Project Title

Initiatives to Reduce Blood Specimen Rejection Rate

Project Lead and Members

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Organisation(s) Involved

Ng Teng Fong General Hospital

Healthcare Family Group Involved in this Project

Nursing, Healthcare Administration

Applicable Specialty or Discipline

Medical & Laboratory Technology

Aims

Ward B16S intends to reduce the median blood specimen rejection rate from 0.39% to 0.30% in Ward B16s by May 2020 for Ward B16S patients because we want to prevent delay in treatments and to reduce patients' complaints.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

The creation of visual cues and reinforcements on the correct sequences of venipuncture has ensured the quality of the specimens.

Conclusion

The compliance to the correct sequence of draw for blood tubes and the standardisation of 8 inversions for all blood tubes had shown positive results in reducing blood specimens rejection rates significantly

Project Category

Care & Process Redesign, Quality Improvement, Job Effectiveness

Keywords

Blood Specimen Rejection, Inpatient Wards

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INITIATIVES TO REDUCE BLOOD SPECIMEN REJECTION RATE

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☑ SAFETY ☐ QUALITY ☑ PATIENT EXPERIENCE
☑ PRODUCTIVITY ☑ COST ☑ TEAMWORK ☑ COMMUNICATION

Define Problem, Set Aim

Problem statement

Between January 2018 to April 2019, Ward B16s saw an increasing trend of specimen rejection. Ranking Ward B16s as the top 6 rejections in Ng Teng Fong General Hospital with the highest blood specimen rejections on several occasions starting from October 2018 onwards. The median shift from 0.27% (April 2018 – September 2018) to 0.39% (October 2018 - April 2019). The median rejection across NTFGH is about 0.35%.

This can lead to the following:

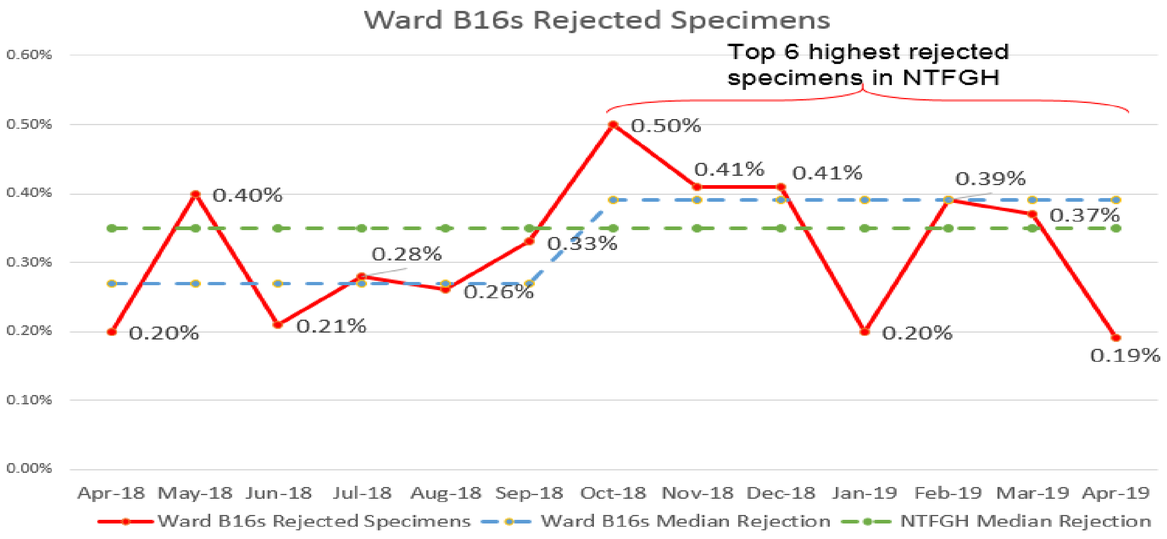
1. Delay in treatment
2. Patient complaints (caused by undue pain)
3. Reworking and increase waste

Aim

Ward B16s intends to reduce the median blood specimen rejection rate from 0.39% to 0.30% in Ward B16s by May 2020 for Ward B16s patients because we want to prevent delay in treatments and to reduce patients' complaints.

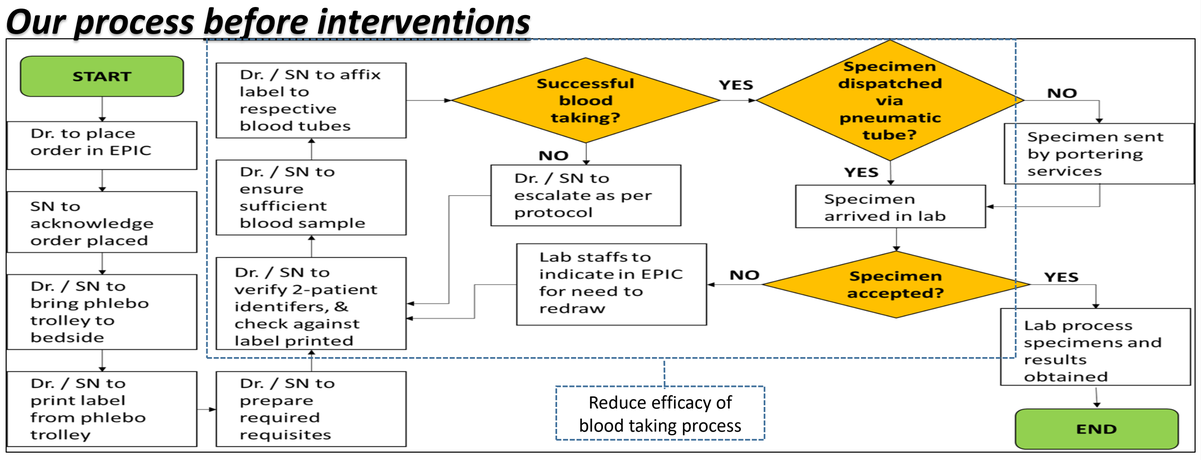
Outcome measure: (total number of blood rejected in Ward B16s (monthly)) / (total number of rejected specimens in NTFGH (monthly))

Establish Measures



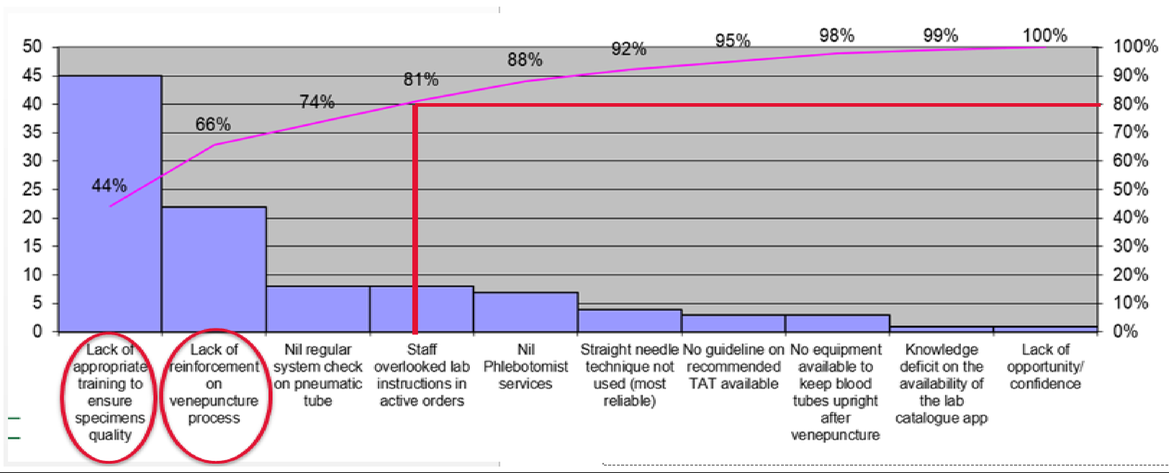
Analyse Problem

Our process before interventions



What are the probable root causes?

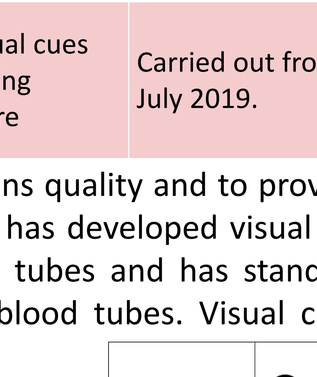
Fishbone diagram and 5-Why were used to derive the potential root causes. These key root causes are identified using pareto chart shown below.



Select Changes

Root Cause A:
Lack of appropriate training to ensure specimens quality

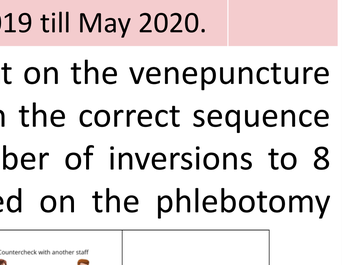
Root Cause		Possible Solutions
Lack of appropriate training to ensure specimens quality	1	Create opportunity for new staffs
	2	*In-service by lab staff twice a year*
	3	*Visual reinforcements*
	4	Induction course for venepuncture



Plan: To conduct in-service twice a year by lab staffs.
Actual implementation: Visual reinforcements

Root Cause B:
Lack of reinforcement on venepuncture process

Root Cause		Possible Solutions
Lack of reinforcement on venepuncture process	1	Mini Quiz (NIC to reinforce during roll-call)
	2	*Random audit on venepuncture process*
	3	Additional phlebotomy trolley
	4	*Visual cues*
	5	*Re-design of phlebotomy trolley*



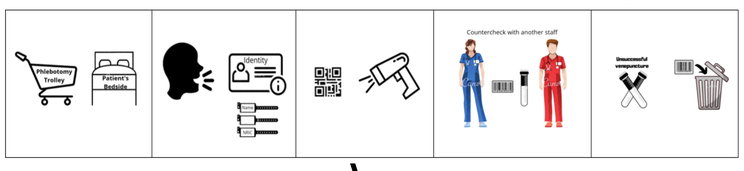
Plan: To re-design phlebotomy trolley which allow staffs to bring the trolley over to patient's bedside (experience of venepuncture process)
Actual implementation: Use of visual cues and conducting random audit to ensure staffs' compliance to venepuncture workflow.

Test & Implement Changes

How do we pilot the changes? What are the initial results?

CYCLE	PLAN	DO	STUDY	ACT
1	NIC to do visual check for all specimens prior to dispatch.	Carried out from 10 December 2018 till 14 March 2019.	The blood specimen rejection rates decreased in January 2019.	Adapt
2	Develop visual cues for users doing venepuncture	Carried out from 9 July 2019.	Consecutive 6 months of achieving targeted rejection rates of below 0.3% from December 2019 till May 2020.	Adopt

To ensure specimens quality and to provide reinforcement on the venepuncture process, the team has developed visual cues targeting on the correct sequence of draw for blood tubes and has standardised the number of inversions to 8 inversions for all blood tubes. Visual cues were attached on the phlebotomy trolley laptop.

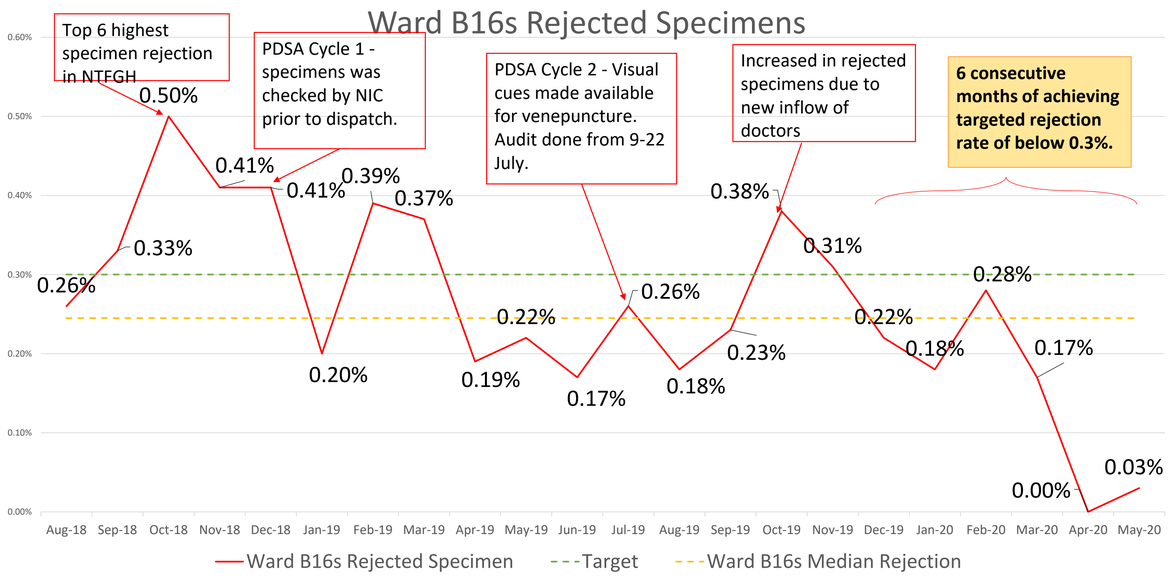


Guidelines on Sequence of Blood Taking

All tubes require mixing after collection.
Insufficient mixing (inaccurate test results)
⬇
Higher rejection rates

STRICTLY DO NOT use needle and syringe!!!

Sequence	Colour Code	Tube Type	Inversions
1	Blood Cultures	Aerobic Anaerobic	8
2	Light blue	Sodium Citrate	
3	Red	Serum	
4	Gold	SST	
5	Green	Heparin & PST	
6	Lavender	EDTA	
7	Pink	Cross Match	
8	Grey	Fluoride Oxalate	



Conclusion

Audit was conducted in Ward B16s from December 2019 – May 2020.
The compliance to the correct sequence of draw for blood tubes and the standardisation of 8 inversions for all blood tubes had shown positive results in reducing blood specimens rejection rates significantly.
Ward B16s has achieved the targeted blood specimen rejection rate of less than 0.30% for 6 consecutive months.

Ng Teng Fong General Hospital
Jurong Community Hospital