

CHI Learning & Development (CHILD) System

Project Title

Reduction in Superficial Incisional Surgical Site Infections for Open Emergency Abdominal Surgery Patients

Project Lead and Members

Project lead: Dr Liu Huimin

Project members:

- Tan Ming Ngan Aloysius
- Liu Biquan
- Yang Yang
- Poh Bee Lian
- Lee Hwee Hwee
- Goh Cheng Cheng

Organisation(s) Involved

Tan Tock Seng Hospital

Healthcare Family Group(s) Involved in this Project

Medical, Nursing, Ancillary Health

Applicable Specialty or Discipline

General Surgery, Operation Theatre, Pre-Admission Counselling & Evaluation (PACE)

Project Period

Start date: 01 March 2021

Completed date: 28 Feb 2022



CHI Learning & Development (CHILD) System

Aims

- 1. Reduce superficial incisional surgical site Infections (SSI) for patients undergoing open emergency abdominal surgery from 23.1% to 8% (stretch goal less than 5%) within 6 months
- 2. Spreading erythema or purulent discharge in or extruding from wound observed on direct examination.

Project Attachment

See poster attached/below

Background

See poster attached/below

Methods

See poster attached/below

Results

See poster attached/below

Conclusion

See poster attached/below

Additional Information

Accorded the NHG Quality Day 2022 (Category C: Developing a Flexible & Sustainable Workforce) Best Award

Project Category

Care & Process Redesign

Value Based Care, Patient Reported Outcome Measures (PROMs)

Quality Improvement, Workflow Redesign



CHI Learning & Development (CHILD) System

Keywords

PROMs, Superficial Incisional Surgical Site Infections, Abdominal Surgery

Name and Email of Project Contact Person(s)

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Reduction in Superficial Incisional Surgical Site Infections for

Open Emergency Abdominal Surgery Patients



Adding years of healthy life

Liu Huimin¹, Tan Ming Ngan Aloysius¹, Liu Biquan¹,

Yang Yang², Poh Bee Lian³, Lee Hwee Hwee³, Goh Cheng Cheng⁴

¹Department of General Surgery, ²Operating Theatre, ³Pre-Admission Counselling & Evaluation (PACE), ⁴Nursing

Mission Statement

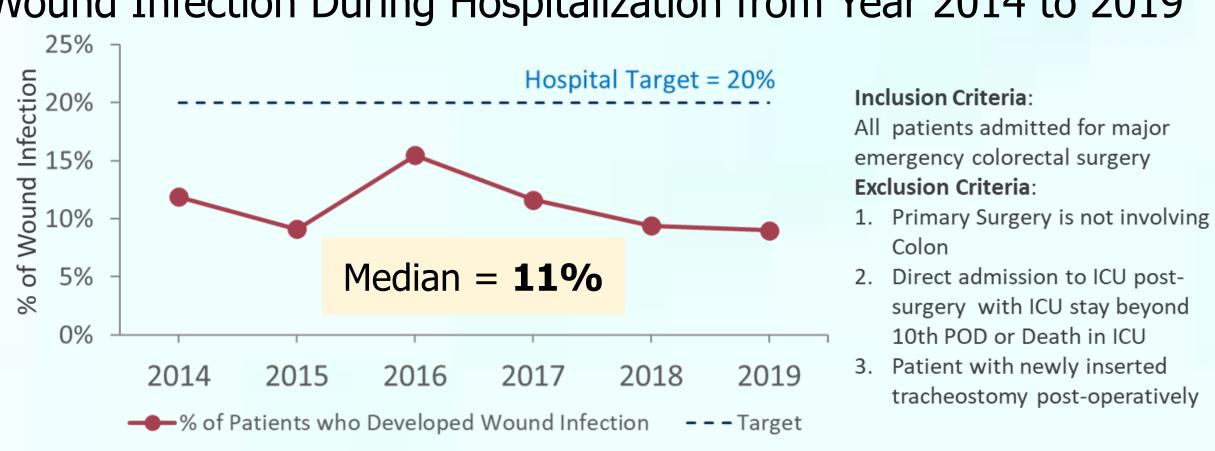
Reduce superficial incisional surgical site Infections¹ (SSI) for patients undergoing open emergency abdominal surgery from 23.1% to 8% (stretch goal less than 5%) within 6 months

¹ Spreading erythema or purulent discharge in or extruding from wound observed on direct examination

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

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



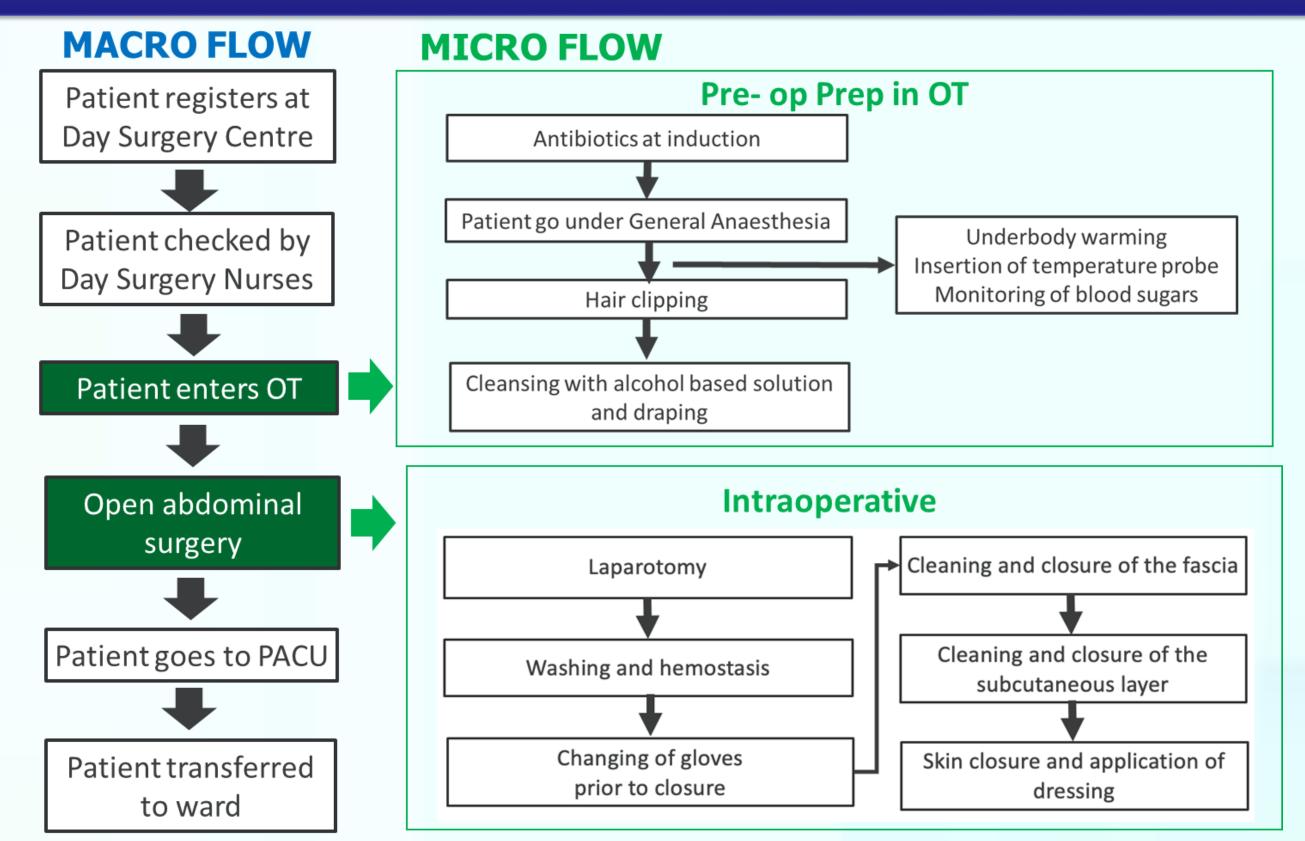
Superficial Incisional
Surgical Site
Infections (SSI) Rate
Baseline Data
(Period: March to October 2021)

chlorhexidine

PACE



Flow Chart of Process



Cause and Effect Diagram Intraop (Anesthesia) Clinic Intraop (Surgery) Junior staff Surgeon preference No template No template for hypocount check Alc based prep not used Hypocount not done < Decline Skin prep issues No core temp Hyperglycemia -Prehab Steridrape/Ioban not used Junior staff documentation-Surgeon preference Hypocount Jnexpected Cost of Junior staff not noted Frail Surgeon preference —Anesthesia preference No IV Iron Lack of fraility Junior staff no Pt's medical carer Cost condition Contaminated instruments Anaemia No carer_ Tired/Forgot oxygenation Malnutrition -No glove change Not available protocol for Lack of malnutrition No Decolonisation No carer No template incisional Did not trace Junior staff MRSA result SSI after Delayed wound Pt Non-Busy/forgot No carer compliant Wound abdominal Missed ordering MRSA -Infrequent No smoking Lack of MRSA screening swab/trace result dressing cessation surgical change Did not inform pt No swab Different unknown No preop shower ∠Patient/carer unsure of f/u plans Forgot to order Poorly Follow-up issues chlorhexidine controlled DM Did not dispense documentation

Pt Non-

compliant

No TCL

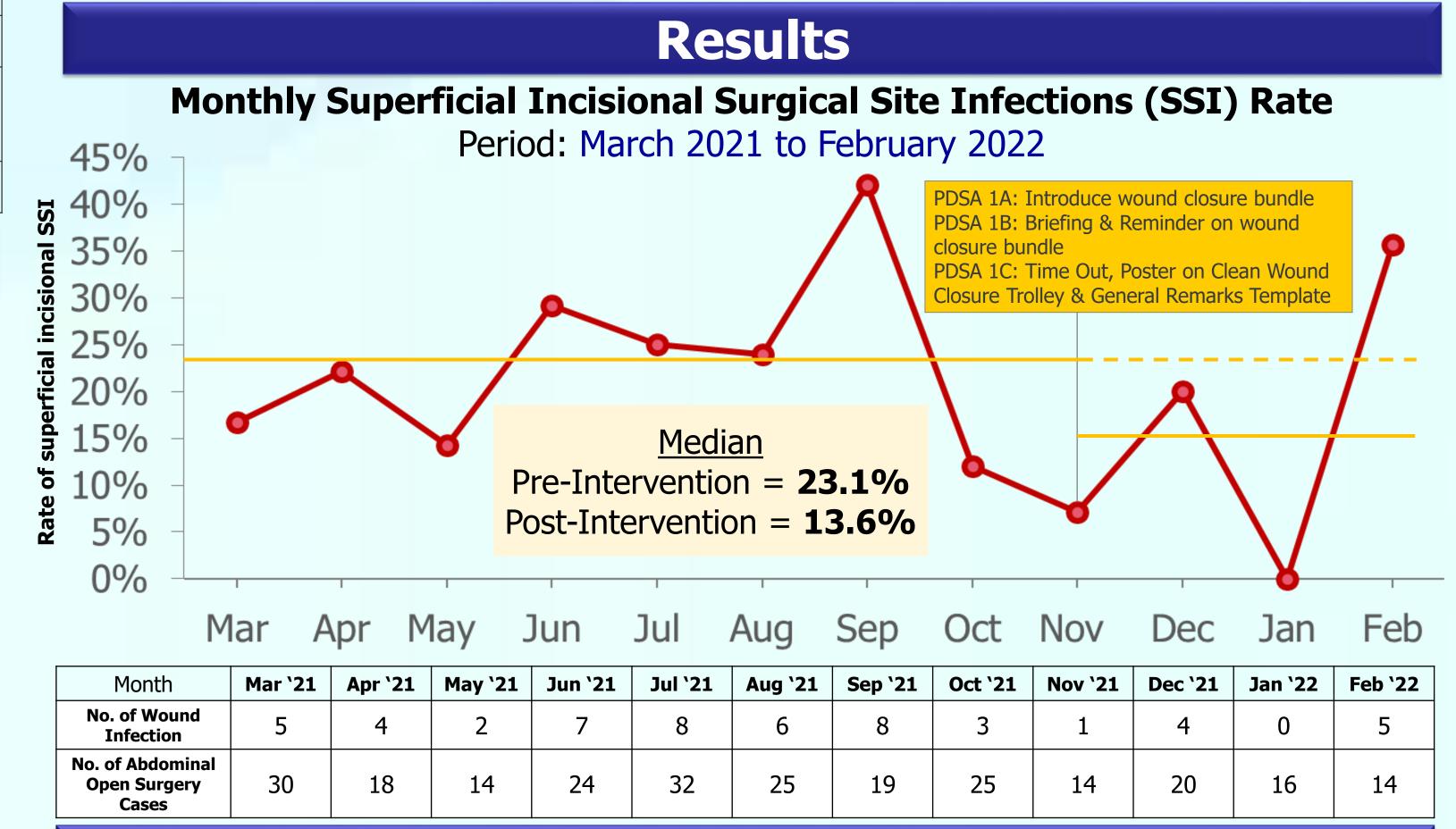
Postop

WI not No template

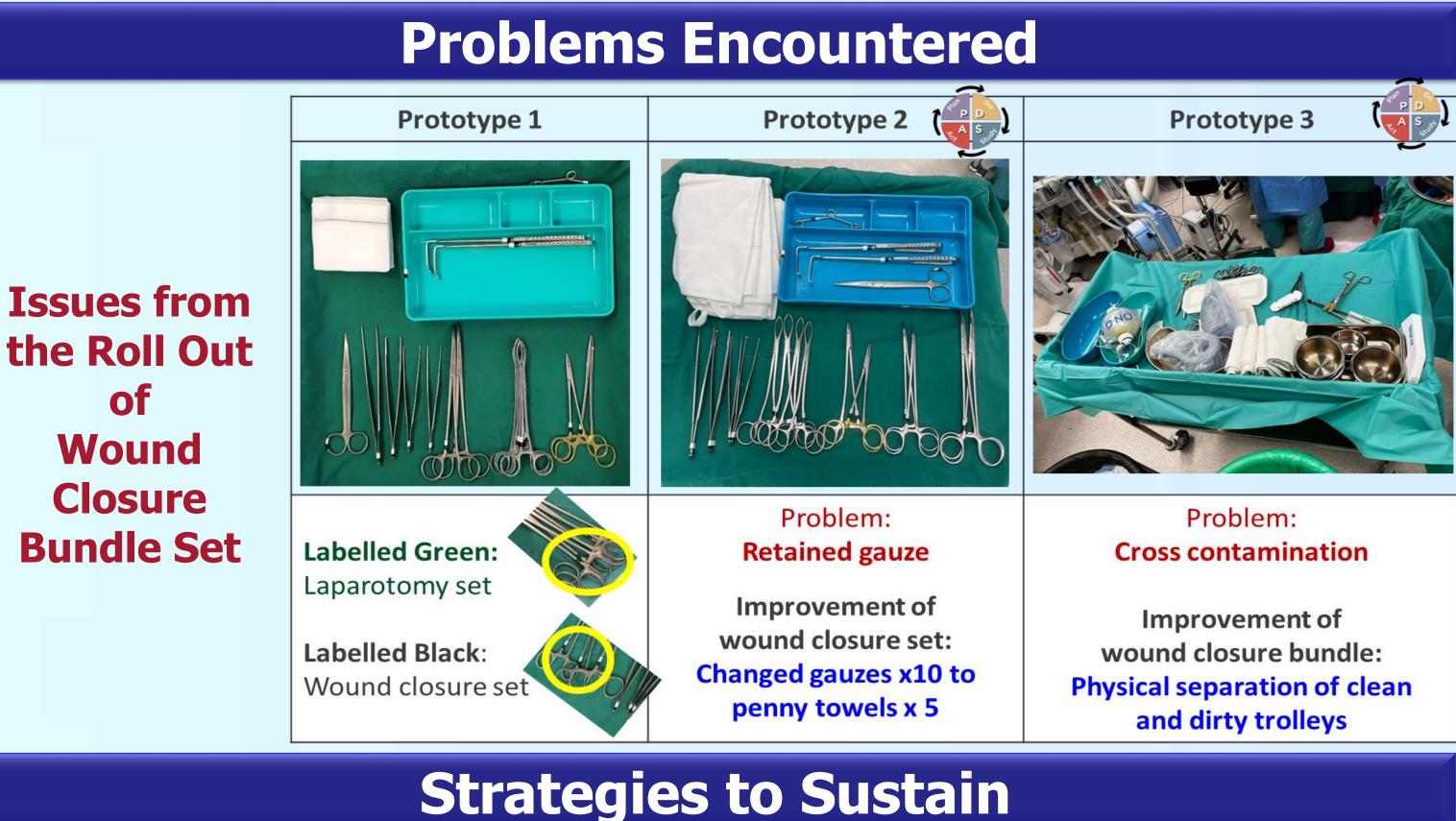
documented

Pareto Chart Causes that led to **Causes** (after removing Clinic & PACE categories and Revoting) increased in SSI No protocol for glove change Not enough clean instruments for closure of Votes 60% Missed ordering MRSA swab/trace result 50% Forgot to order chlorhexidine wash 30% Cost of antibiotic sutures 10% Junior staff not familiar with dressing options Cause 1 Cause 2 Cause 5 Cause 6 No template for hypocount check ■ No. of Votes — Cumulative %

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



Cost Avoidance & Cost Savings							
Cost Ave	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	23 Days			
Wound Product Cost Avoided (Per Patient)	25 x 10 = \$250	Bed Days Saved (Per Patient)	25 -23 = 2 Days				
Total Dressing Cost Avoided (Per Patient)	\$620	Cost of Inpatient Stay (Per Patient)	25 x 1114 = \$27,850	23 x 1114 = \$25,622			
Assume: Ave No. of Open Abd Surgery Patientervention = 5 patients per mon	Cost Savings (Per Patient)	\$27,850 - \$25,622 = \$2,228					
Ave No. of Open Abd Surgery Pat intervention = 3 patients per mon	Assume: Average Number of Abdominal Open Surgery Patients who has SSI = 5 patients per month						
Total Dressing Cost Avoided (Per month)	2 x \$620 = \$1,240	Total Length of Stay Saved (Annualized)		x 12 Days			
Total Dressing Cost Avoided (Annualized)	12 x \$1240 = \$14,880	Total Cost Savings (Annualized)	= \$13	\$1114 3,680 atient - \$1,114			
Total Dressing Cost	12 x \$1240	Total Cost Savings	120 x = \$13	\$1114 3,680			



1. Creating a new norm

- Continuing education (both physicians/nurses)
- Increasing awareness to separate clean & contaminated equipment

2. Data collection - manpower

- Surgical department or Infectious disease department
- Surveillance coordinators

3. Regular audit quarterly

HAIE meetings versus GS department meetings