

Project Title

To Reduce Incidences of Surgical Site Infection on Sternal Wound Post Open Heart Surgery in High Risk Patients

Project Lead and Members

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Organisation(s) Involved

National Heart Centre Singapore

Healthcare Family Group(s) Involved in this Project

Nursing, Medical

Applicable Specialty or Discipline

Specialty Care Unit, Cardiothoracic Intensive Care Unit, Cardiothoracic Surgery

Project Period

Start date: 2016

Completed date: 2022

Aim(s)

Reduce incidence of infection to sternal wound in high risk patients from 2.8% to 1%

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

See poster appended/ below

Additional Information

Singapore Healthcare Management (SHM) Congress 2023 – 2nd Prize (Patient Experience category)

Project Category

Care & Process Redesign

Value Base Care, Safe Care, Quality Improvement, Clinical Practice Improvement

Keywords

Sternal Wound Infection, Post Operative, High Risk Patients, Clinical Excellence

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Singapore Healthcare Management 2023



National Heart Centre Singapore SingHealth

Team Members: Wee Hwei Li Gillian, Wirdawati Binte Salimin, Laurie Saldo Novilla, Siti Khairunnisa Binte Roslan, Yap Yen Ping, Jacqueline Huo, Philip Pang and Chua Kim Chai

Background

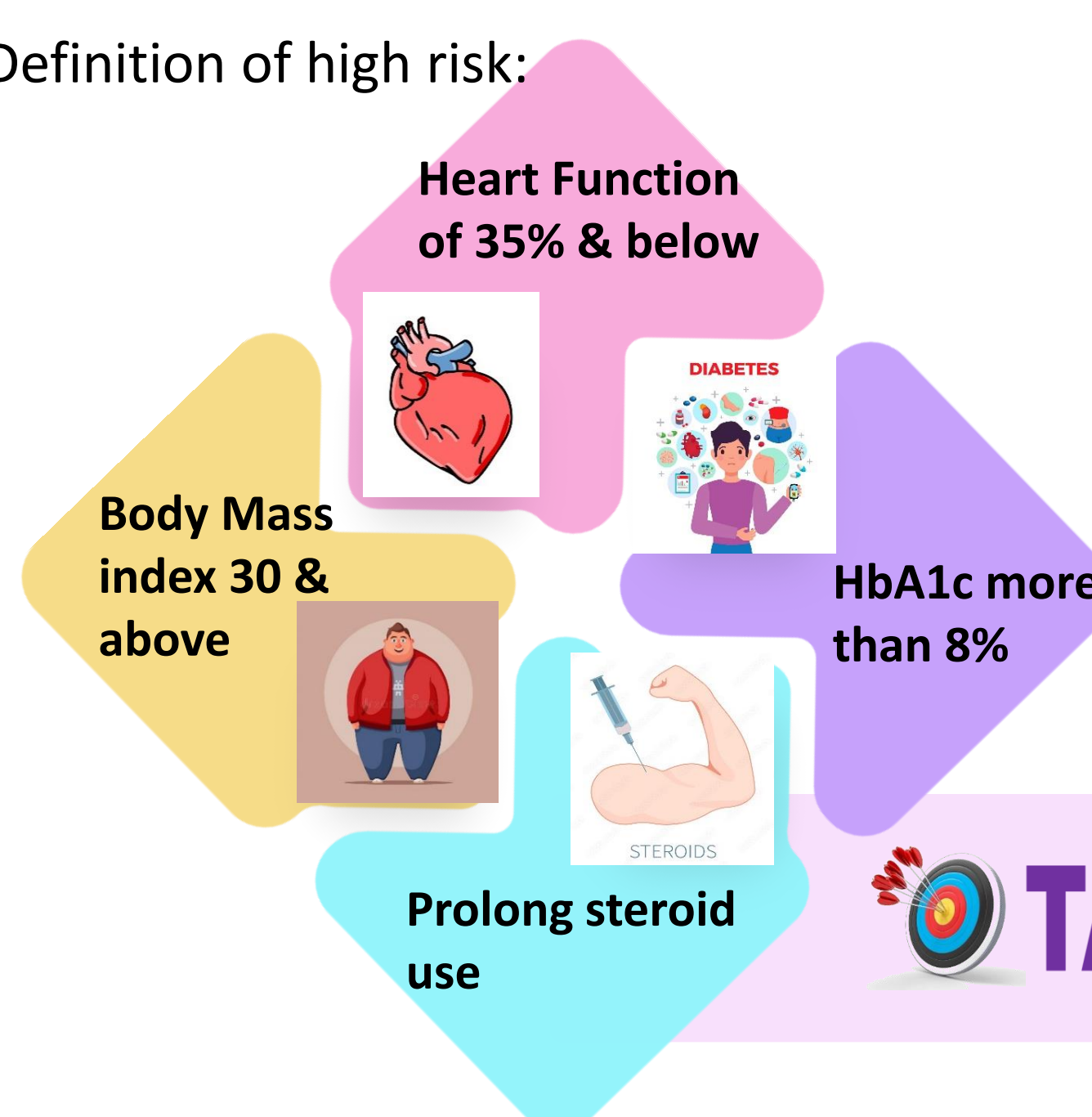
Wound infection after median sternotomy in high risk patients are associated with increased morbidity and mortality. Increased health risks resulting from sternal wound being infection can impact patients' recovery with excess costs arising from prolonged hospital stays or readmission and the need for repeated surgical procedures and extensive treatments in these patients.

The incidence of patients developing sternal wound infection was constantly at more than 2% of the total number of patients undergoing open heart surgery.

Consequences

- Extended hospitalisation
- Unnecessary expenses
- Multiple operations/ procedures to debride the wound
- Increase in patient suffering

Definition of high risk:



Consequences



TARGET Reduce incidence of infection to sternal wound in high risk patients from 2.8% to 1%

Methodology

Looking into the methods and types of dressing materials that were available. Root causes were identified, final solution developed after researching and refined based on stakeholders' feedback.

Root Causes

No Standardized method of dressing application

Ineffective dressing materials used

Lack of supervision and hands-on trainings

Final Solutions

In-service training on the effective approach on dressing methods and materials

Source out for effective dressing materials

In-service training to the nurses/doctors

Action Plans

SOP to be in policy & made available on intranet for reference

Expert evaluation committee to review

Included in Nursing & Doctors training

Dressing Material Selection Decision Matrix

Dressing Type	Criteria	Anti-microbial effect	Ease of application	Durability	Comfort	Total score
Mepore Plaster dressing		1	4	1	2	8
Mepilex Postop Silicon foam dressing		1	4	3	4	12
Dermabond Skin glue		1	2	4	5	12
Prevena Close incision negative pressure wound therapy		5	4	5	4	18

Final Solution

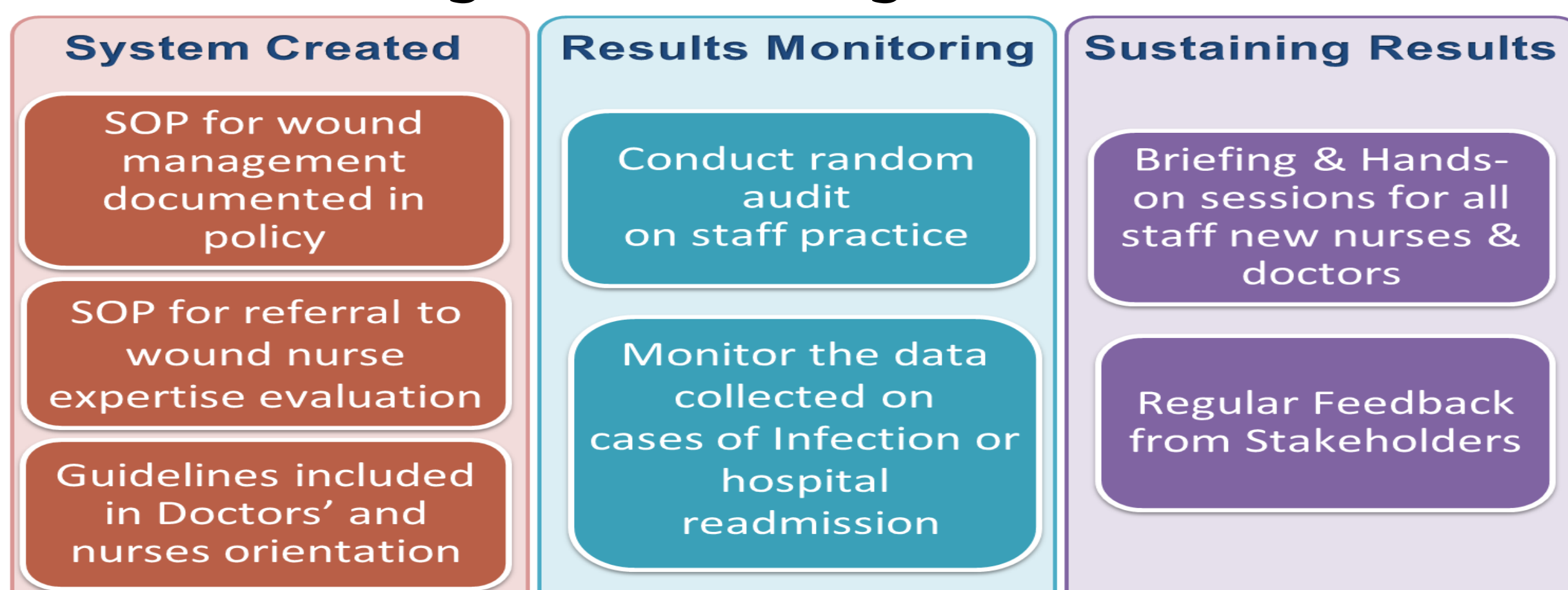


Prevena Dressing (Incision Negative Pressure Wound Therapy)

Final solution is...

- Reviewed by a nursing committee comprising of wound nurses who are specialized in wound treatment.
- Backed by research studies
- Supported by the management after being presented with a demonstration by the vendor

System for Measuring and Sustaining Results



Spin Offs: Application On Other Surgical Wounds

- The solution has been rolled out to other wards in NHCS.
- It is also applicable to other surgical wounds.



Groin Surgery

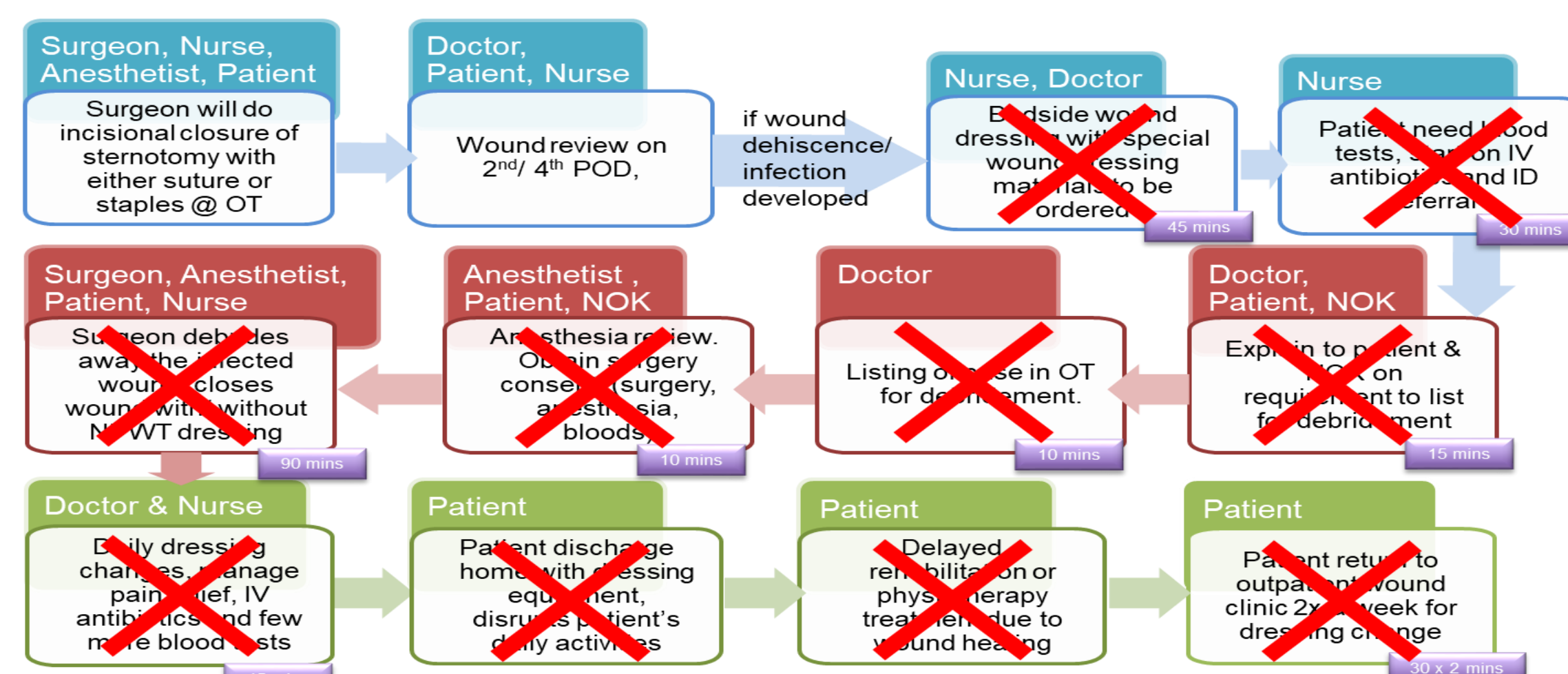
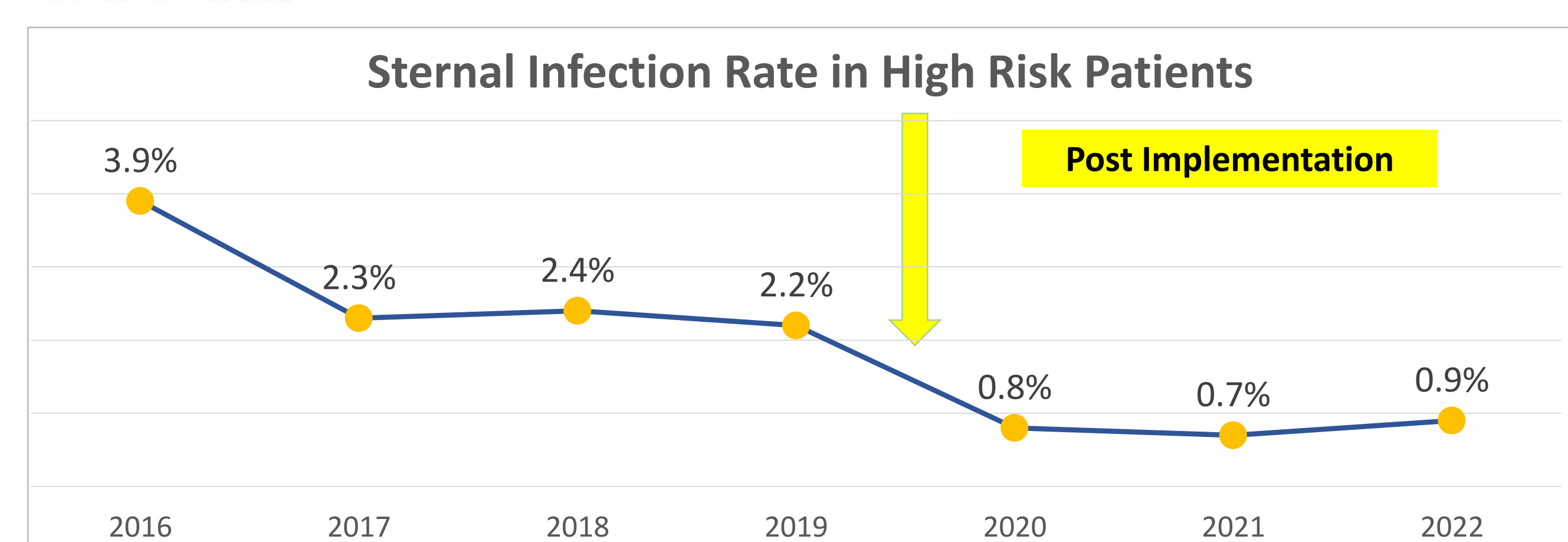


Knee Surgery

Results



Reduced incidence of infection to sternal wound in high risk patients from 2.8% to ~0.8%



Estimated Time Savings: 715min x 20patients

= 238 Hours / Annum

Estimated Bed Days Saved: 10days x 20patients

= 200 Beds Days / Annum

Chargeable Items	Procedure charge	Frequency	Total (10days)
E- referral to specialty nurse	\$60	1	\$60
E- Blue letter to infectious disease medical team	\$120	1	\$120
Ward charge (bed + treatment)	\$680	10	\$6,800
Debridement surgery	\$800	2	\$1,600
Capillary Blood Glucose monitoring (\$10/ 6 hourly)	\$40/day	10	\$400
Dressing	\$78	4	\$312
Injection and IV drip set	\$39	10	\$390
Cost of Negative Pressure Wound Therapy	\$825/week	8	\$6,600
Cost of outpatient wound clinic dressing charges	\$78	16	\$1,248
TOTAL			\$10,930

Estimated Patient Cost Savings for 20patients

= \$218,600 / Annum

Intangible Benefits

- Improved patients' safety
- Better patient care
- Hospital beds are freed up for urgent cardiac cases
- Greater patients' satisfaction
- Avoid unnecessary complaints
- Better organization image

There's improvement in staffs' confidence in providing the best care for the patients. Patients' experience was enhanced and improved their recovery process. The project promotes wound healing for post operative patients, to prevent complications and allows early discharge. Doctors and nurses can also prioritize time on critical tasks hence ensuring clinical excellent and enhancing patients' experiences.