

**Project Title**

Reduce Rejected Specimen Rate

**Project Lead and Members**

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**Organisation(s) Involved**

National Heart Centre Singapore

**Healthcare Family Group Involved in this Project**

Allied Health

**Specialty or Discipline**

Medical & Laboratory Technology

**Project Period**

Start date: Oct 2018

Completed date: Feb 2019

**Aims**

To reduce the specimen rejection rate to 0.7% or less

## **Background**

See poster appended / below

## **Methods**

See poster appended / below

## **Results**

See poster appended / below

## **Lessons Learnt**

See poster appended / below

## **Conclusion**

See poster appended / below

## **Additional Information**

Singapore Healthcare Management (SHM) Conference 2021 – Shortlisted Project  
(Patient Experience Category)

## **Project Category**

Care & Process Redesign, Quality Improvement, Workflow Redesign, Job  
Effectiveness, Access To Care, Turnaround Time, Value Based Care, Productivity, Time  
Saving, Cost Saving, Operational Management, Logistics Management, Training &  
Education

## **Keywords**

Roll Call, Roadshow, Posters, Phlebotomy

## **Name and Email of Project Contact Person(s)**

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**Singapore Healthcare Management 2021**

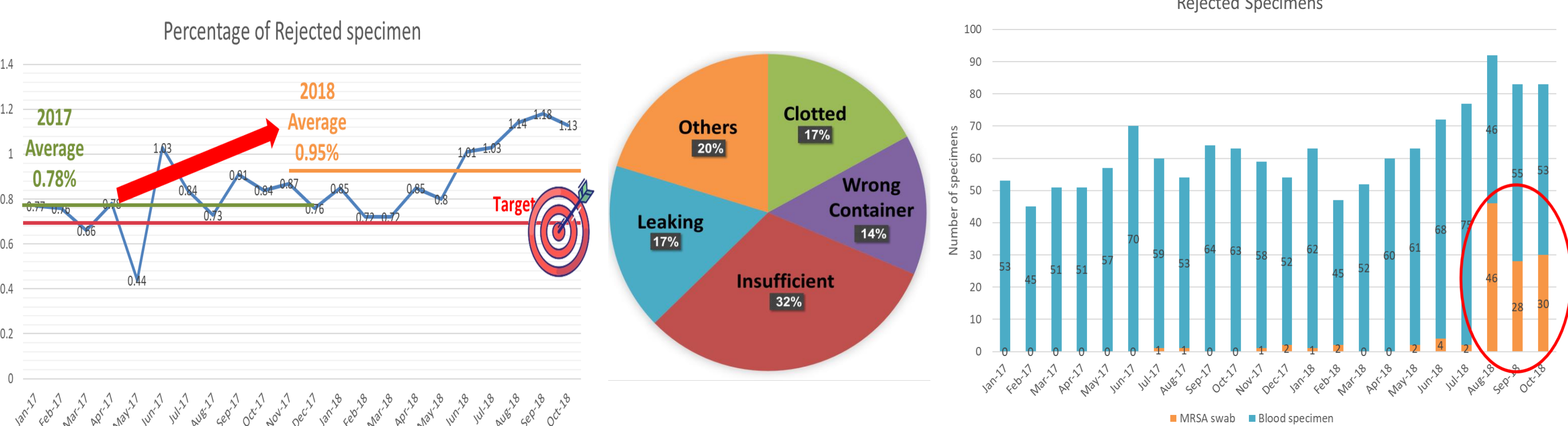
# Reduce Rejected Specimen Rate

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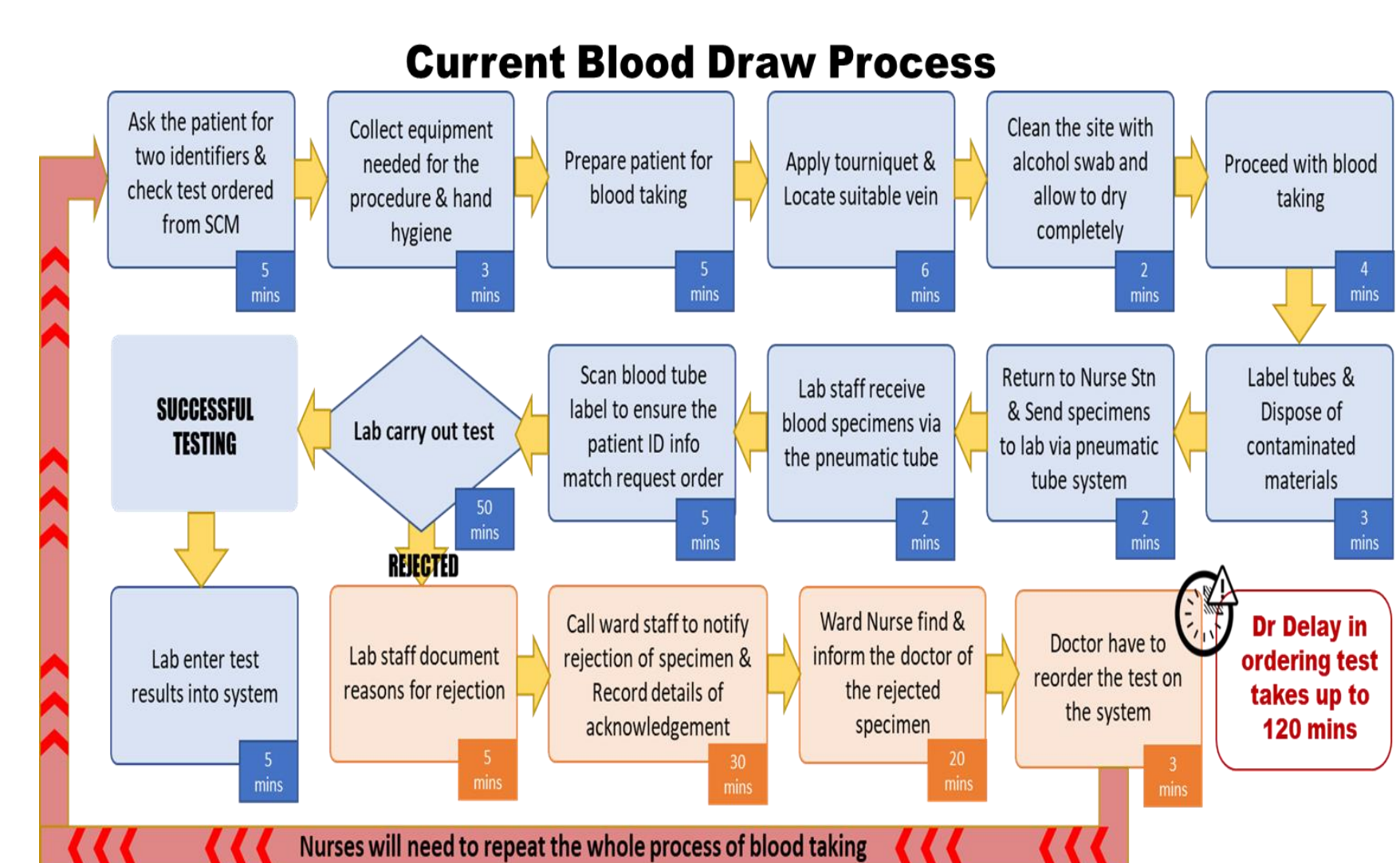
**National Heart Centre Singapore**  
SingHealth

## BACKGROUND



The number of specimen rejected by the laboratory is an area of concern. 32% of the total rejected specimen was due to insufficient specimen. 17% was due to leaking and another 17% was due to clotted specimen. The impact of rejected specimen is severe as it delays treatment, discharge time and caused unnecessary additional venipuncture for patient. The repeated blood taking process is chargeable to both the organization and patients.

On average, the blood specimen collection process takes 92 minutes to complete. In event of a rejected specimen, an additional 145 minutes is required to reorder and recollect the same specimen. This excludes an unforeseen delay of 2 hours for Doctor to reorder. This will further prolong the blood test result and delay treatment. Hence, this project targets to reduce the specimen rejection rate to 0.7%.

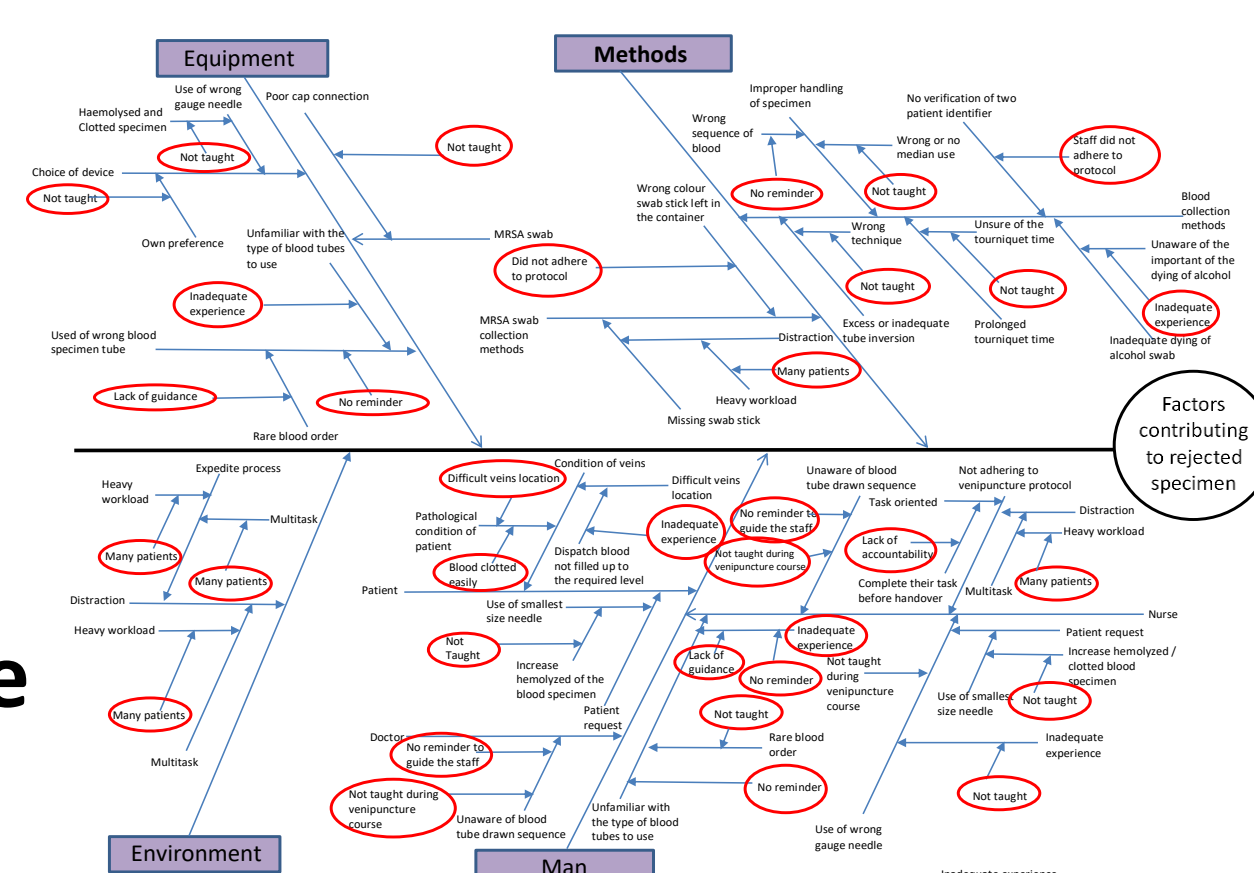


**Target**  
Reduce Rejected Specimen to 0.7% or Less

## METHODOLOGY

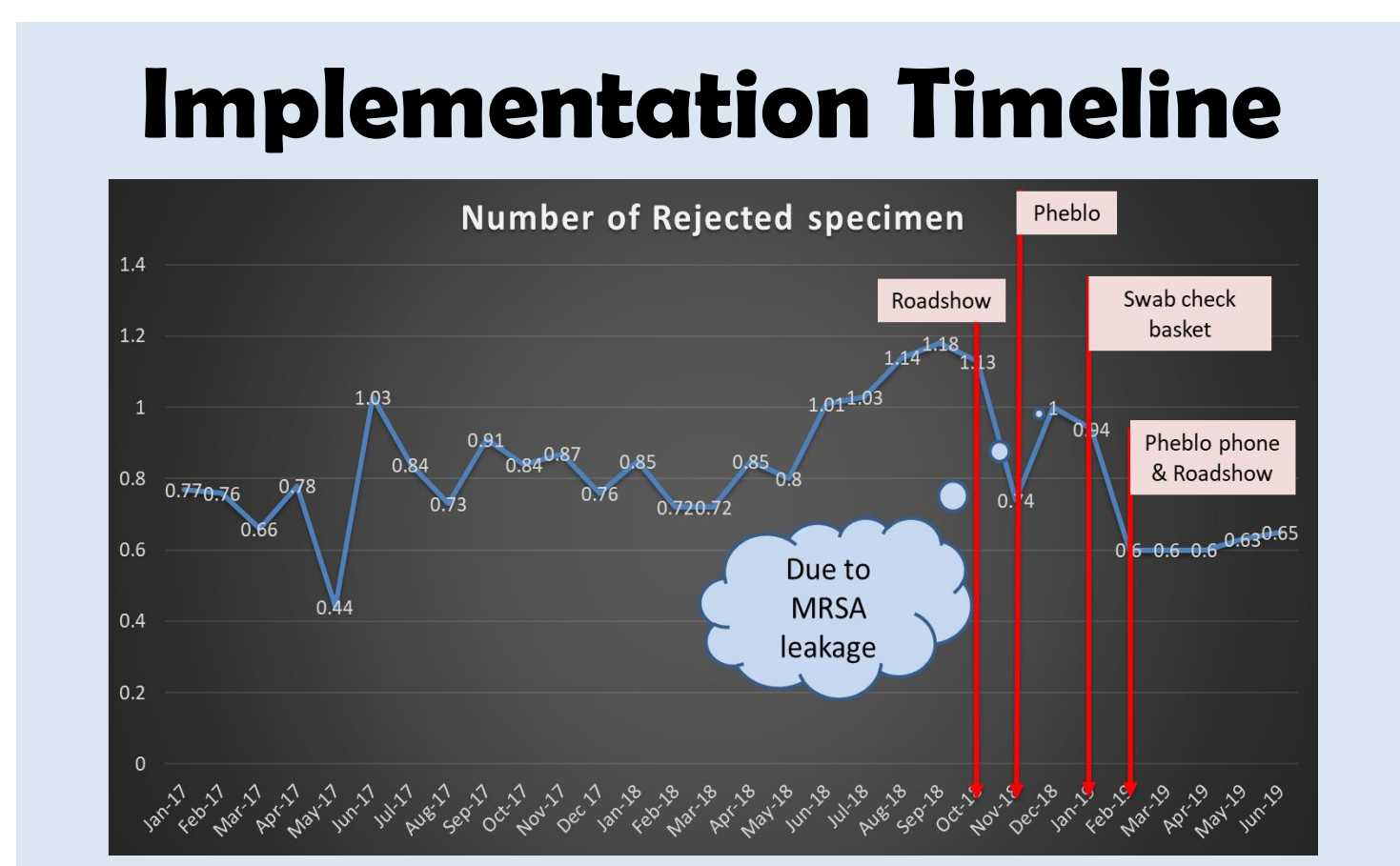
The final root causes were identified using a Cause and effect diagram and further analysed to determine the final root causes:

- 1) Inadequate experience,
- 2) Lack of guidance and
- 3) Insufficient teaching during venipuncture course resulted in knowledge deficit.



Solutions were brainstormed and discussed before going through a selection using the tree diagram.

Areas for improvement	Possible Solutions	Analysis of Solutions
		A B C Total
Provide guidance to inexperienced/new nurses	A) Put up poster to educate staff	22 24 26 72
	B) Assign nurse to guide other healthcare personnel during venipuncture	10 18 26 64
	C) Conduct roll call and meeting to reinforce proper collection of specimen	22 24 28 74
Increase exposure to specimen collection	A) Learning trips to other hospitals	4 3 4 11
	B) Dedicated Phlebotomist to standardize specimen collection	28 28 28 84
	C) Conduct roadshows on the effective methods of venipuncture	22 28 28 78
Improve knowledge on specimen collection	A) Provide in-service training to nurses	22 28 24 74
	B) Provide in-service training to nurses	22 24 28 74
	C) Conduct roll call and meeting to reinforce practice	22 24 28 74
Provide reminders on the types of containers to use and the amount of specimen required	A) Put up poster in clinical area	22 28 26 76
	B) Conduct audit test on nurses	22 22 26 70



**A multi-prong approach was used to improve the efficiency in specimen collection.**

**Roll call and meeting to reinforce proper collection of specimen**

**Posters were put up on Computers on Wheels to reinforce staff on the sequence of blood taking.**

**SEQUENCE OF BLOOD TAKING**

Specimen bottles or tubes: Blood culture, Sodium Citrate (4), Plain (5), SST w/HR, Lithium Heparin (5), 12 EDTA, 12 EDTA, Sodium Citrate (6), Sodium Fluoride (8)

**Conduct Roadshow to re-educate on the process of specimen collection.**

**Standardizing specimen taking**

Up-skill Patient Care Assistant as designated phlebotomist

**Samples placed at the pneumatic tube for visibility and comparison.**

**24Hour Phlebotomist on-call to attend to specimen taking requests**

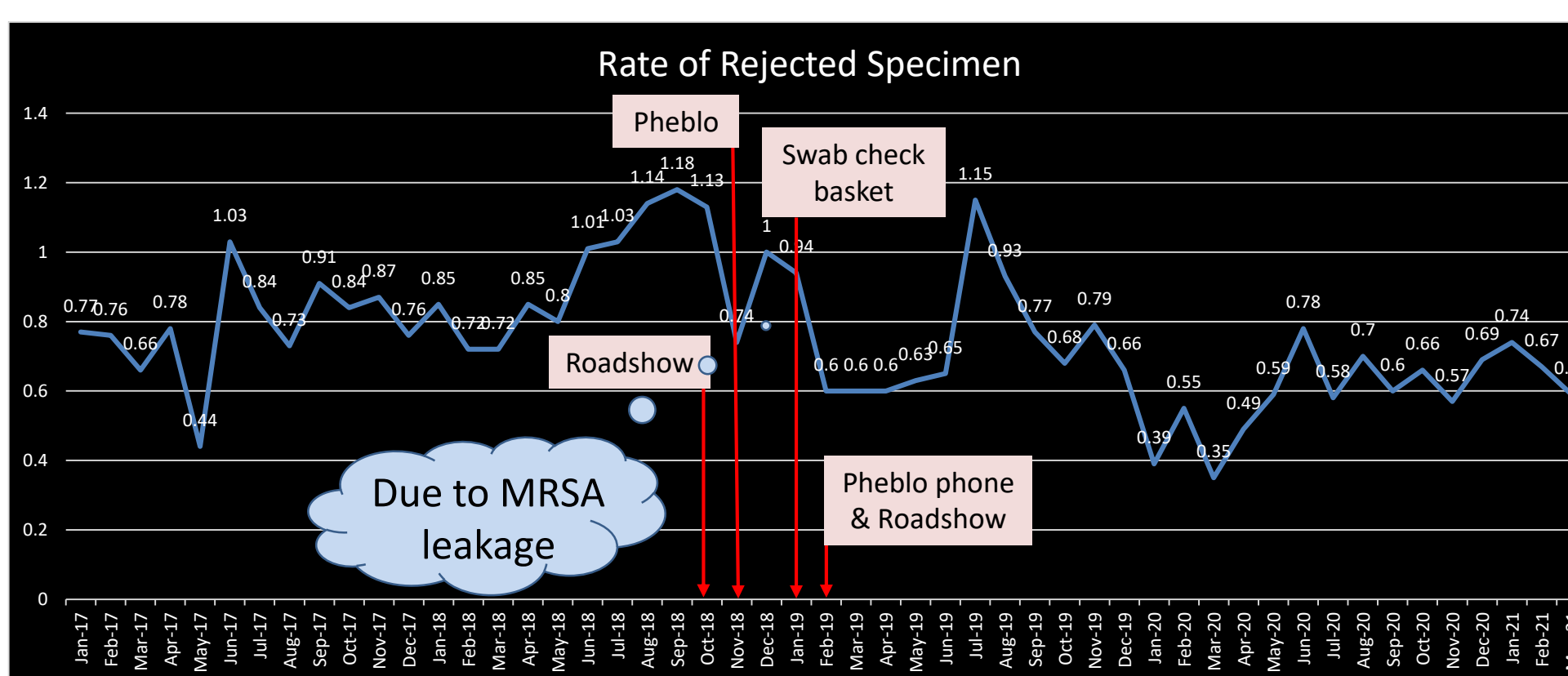
Phlebotomist no. 98752321

**Weekly data collection & sharing during roll call to determine any trend of the rejected specimens**

**Additional Checks on specimen by ward clerks & Nurses.**

REJECTED SPECIMEN (MRSA, Clotted, Leaking, Insufficient)

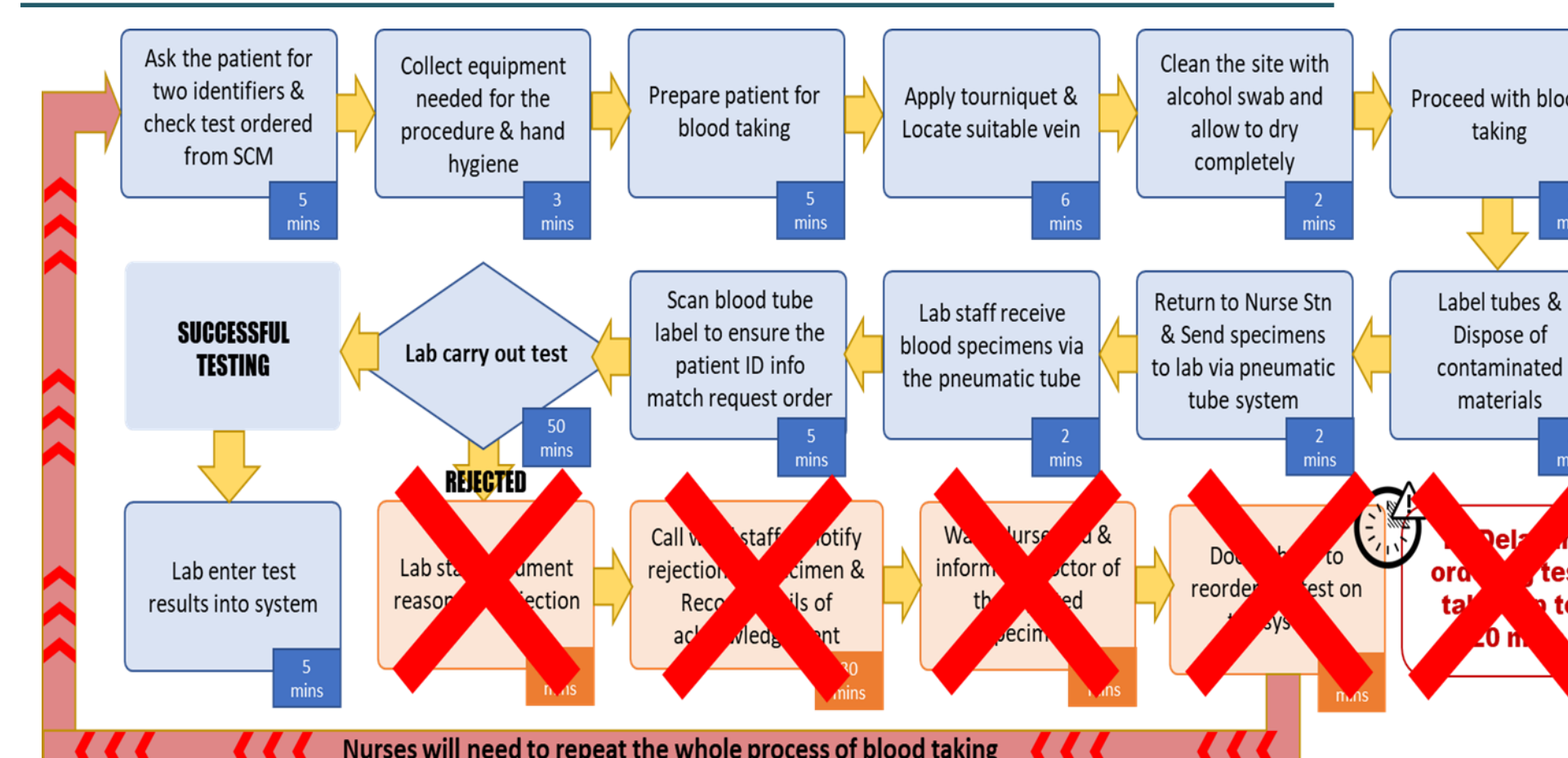
## RESULTS



**Average Mean After Implementation**

**0.65%**

### 2. Time Saved with New Process



**749 HOURS Per Annum**

Time Saved from 1 less Rejected Specimen = 145min  
Average Improvement in Number of Rejected Specimen = 310/ Annum

### 3. Cost Savings with the Reduction in Rejected Specimen

**Leakage Specimen \$1888.39** + **Insufficient Specimen \$4704** + **Clotted Specimen \$1079.61**

**Total Cost Savings Per Annum = \$7672**

### Intangible Benefits

- Improved Hospital Experience for Patients
- Timely Treatment and Appropriate Care for Patients
- Enhanced Teamwork for Holistic Patient Care
- Improved Patient Satisfaction
- Reduced Unnecessary Complaints and Potential Lawsuits
- Maintain Professional Image of Hospital

## SUSTENANCE

- Monthly data provided by the laboratory to monitor the specimen rejection rate
- Roll call and ward meeting to reinforce the calling of phlebotomist for blood taking
- Rejected specimen reported in monthly Management meeting
- Regular feedback from stakeholders