To reduce biochemistry haemolysed sample rate from 20% to 7% (stretch goal 4%) for NNI Outpatient Samples in 6 months

Singapore Healthcare Management 2016

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Aim

To reduce biochemistry haemolysed sample rate from 20% to 7% (stretch goal 4%) for NNI outpatient samples in 6 months; in order to lead a faster, more accurate diagnosis and treatment for the patient; by providing a quality specimens drawn correctly for the laboratory, meaningful test results for the physician, and minimum of venepuncture(s) for the patient.

Evidence of a Problem worth Solving

Clin Chem Lab Med 2008 46(6): 764–772e: Haemolytic specimens are a frequent occurrence in laboratory practice; Can account for 40% to 70% of all unsuitable specimens; Prevalence up to 3.3% of all routine samples (visual inspection)

Local Data: From April 2014 to May 2015; NNI outpatient samples biochemistry haemolysed sample rate is about 20% (Fig. 1)

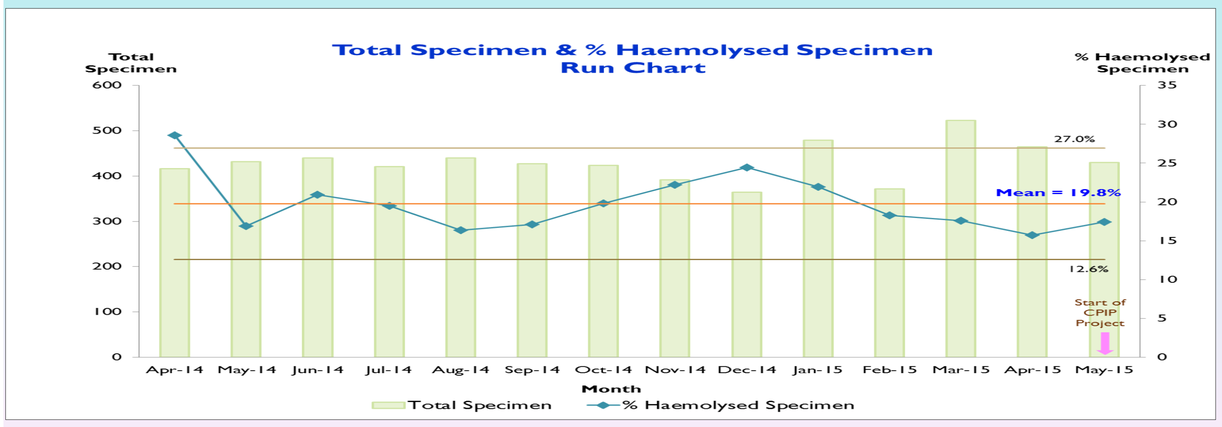
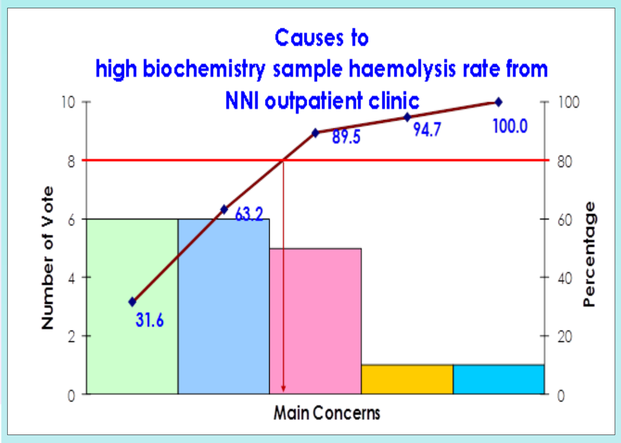


Fig. 1 Total specimen and % Haemolysed Specimen Run Chart in NNI

(III) PARETO CHART



1		Lack of knowledge on the causes of haemolysis during blood collection
2		Vigorous mixing or shaking of specimen caused by pneumatic tube system
3		Distance taken to transport the blood collection tubes (clinic position in hospital)
4		Placement of multiple blood collection tubes in the canister
5		Patients on steroid treatment

Methodology

(I) FLOWCHART OF PROCESS

The approach which were adopted to address the venepuncture workflow at Neuroscience Outpatient Clinic are as follows (Fig. 2a):

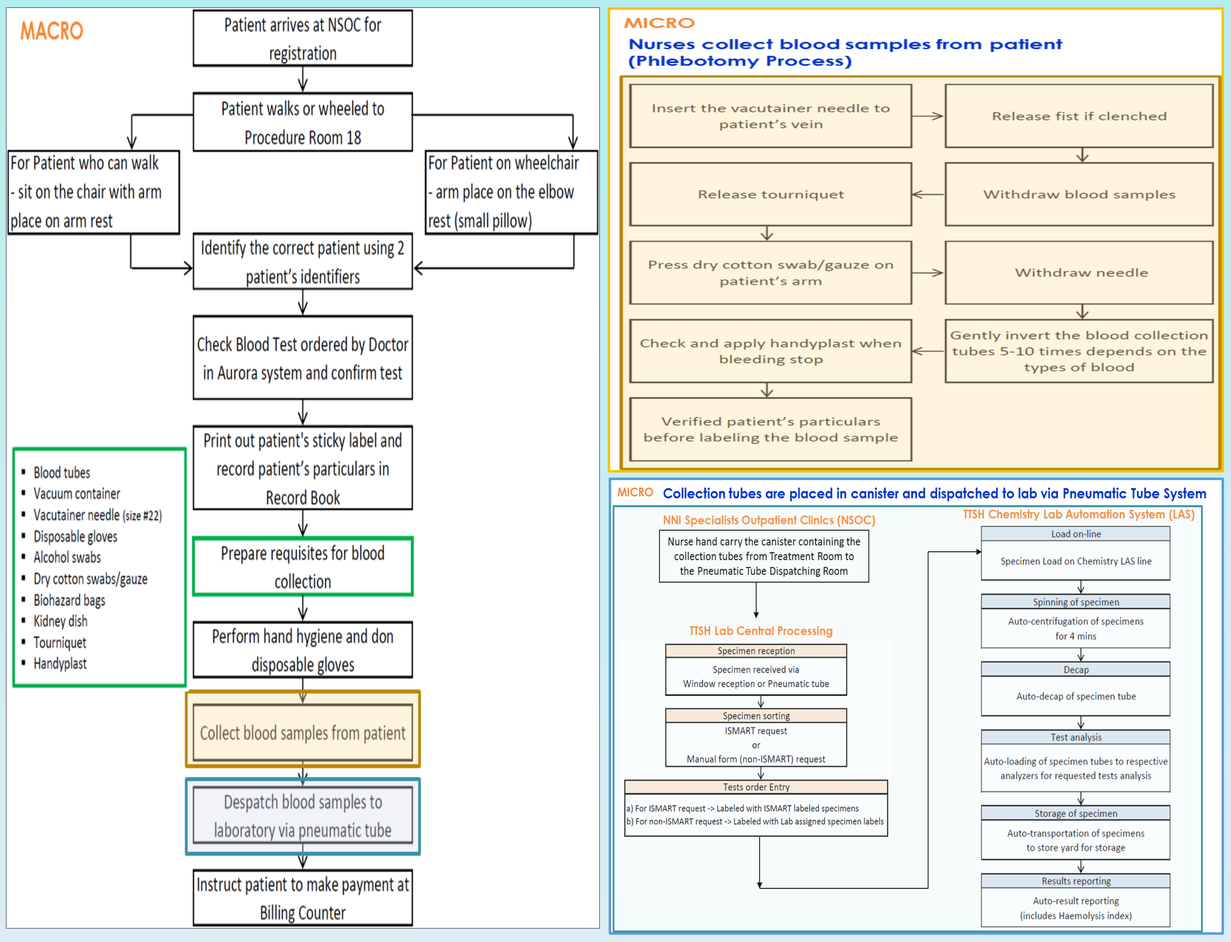


Fig. 2a Venepuncture Workflow at NNI outpatient Clinic

(II) CAUSE & EFFECT DIAGRAM

Paradigm breaking exercise helped the team think out of the box to come up with breakthrough solutions (Fig. 2b)

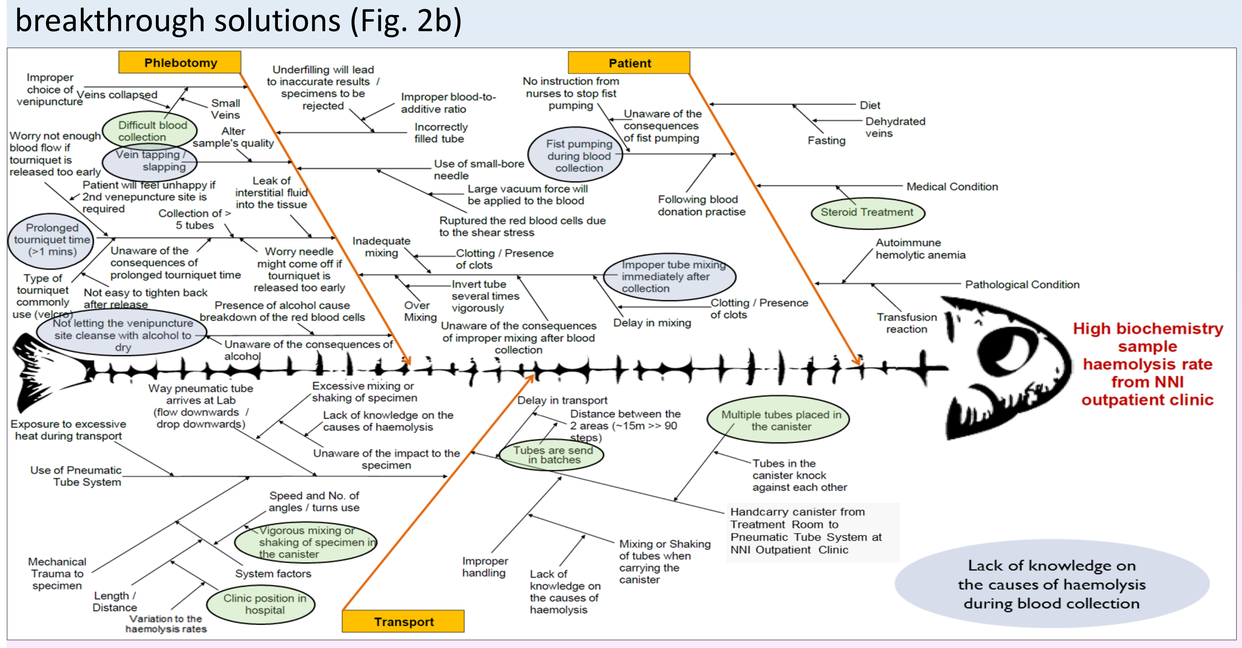


Fig. 2b Fishbone Diagram (High biochemistry sample haemolysis rate at NNI outpatient clinic)

Intervention / PDSA

Cause / Problem	Intervention / PDSA	Date of Implementation
(1) Lack of knowledge on the causes of haemolysis during blood collection	To conduct refresher training for the nurses involved in phlebotomy	June 2015
(2) Vigorous mixing or shaking of specimen caused by pneumatic tube system	To modify pneumatic tube canister	August 2015

PDSA cycle was applied to solve problem systematically and monitor progress of the project

Results

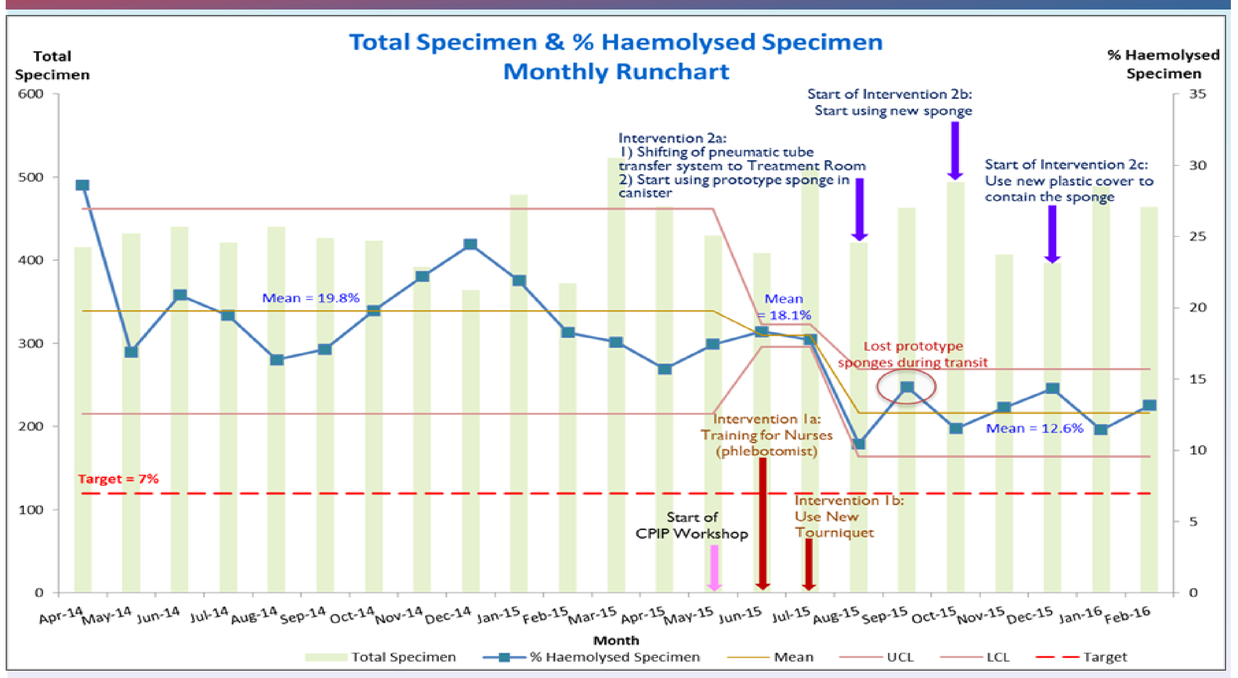


Fig. 3 % Haemolysed Specimen Monthly Runchart

The mean of the monthly haemolysis rate from April 2014 to May 2015 was about 20% (Baseline Data). After Intervention 1, the mean haemolysis rate dropped to 18.1% as of July 2015, and further dropped to 12.4% as of November 2015 as a result of Intervention 2 (Fig 3).

Conclusion

We will continue to monitor the data for another year for sustainability and introduce other intervention(s) when possible, in order to identify other rooms for improvement. Lessons learnt from the project is to in-cooperate the aspects of phlebotomy best practices (i.e. video training) with the newcomers, during orientation. Special considerations of inter-cluster projects with multi-disciplinary team and regular data updates.