

# MRSA-Free Healthcare: A Quality Improvement Approach

Dr Darius Beh Lian Lian<sup>1</sup>,  
Ms Ghislaine Zhang Jiabei<sup>2</sup>, Ms Ang Sue Fern<sup>3</sup>

<sup>1</sup>Department of Infectious Diseases | <sup>2</sup>Ward 5A | <sup>3</sup>Department of Infection Prevention & Control

## Mission Statement

To achieve a 50% reduction for MRSA Bacteremia rates in TTSH, from median 0.80 per 10,000 patient days in 2022 to 0.40 per 10,000 patient days by 2025.

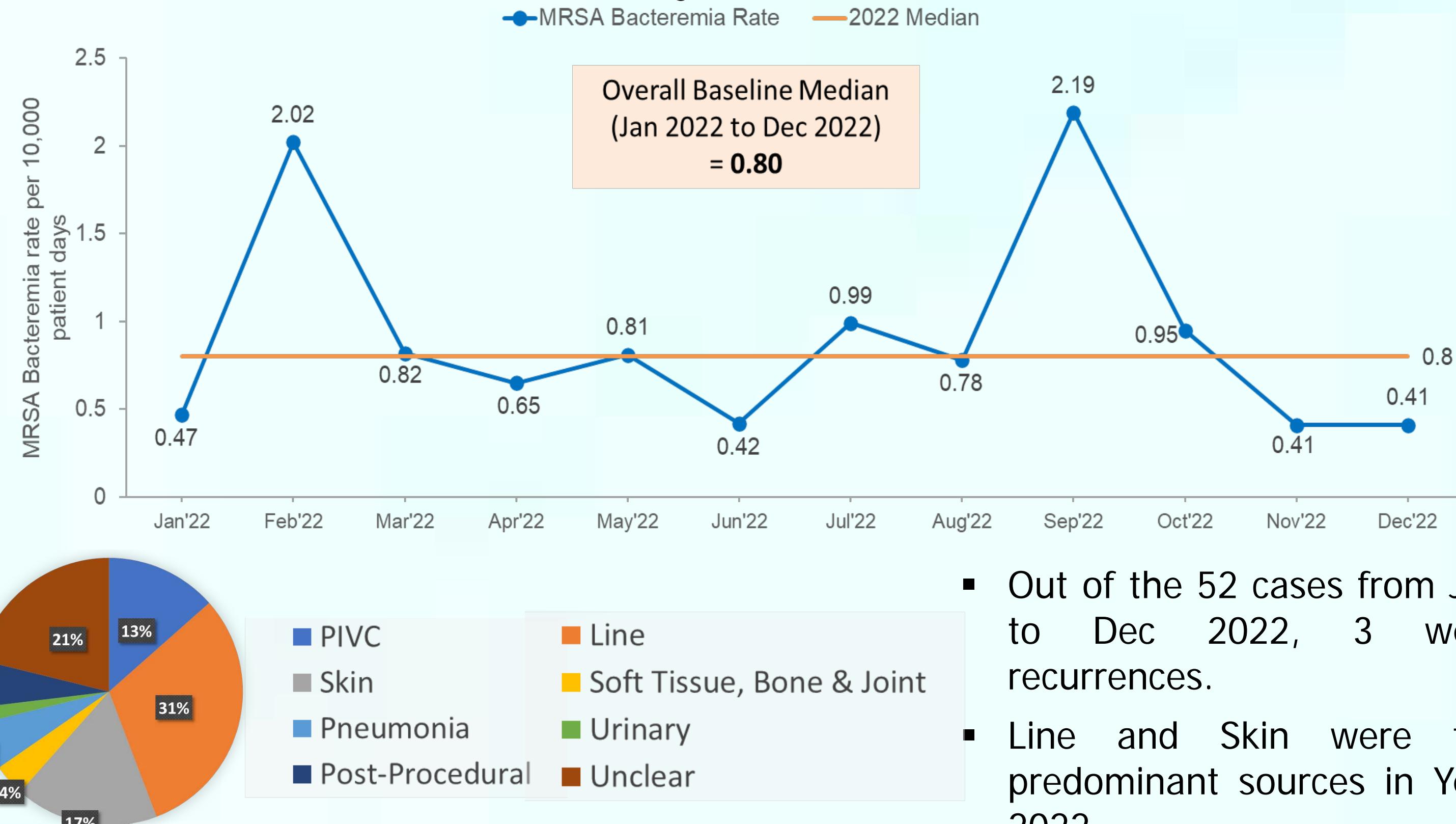
## Team Members

Team Structure	Name	Designation & Department
Team Lead	Dr Darius Beh	Consultant, Infectious Diseases
Core Team Members	Ms Poh Bee Fong	Deputy Director of Nursing, Infection Prevention & Control
	Ms Ang Sue Fern	Nurse Clinician, Infection Prevention & Control
	Ms Ong Ee Ling	Assistant Manager, Clinical Standards & Improvement
Pilot Site Team Members	Adj A/Prof Ashish Anil Sule	Senior Consultant, General Medicine
	Dr Noe Manicdiao Cangco	Senior Resident Physician, General Medicine
	Ms Lim Mei Ling	Senior Nurse Manager, Level 5
	Ms Ghislaine Zhang Jiabei	Nurse Clinician, Ward 5A
	Ms Lim Chia Yee	Senior Staff Nurse, Ward 5A
Sponsor	Adj A/Prof Tan Hui Ling	ACMB, Quality & Clinical Governance

## Evidence for a Problem Worth Solving

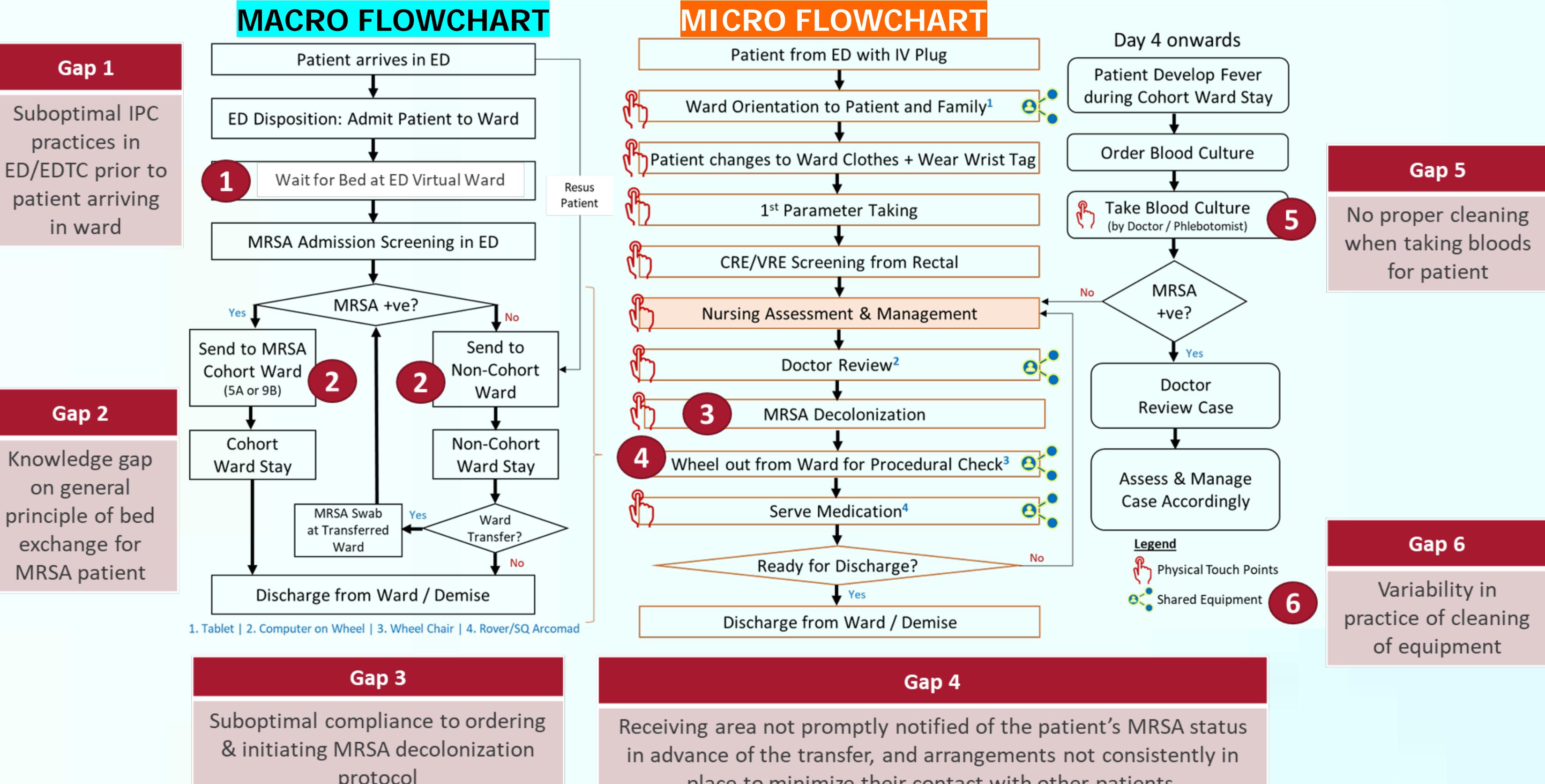
### Overall MRSA Bacteremia Rates in TTSH

Period: January to December 2022

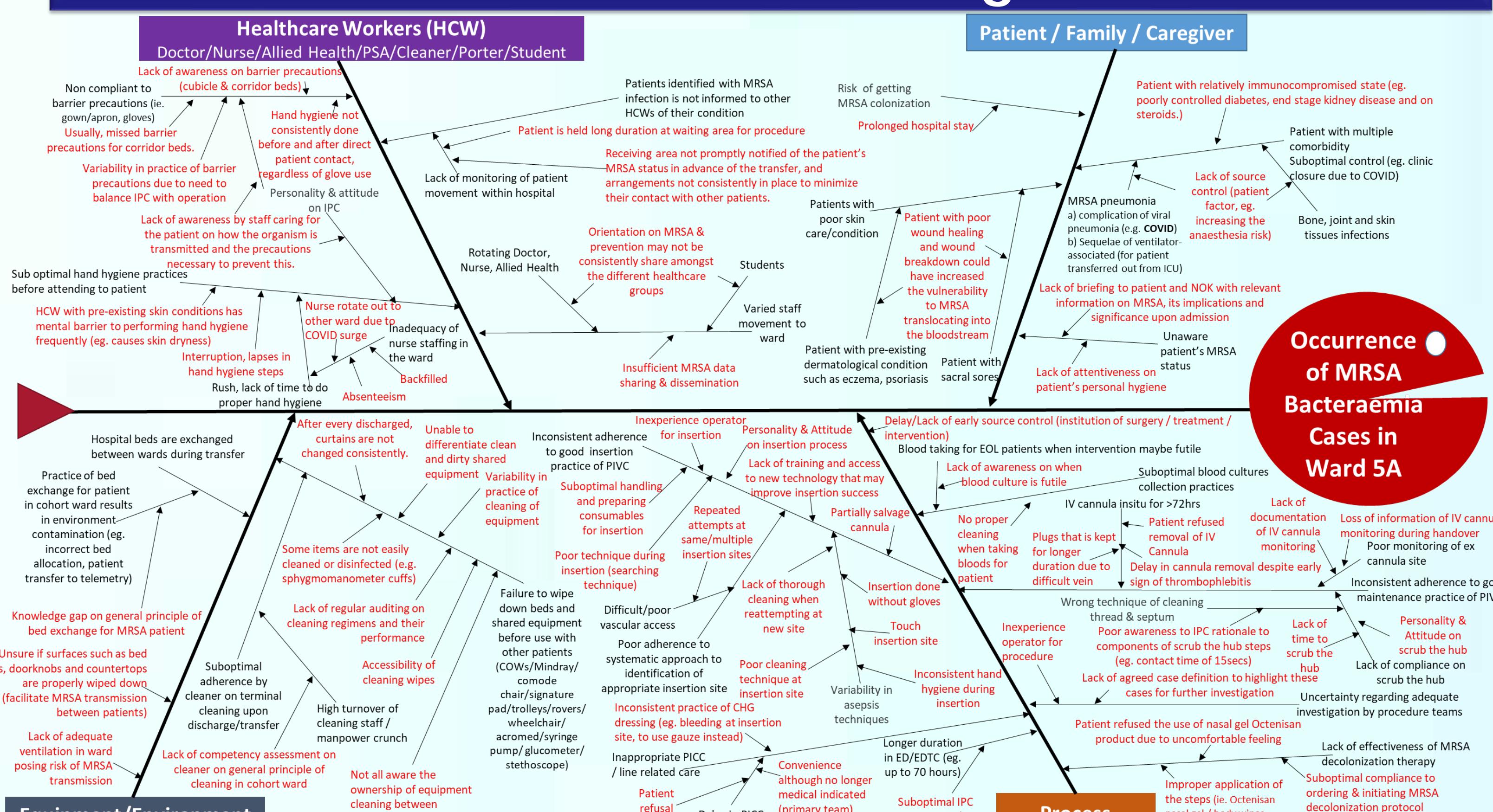


- Out of the 52 cases from Jan to Dec 2022, 3 were recurrences.
- Line and Skin were the predominant sources in Year 2022.

## Flow Chart of Pilot Site (Ward 5A)

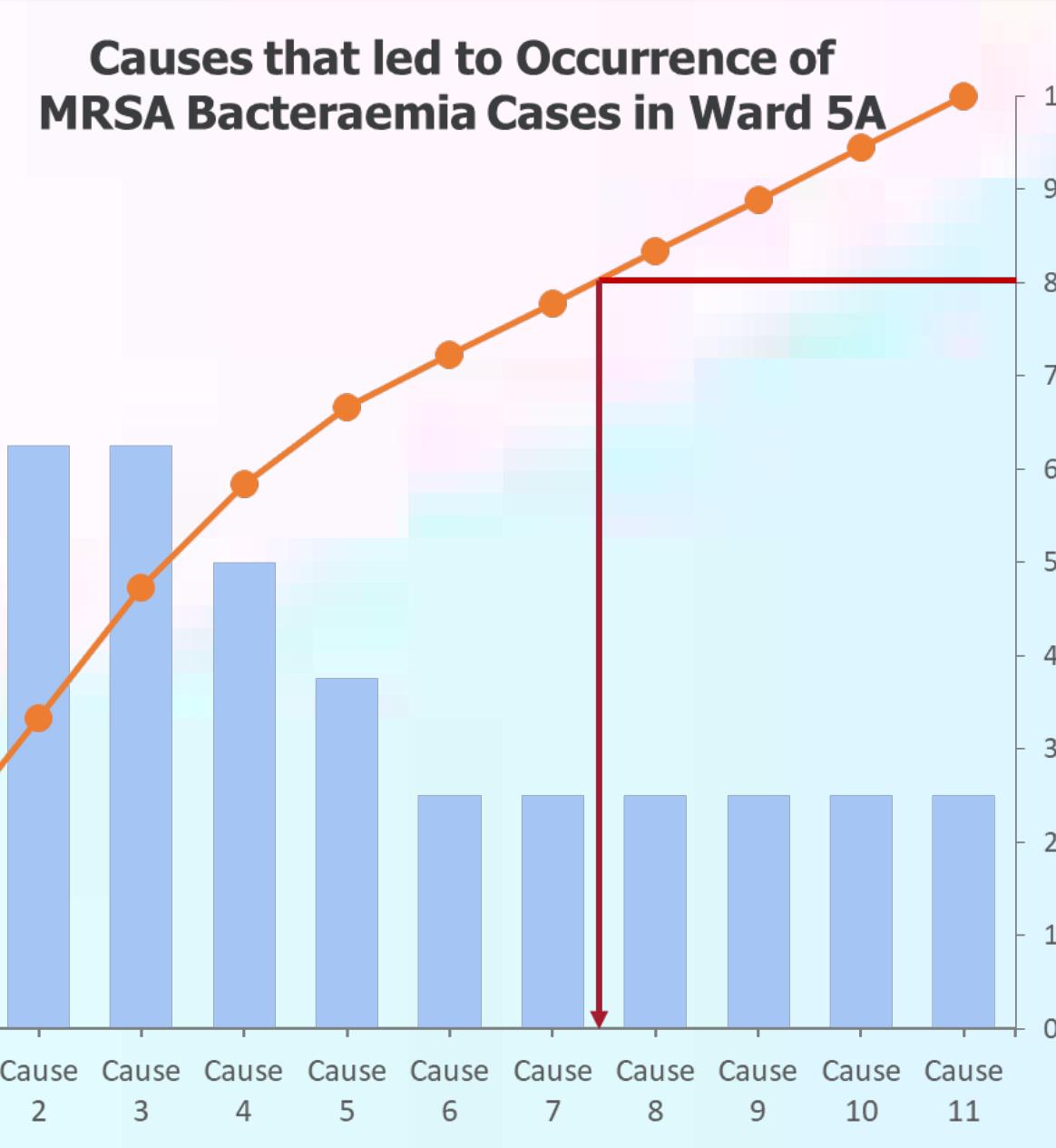


## Cause and Effect Diagram



## Pareto Chart

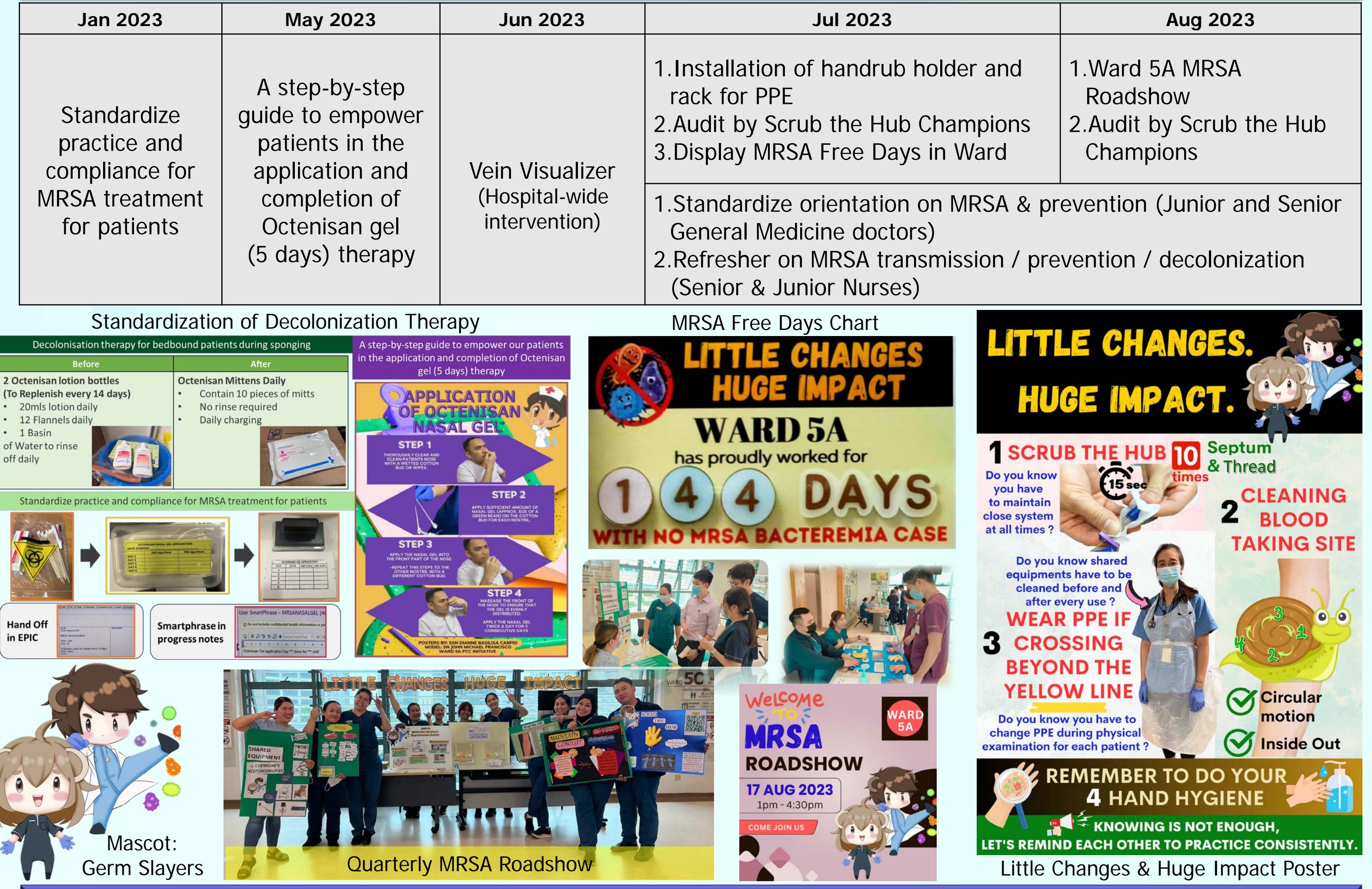
### Causes that led to Occurrence of MRSA Bacteremia Cases in Ward 5A



### Top Voted 11 Root Causes

Rank	Cause
1	Plugs that is kept for longer duration due to difficult vein
2	Hand hygiene not consistently done before and after direct patient contact, regardless of glove use.
3	Poor awareness to IPC rationale to components of scrub the hub steps (e.g. contact time of 15secs)
4	Not removing PICC due to convenience although no longer medical indicated (primary team)
5	No proper cleaning when taking bloods for patient
6	Lack of awareness on barrier precautions (cubicle & corridor beds)
7	Nurse rotate out to other ward due to COVID surge
8	Orientation on MRSA & prevention may not be consistently share amongst the different healthcare groups
9	Unable to differentiate clean and dirty shared equipment
10	Repeated attempts at same/multiple insertion sites
11	Personality & Attitude on scrub the hub

## Implementation



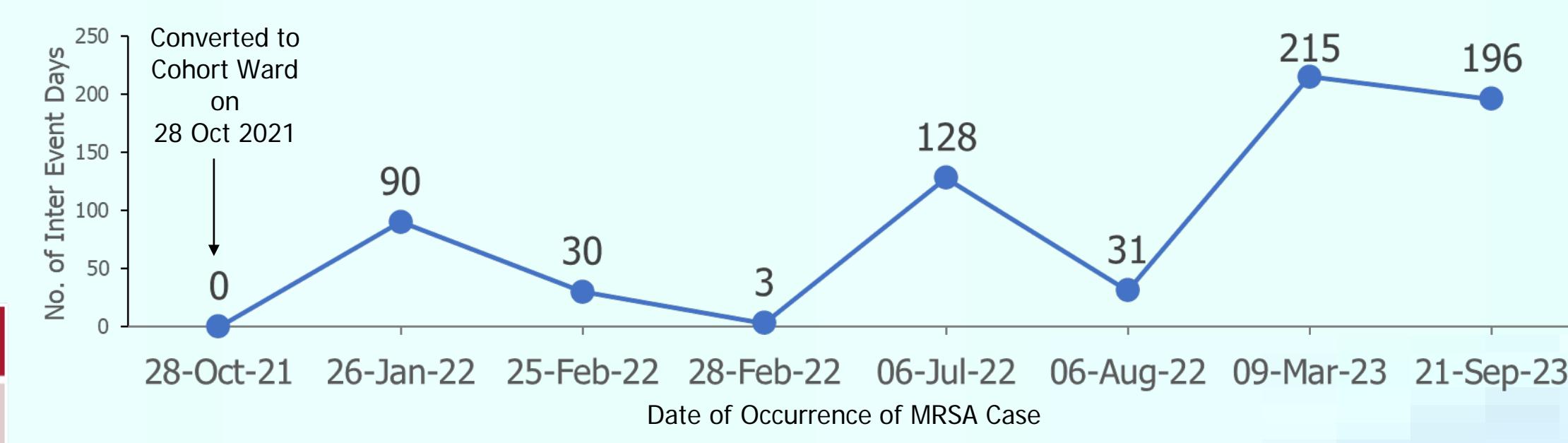
## Results

Year	Overall MRSA Bacteremia Rates (Median)	Total No. of MRSA Cases
2022	0.80	52
2023	0.50	34

A significant reduction in MRSA cases over the course of the project.

### MRSA Free Days in Ward 5A (Pilot Site)

Period: January 2022 to December 2023



Ward 5A Median Free Days  
Year 2022 = 31 MRSA Free Days  
Year 2023 = 206 MRSA Free Days

No. of MRSA Bacteremia Cases
Reduced from 5 Cases (Year 2022) to 2 Cases (Year 2023)

## Cost Savings

For Ward 5A	MRSA	No MRSA
Average Length of Stay (Per Patient)	33 days (exclude patients who stayed >100 days)	7.5 days
Total Cost of Care (Per Patient)	33 x \$1114 = \$36,762	7.5 x \$1114 = \$8,355
Bed Days Saved per Prevented MRSA (Per Patient)	33 - 7.5 = 25.5 days	
Potential Cost Saved Per Prevented MRSA (In Monetary Terms)	\$36,762 - \$8,355 = \$28,407	

Note: Unit Cost for Inpatient Stay Per Day Per Patient = \$1,114

Limitation of this analysis:

- Uncertain if the increased ALOS is due to MRSA bacteraemia or result of other confounding severe disease states
- Cases and controls not matched
- Overall decrease in cases observed in entire hospital between 2022 and 2023 not taken into account and adjusted for

## Strategies to Sustain

- Strong leadership support and commitment to a culture of safety are crucial for sustaining MRSA improvement efforts and ensuring that infection control measures remain a priority.
- Regularly assessing the effectiveness of interventions, learning from successes and failures, and making necessary adjustments are key to the ongoing improvement of MRSA control strategies in hospital.
- Enforcing strict adherence to infection control protocols, including hand hygiene, isolation precautions and cleaning procedures are fundamental to reducing MRSA transmission.

## Strategies to Spread

