

# Sustainability Phase: Reduction in Superficial Incisional Surgical Site Infections for Open Emergency Abdominal Surgery Patients

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## Mission Statement

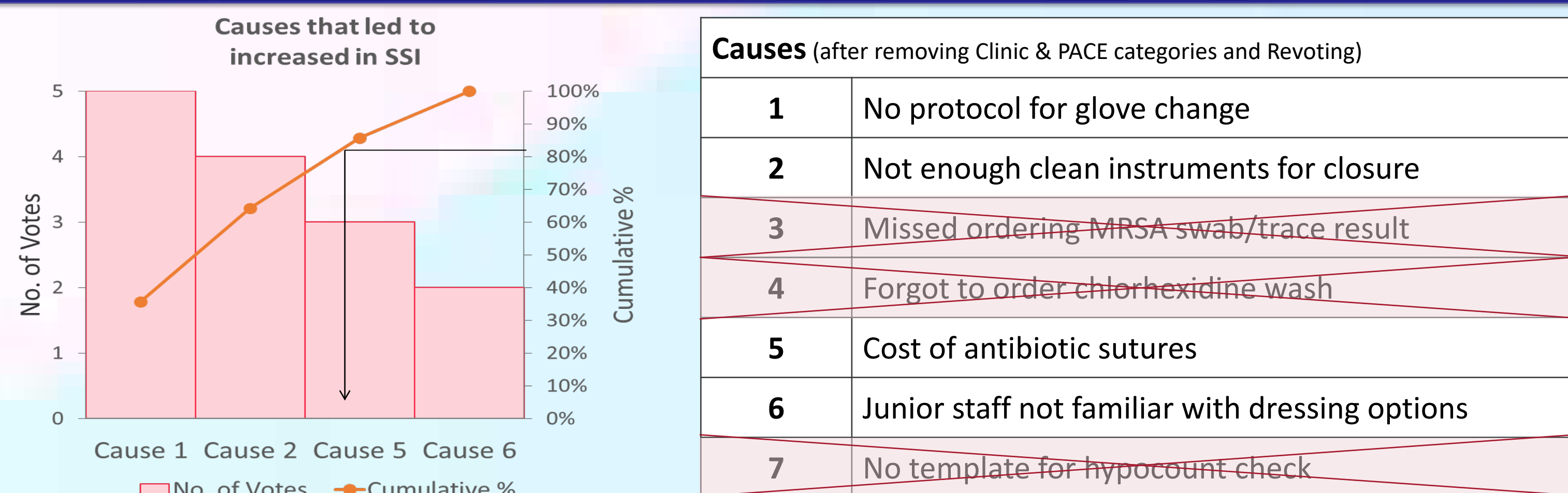
Reduce superficial incisional surgical site infections<sup>1</sup> (SSI) for patients undergoing open emergency abdominal surgery from 23.1% to 8% (stretch goal less than 5%) over a sustained period

<sup>1</sup> Spreading erythema or purulent discharge in or extruding from wound observed on direct examination

## Team Members

	Name	Designation	Department
<b>Team Leader</b>	Dr Liu Huimin	Consultant	General Surgery
<b>Team Members</b>	Dr Aloysius Tan Ming Ngan	Consultant	General Surgery
	Yang Yang	Nurse Clinician	Operating Theatre
	Poh Bee Lian	Nurse Clinician	PACE
	Lee Hwee Hwee	Assistant NC	PACE
	Goh Cheng Cheng	Senior Nurse Clinician (Wound Nurse)	Nursing
	Dr Liu Biquan	Senior Resident	General Surgery
<b>Sponsors</b>	Adj A/Prof Glenn Tan (HOD of General Surgery) Dr Tay Guan Sze & Dr How Kwang Yeong (Colorectal Senior Consultants)		
<b>Mentors</b>	Dr Yew Min Sen & Adj A/Prof Chong Yew Lam		

## Pareto Chart



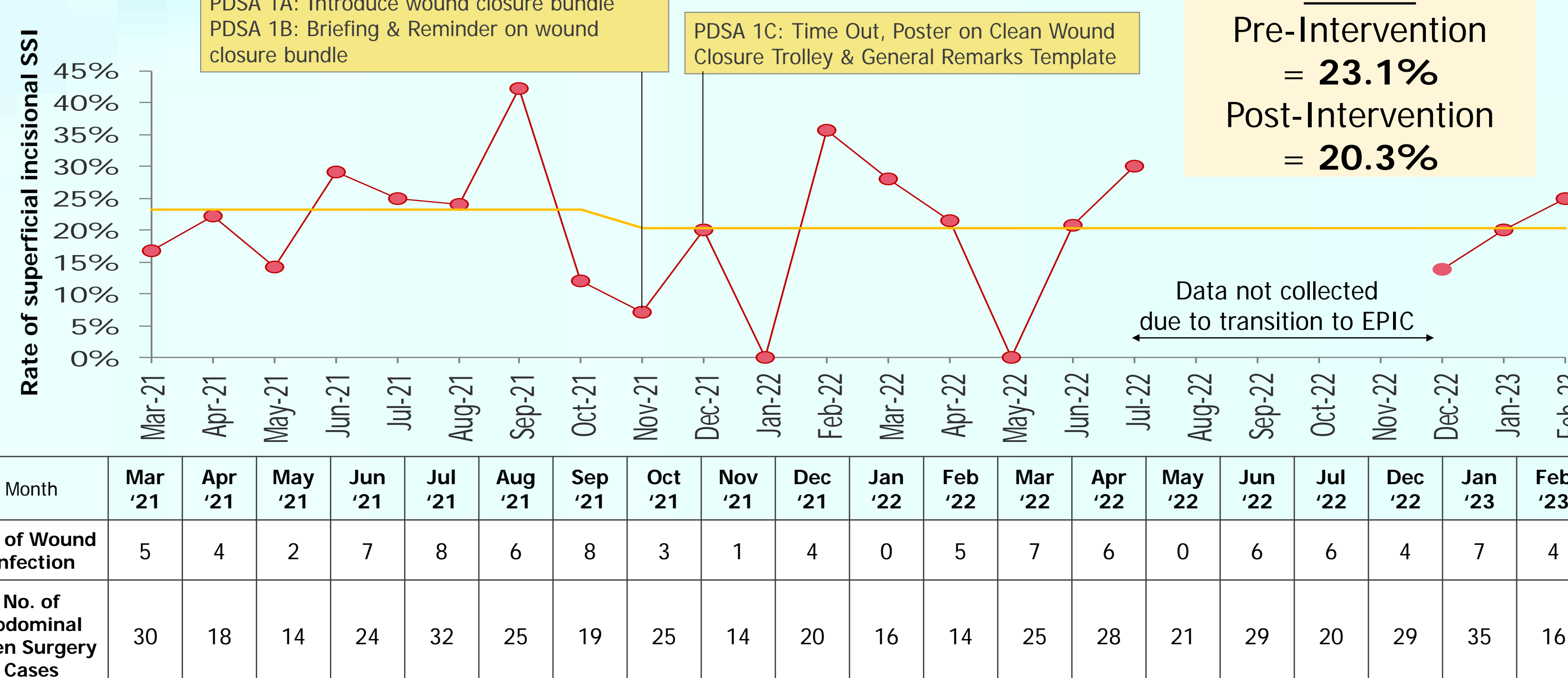
## Implementation

Root Cause	Intervention	Implementation Date
<b>Cause 1:</b> No protocol for glove change	Introduce wound closure bundle	1 Nov 2021
<b>Cause 2:</b> Not enough clean instruments for closure		

## Results

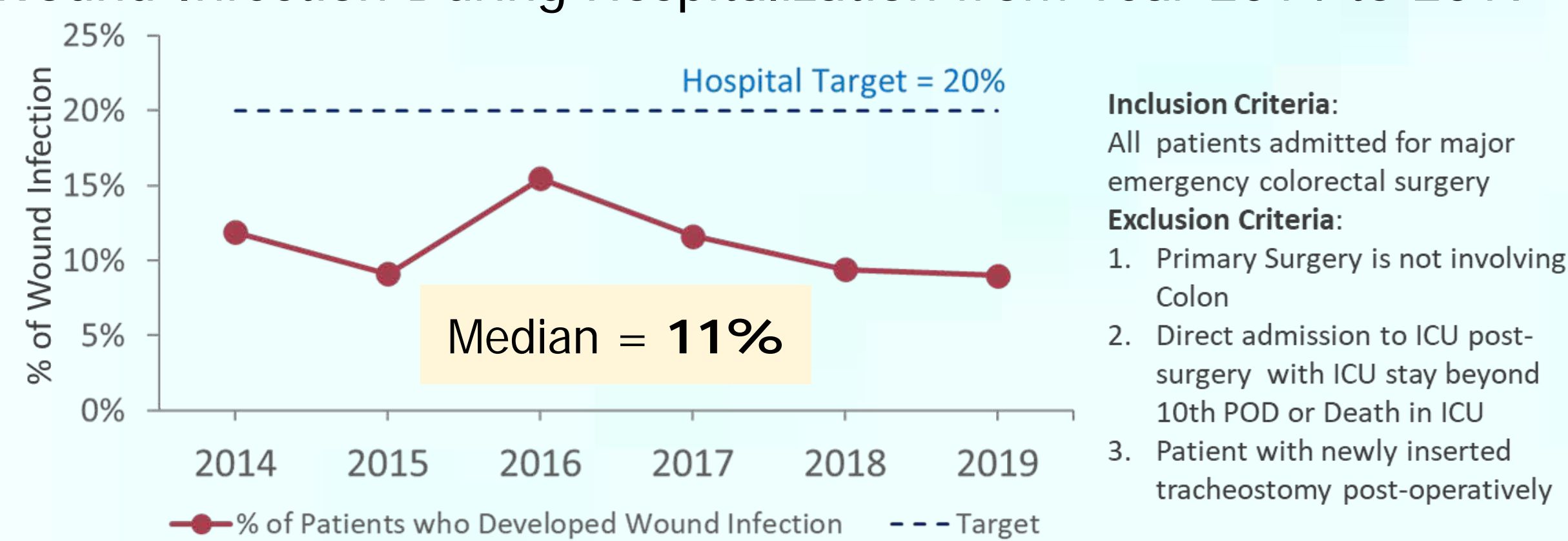
### Monthly Superficial Incisional Surgical Site Infections (SSI) Rate

Period: March 2021 to February 2023

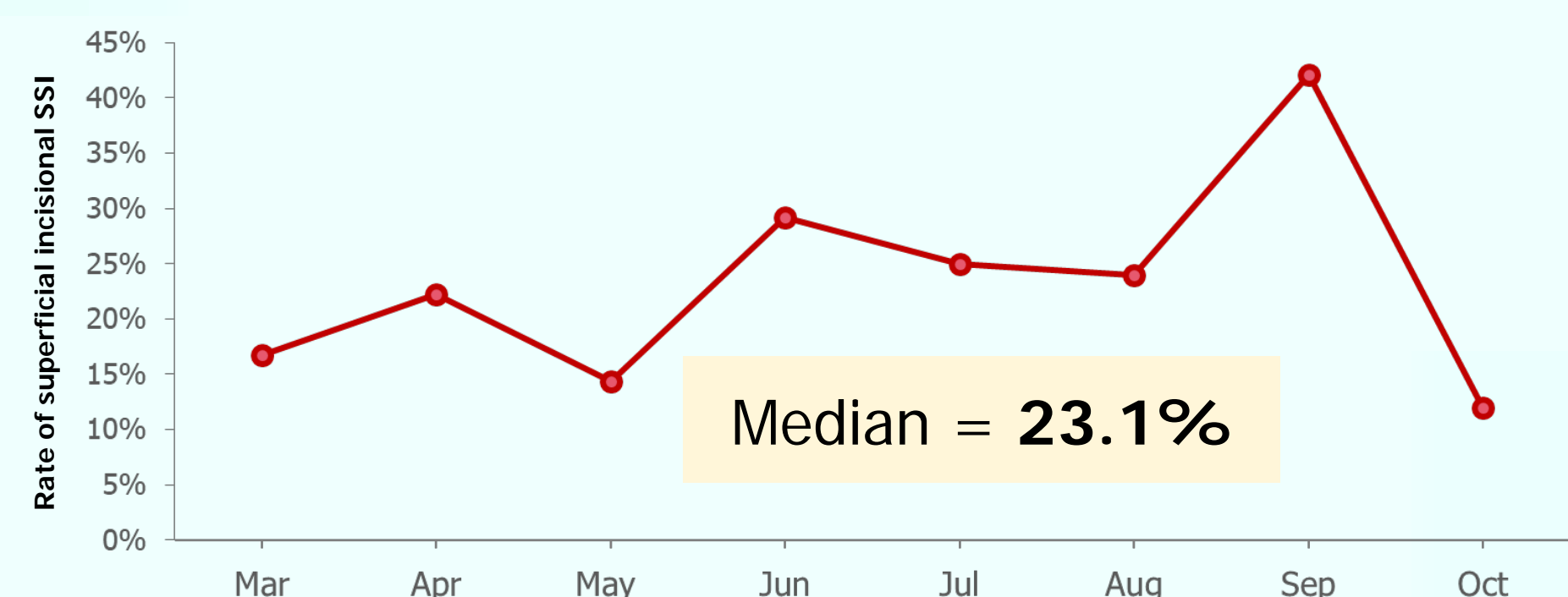


## Evidence for a Problem Worth Solving

Emergency Colorectal Surgery Clinical Pathway: Wound Infection During Hospitalization from Year 2014 to 2019



Superficial Incisional Surgical Site Infections (SSI) Rate Baseline Data (Period: March to October 2021)

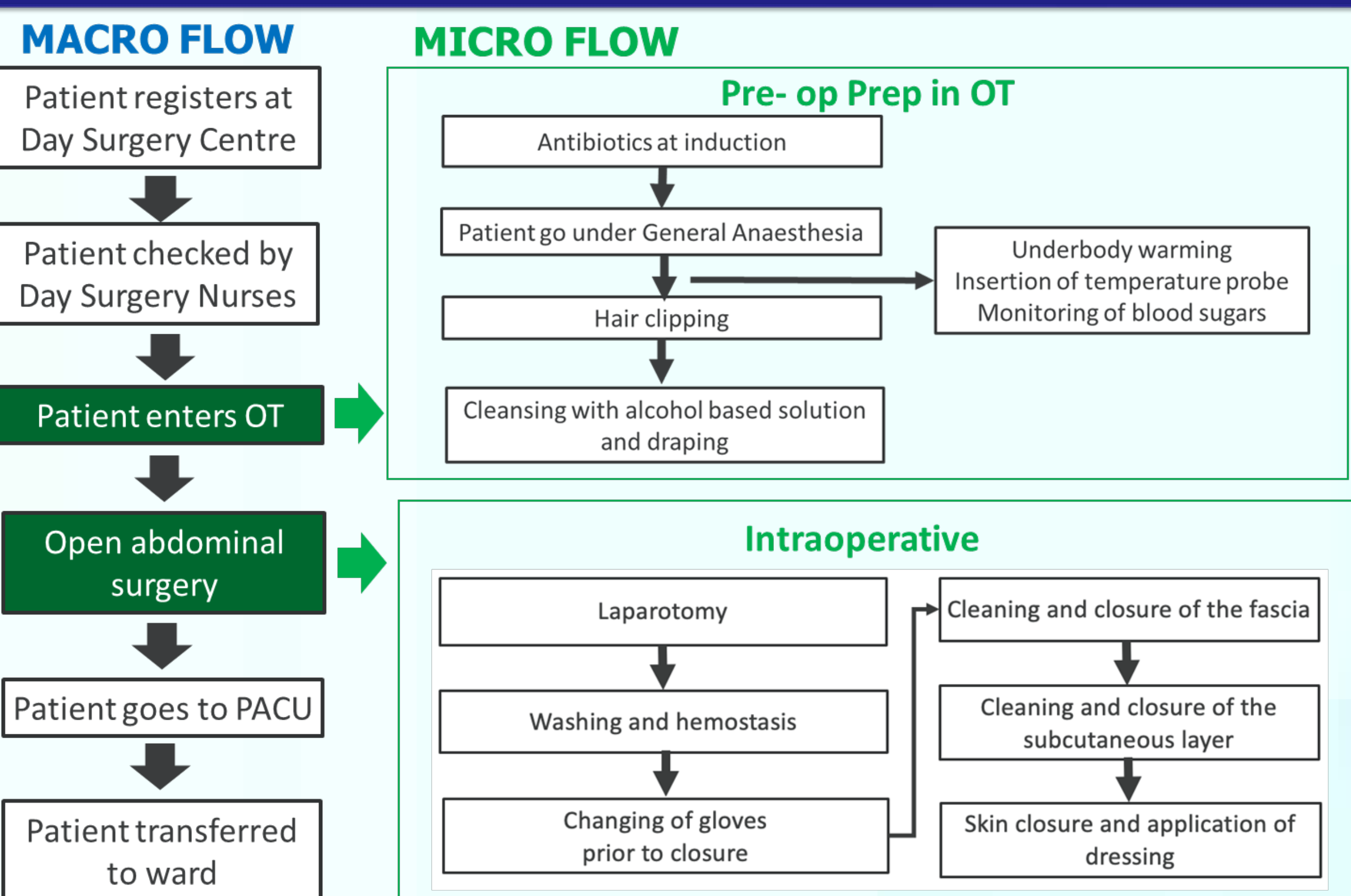


## Cost Avoidance & Cost Savings

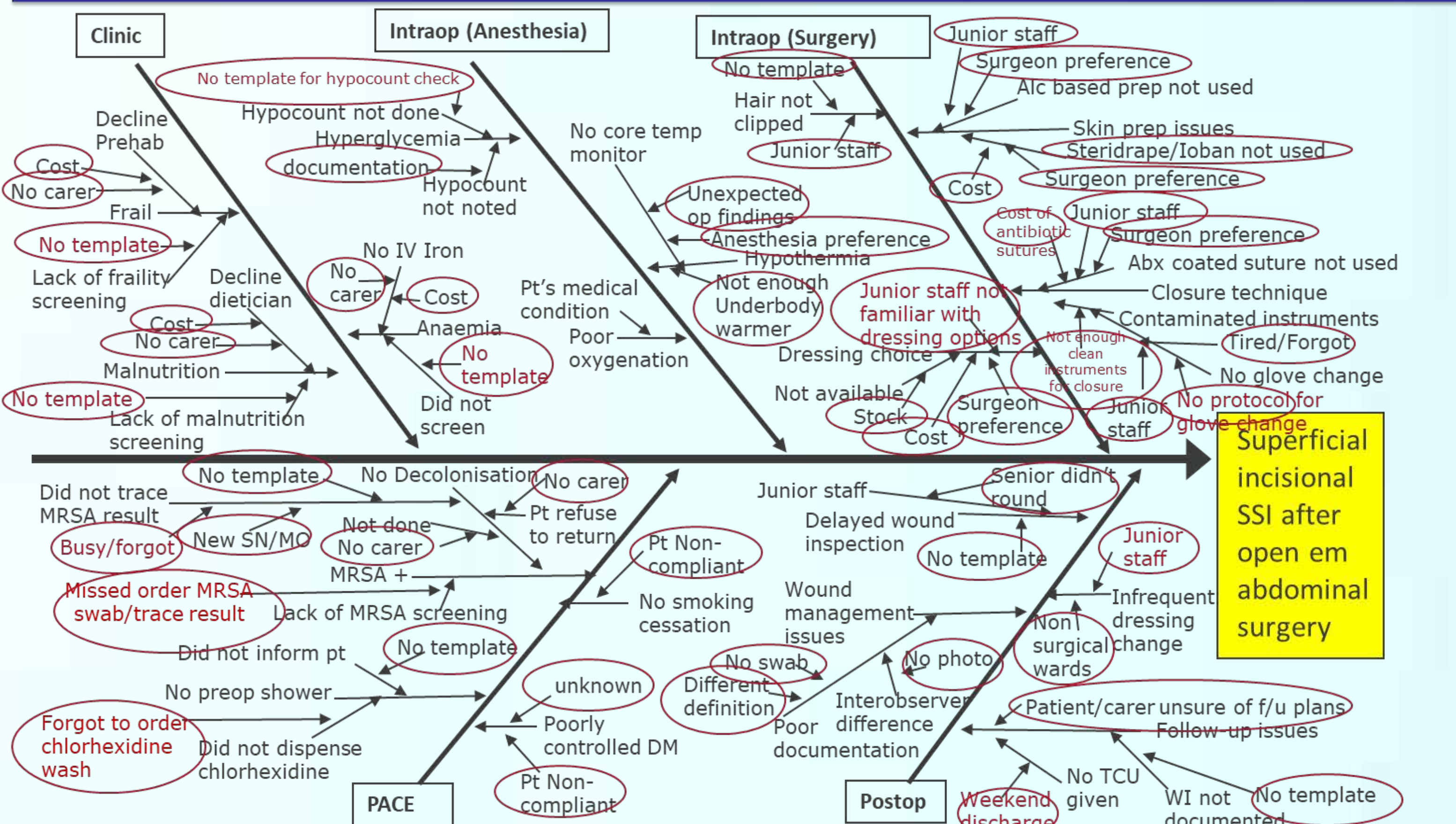
Cost Avoidance		Cost Savings	Pre-Intervention	Post-Intervention
Dressing cost avoided (Per Patient)	25 x \$14.8 = \$370	Average Length of Stay if SSI present (Per Patient)	25 Days	16 Days
Wound Product Cost Avoided (Per Patient)	25 x 10 = \$250	Bed Days Saved (Per Patient)	25 - 16 = <b>9 Days</b>	
Total Dressing Cost Avoided (Per Patient)	\$620	Cost of Inpatient Stay (Per Patient)	25 x 1114 = \$27,850	16 x 1114 = \$17,824
Assume: Ave No. of Open Abd Surgery Patients who has SSI pre intervention= 5 patients per month Ave No. of Open Abd Surgery Patients who has SSI post intervention= 4 patients per month		Cost Savings (Per Patient)	\$27,850 - \$17,824 = <b>\$10,026</b>	
Total Dressing Cost Avoided (Per month)	1 x \$620 = <b>\$620</b>	Total Length of Stay Saved (Annualized)	9 days x 4 x 12 = <b>432 Days</b>	
Total Dressing Cost Avoided (Annualized)	12 x \$620 = <b>\$7,440</b>	Total Cost Savings (Annualized)	432 x \$1114 = <b>\$481,248</b>	

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


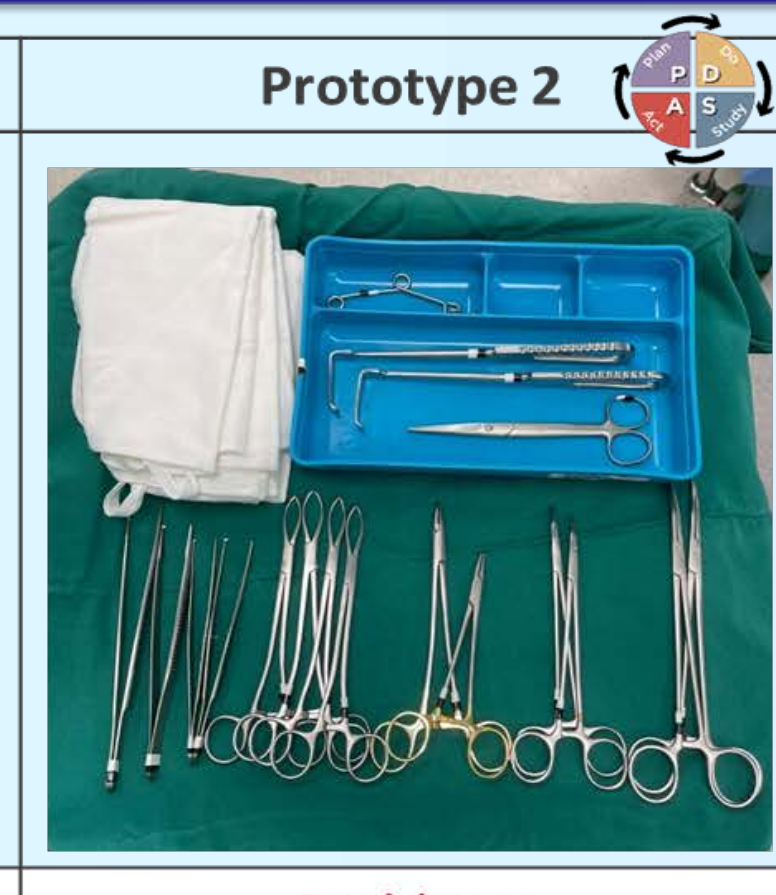
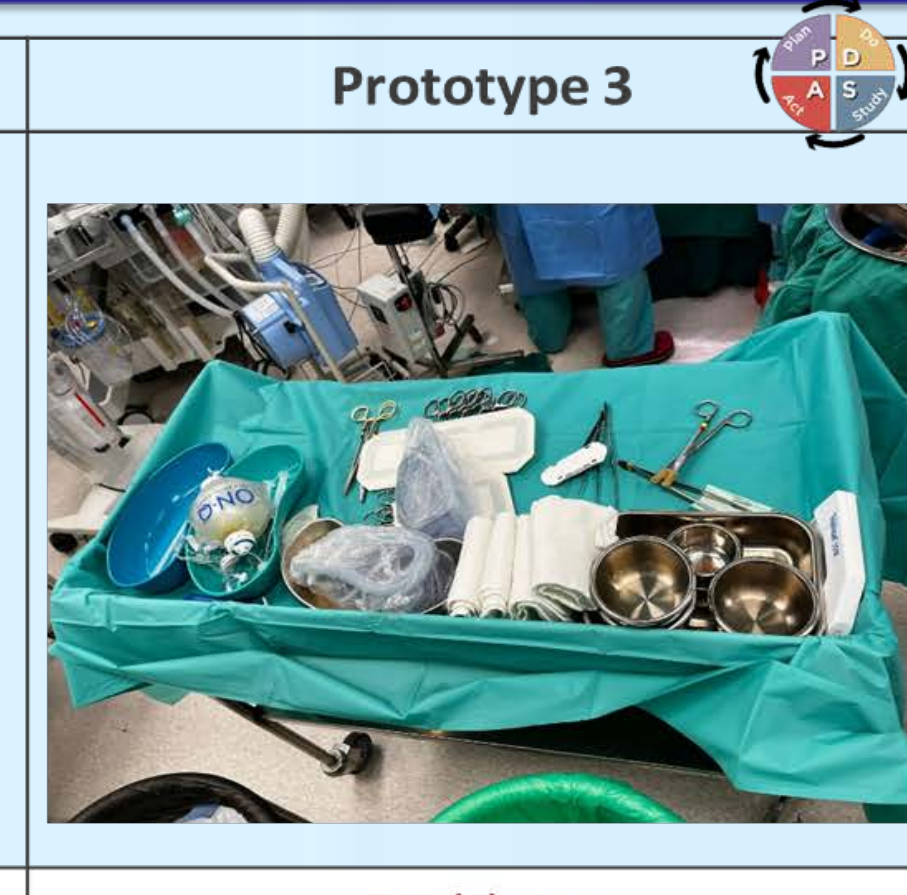
## Flow Chart of Process



## Cause and Effect Diagram



## Problems Encountered

Prototype 1	Prototype 2	Prototype 3
 <p><b>Labelled Green:</b> Laparotomy set <b>Labelled Black:</b> Wound closure set</p>	 <p><b>Problem:</b> Retained gauze <b>Improvement of wound closure set:</b> Changed gauzes x10 to penny towels x 5</p>	 <p><b>Problem:</b> Cross contamination <b>Improvement of wound closure bundle:</b> Physical separation of clean and dirty trolleys</p>

Issues from the Roll Out of Wound Closure Bundle Set

## Strategies to Sustain

- Creating a new norm**
  - Continuing education (both physicians/nurses)
  - Increasing awareness to separate clean & contaminated equipment
- Data collection - manpower**
  - Surgical department or Infectious disease department
  - Surveillance coordinators
- Regular audit quarterly**
  - HAIE meetings versus GS department meetings