	Liew Li Huey	Medical Technologist	Laboratory

Evidence for a Problem Worth Solving

PIO has Multi levels (3 floors) lab sending samples to lab and the processing time become a concern when samples and required forms were not sent timely and correctly to lab.

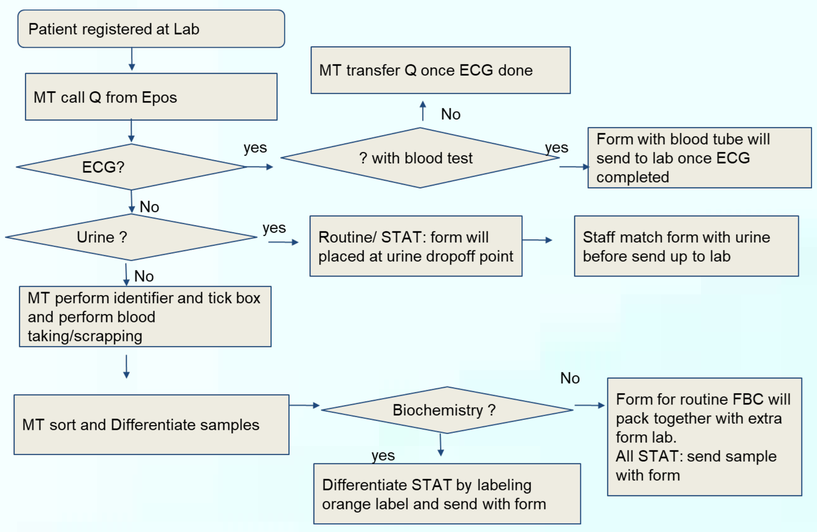
- Average no of rework during 7 Sep – 30 Sep 2020: 29
- Average TAT for lab > consult in Sep 2020: 61.37mins (>60min)
- Patient complaint on lab TAT – 1 written, 3 to 5 verbal
- Complaint from staff where TAT > 2 hrs due to Pneumatic tube error

Current Performance of a Process

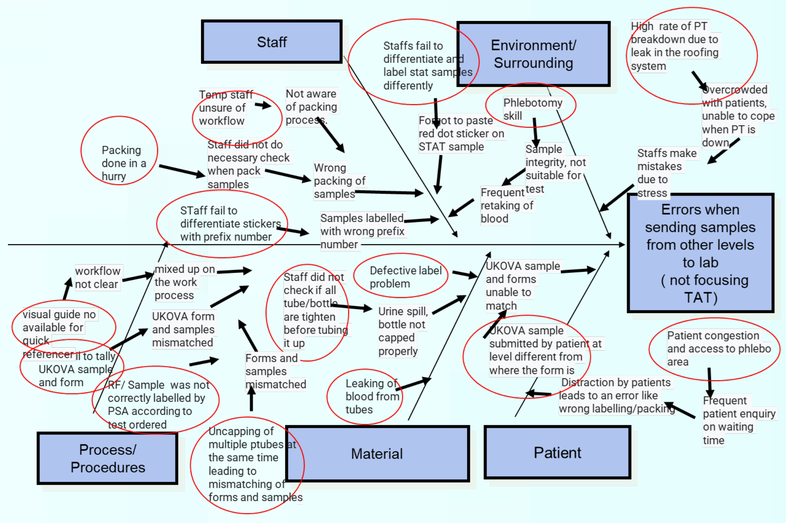
Error	Frequency
Defective sample label, contaminated with blood	1
Urine spilled, not sealed properly	1
STAT samples not identifiable, staff did not label specific way	2
POCT meter not docked properly	2
HbA1c sample labelled with wrong number (370/650) sticker	3
Unlabelled Urine sample	1
Biohazard bag not sealed before tubing to lab	2
POCT not resulted, wrong barcode scanned	1
FBC/UKOVA/Dipstick no form	4
Baby PS tube missing black label	1
Paeds sample leaked out into biohazard bag	1
EHI sample packed with FBC form and sample	1
PS tube labelled with 370- sticker instead of 800-	1
Incomplete documentation on Request Form	3
urine label pasted on urine bottle instead of form label	1
Mixed offsites KTPH and IMH samples	1
FBC, ESR process delay because samples were packed with a1c	1
Test not suppressed properly	1
Hb variant edta tube not taken	1

Table 1: breakdown of encounters

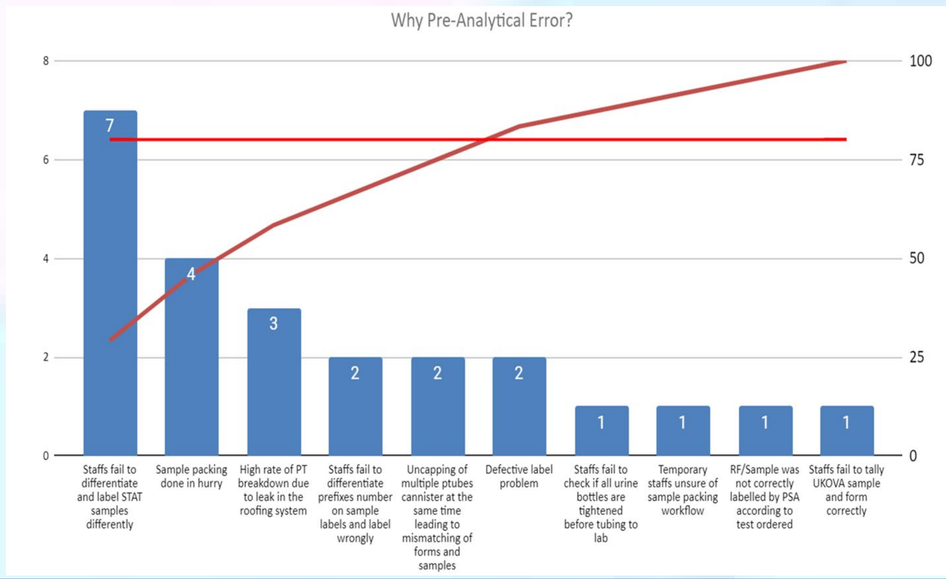
Flow Chart of Process



Cause and Effect Diagram



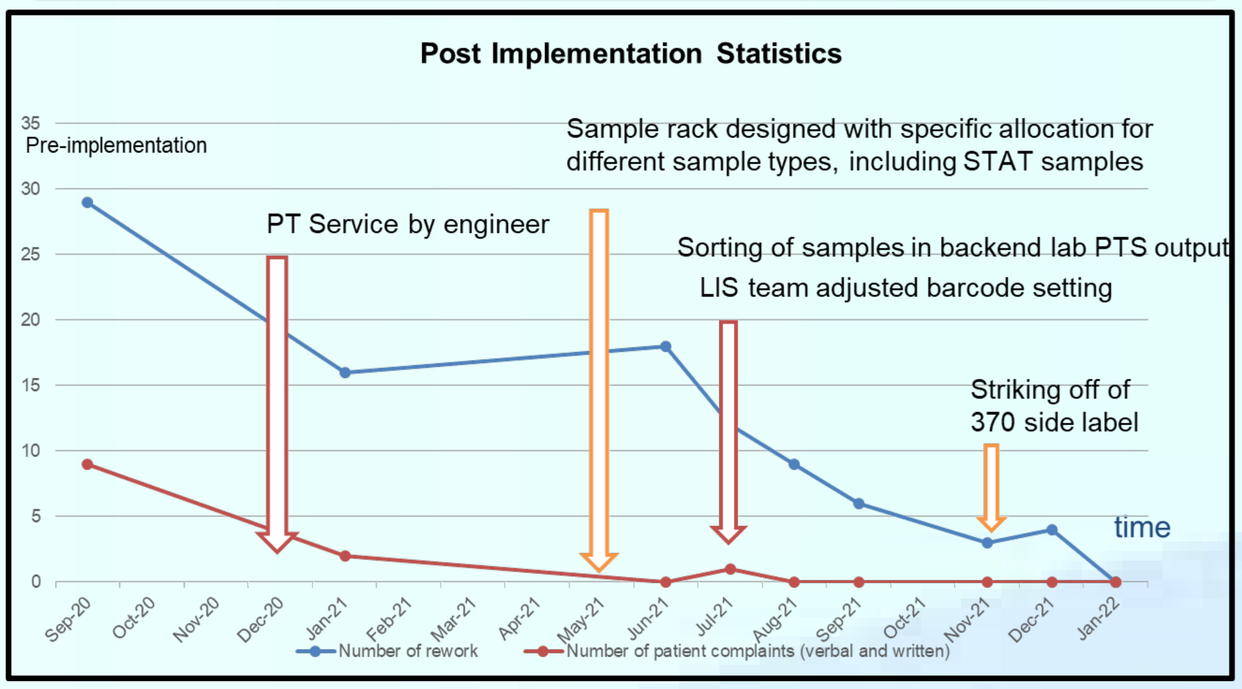
Pareto Chart



Implementation

	Root Causes	Countermeasure proposed	Date of experiment
1	fail to differentiate STAT samples	Sample rack designed with specific allocation for different sample types, including STAT samples	28May2021
2	Sample packing done in hurry		
3	Use wrong prefix label for HbA1c vials	370 side sticker striked off to prevent use	19Nov2021
4	Process multiple canister concurrently, leading to sample sorting error	Upon uncapping of canister samples will be sorted to specific compartments	12Jul2021
5	Defective barcode label	Adjusted barcode setting	28May2021

Results



Cost Savings

On an average, staff need to allocate 30 min/day to investigate and rectify the error which is equivalent to $9.80 and 1 hour on patient service recovery. The reduction in error from estimated pre intervention of 5 error/day to post intervention estimate ~ 5 cases per month would equate to $205 saving in manpower. Beside the monetary saving, time is saved serve other patients and laboratory work.

Problems Encountered

As the project took place during COVID times and team was working on split teams mode, the discussions and feedbacks can only be done through messages or zoom. Closer monitoring of outcome and distant observation of workflow changes were done to overcome that and ensure consistency.

Strategies to Sustain

No	Purpose	Task	Who	When/ How often
1	For consistent practice on use of sample rack & sample packing	feedback to staffs if not doing the right way	Lab staff	Daily when doing lab
2	Continuity of practice by new staff	Include workflow as new staff training	New Staff trainer	During training