

SSI Prevention and the Collaborative Model

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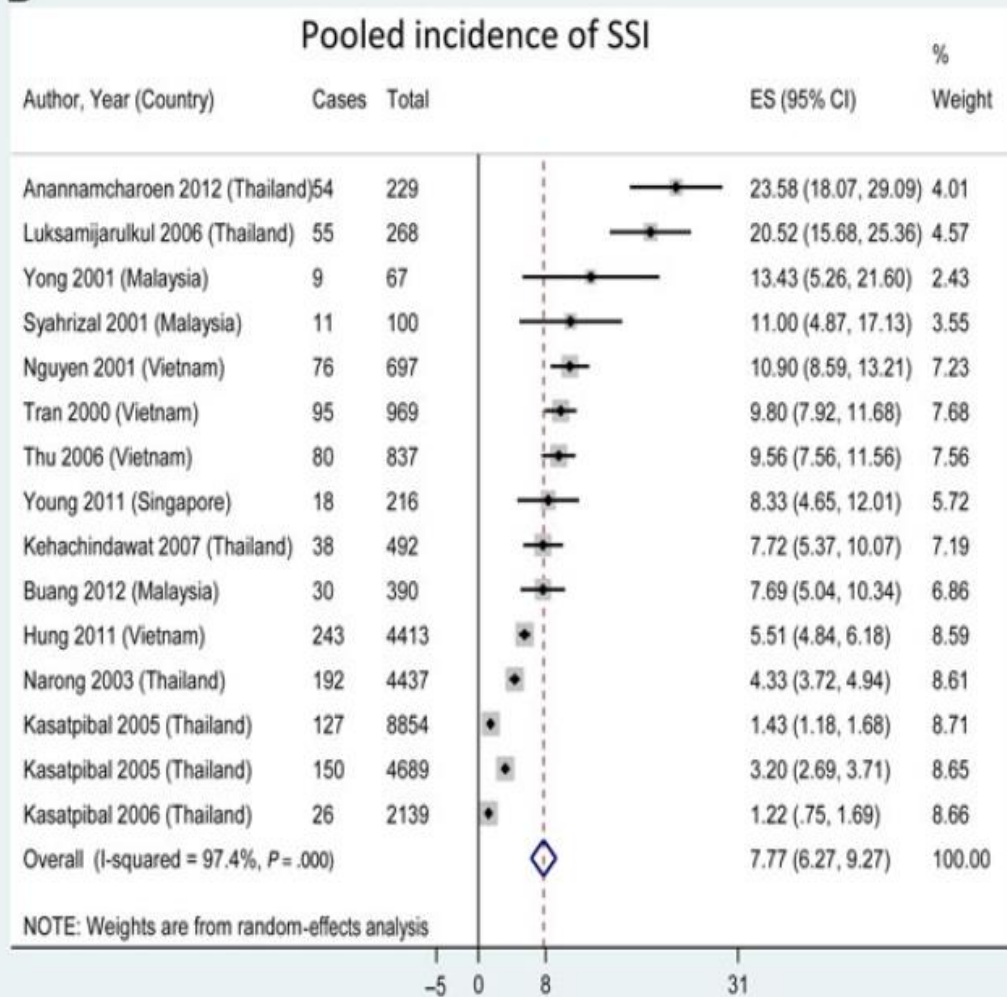
Singapore General Hospital

Disclosure

- 3M
- Aesculup Academy
- MSD

The pooled SSI rate (7.8%) reported in this meta-analysis is more than twice that (2.9%) of developing countries surveyed from 2005 to 2010

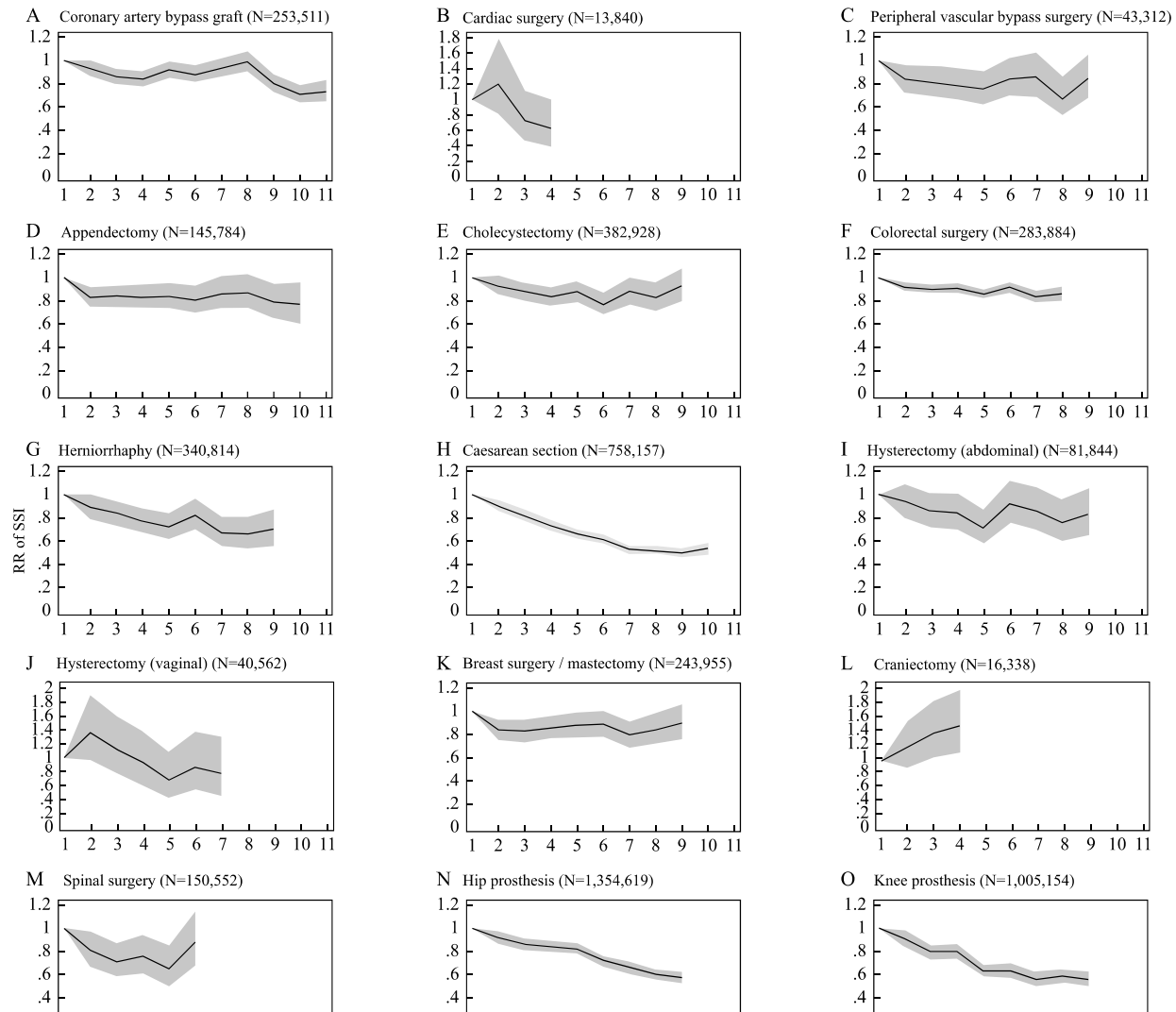
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Surveillance reduce SSIs

- 17 networks from 15 countries from three continents (Asia, Australia, and Europe)
 - sustainable decrease after joining an SSI surveillance network

Abbas M et al., Impact of participation in a surgical site infection surveillance network: results from a large inter- national cohort study, Journal of Hospital Infection, <https://doi.org/10.1016/j.jhin.2018.12.003>

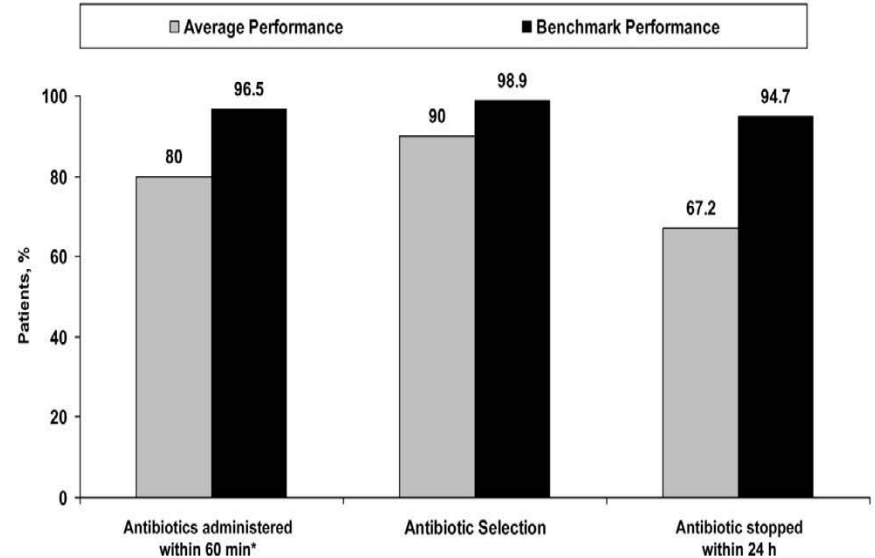
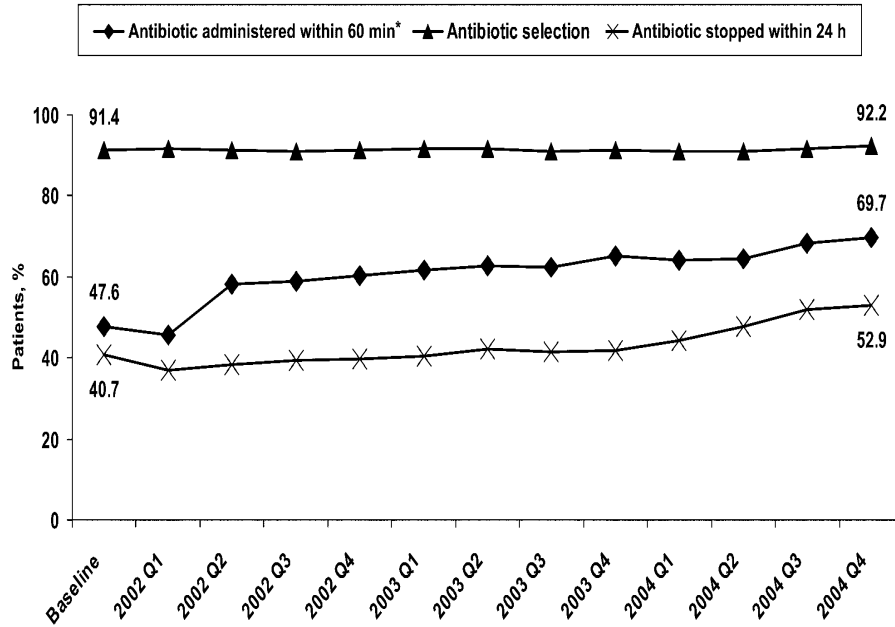


National programs

- National SIP project (2002)
 - Decrease the morbidity and mortality associated with postoperative SSI by promoting appropriate selection and timing of prophylactic antimicrobials
- SCIP (2003): a national quality partnership of organizations committed to improving the safety of surgical care through the reduction of postoperative complications

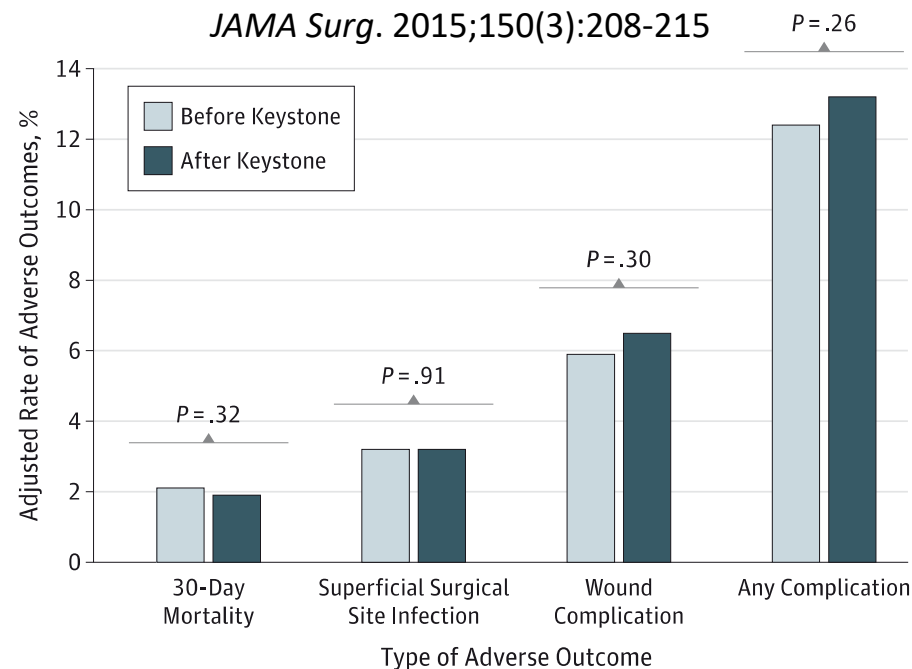
Category	Performance measures	Clinical Infectious Diseases 2006;43:322–30
Prevention of infection	Prophylactic antimicrobial received within 1 h prior to surgical incision ^a ; prophylactic antimicrobial consistent with published guidelines; prophylactic antimicrobial discontinued within 24 h of surgery end time ^b ; blood glucose control in patients undergoing cardiac surgery; proper hair removal (use of clippers or no hair removal); maintenance of normothermia in colorectal surgery patients	
Prevention of VTE	VTE prophylaxis ordered that is consistent with current guidelines ^c ; appropriate VTE prophylaxis administered within 24 h before or after surgery	
Prevention of cardiac events	Administration of perioperative β -blockers to patients receiving β -blockers before arrival	
Prevention of respiratory complications	Elevation of the head of the bed to at least 30° for patients receiving mechanical ventilation; stress ulcer disease prophylaxis for patients receiving mechanical ventilation; documentation of a standard weaning protocol for patients receiving mechanical ventilation	

National surveillance data for antimicrobial prophylaxis for surgery



Keystone Project

Intervention Component	Content	Program Support
Evidence-based practice ²³ Checklist tool describing SCIP	6 SCIP processes: INF-1: Prophylactic antibiotic selection ^a INF-2: Prophylactic antibiotic timing INF-3: Prophylactic antibiotic discontinuation INF-4: Glucose control INF-6: Appropriate hair removal INF-7: Temperature control	Educational materials provided Routine briefings and debriefings among surgical teams encouraged Principles of safety science enforced
Comprehensive Unit-based Safety Program ^{5,24} 5-Step iterative process to improve teamwork and safety culture	Step 1: Education on system redesign Step 2: Identify defects in the system Step 3: Senior executive partnerships Step 4: Learning from defects tool Step 5: Implement teamwork and communication tools	Team leaders encouraged to participate in: Monthly content and coaching calls Semiannual daylong collaborative meetings

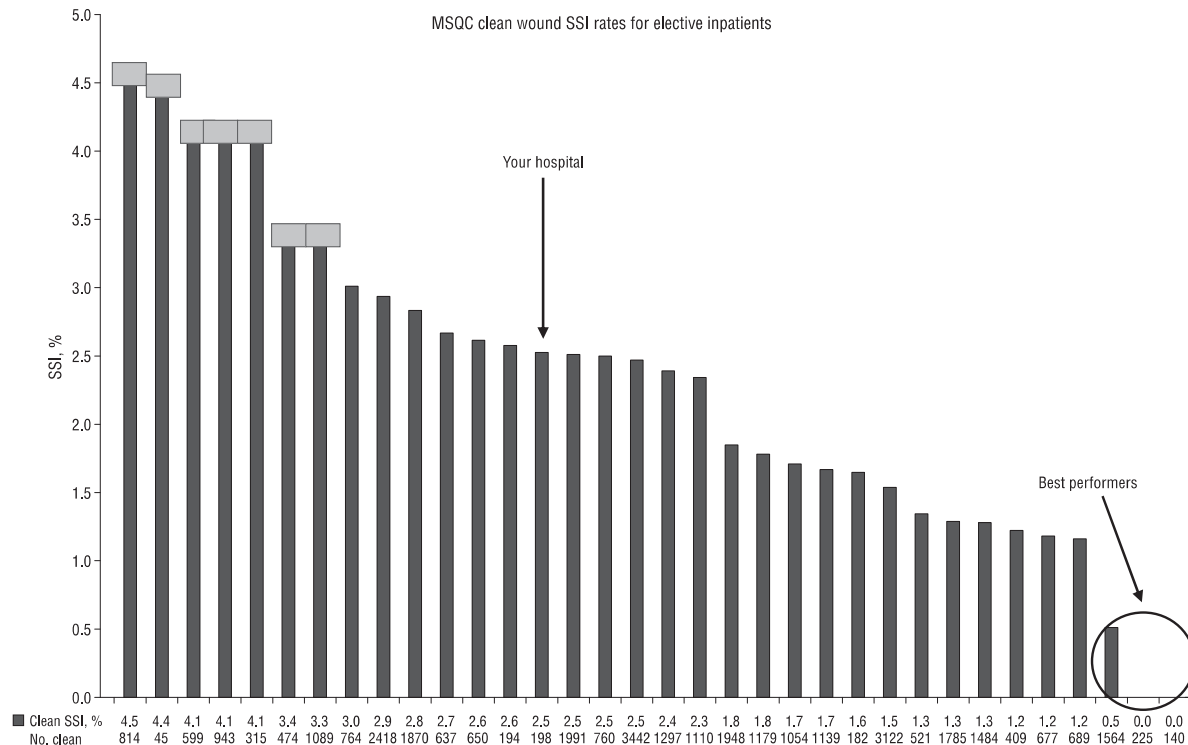


Comparison of adjusted rates of adverse outcomes in Keystone hospitals before and after implementation of the Keystone Surgery Program.

Reasons for failure

- Success of a program in one clinical context may not translate to others
- Failure of the implementation process
 - Focused efforts needed to address and mitigate local defects

Statewide QI projects



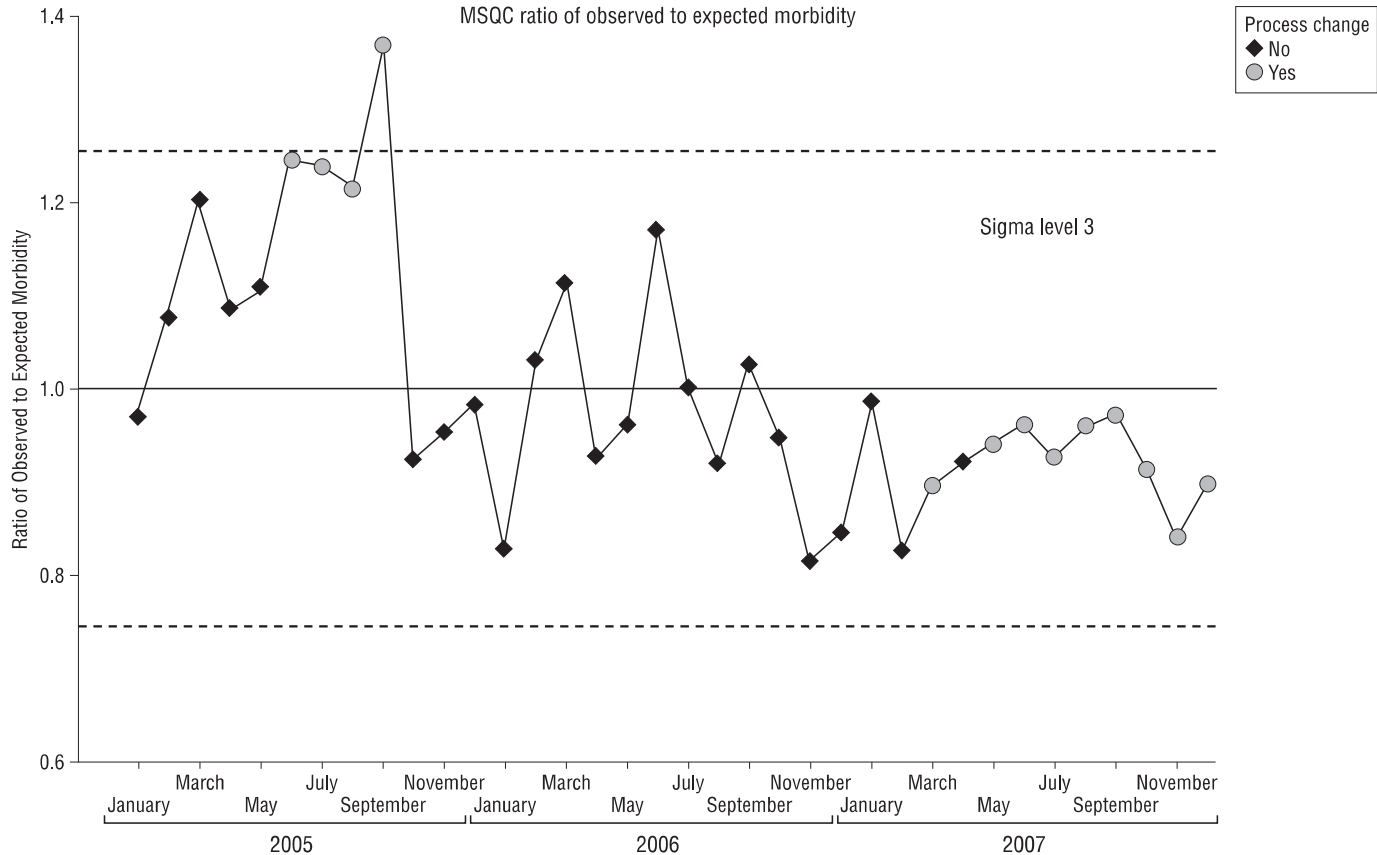
- Focus on the right side of the figure, or best performers.
- Directly identify these hospitals and share best practices.

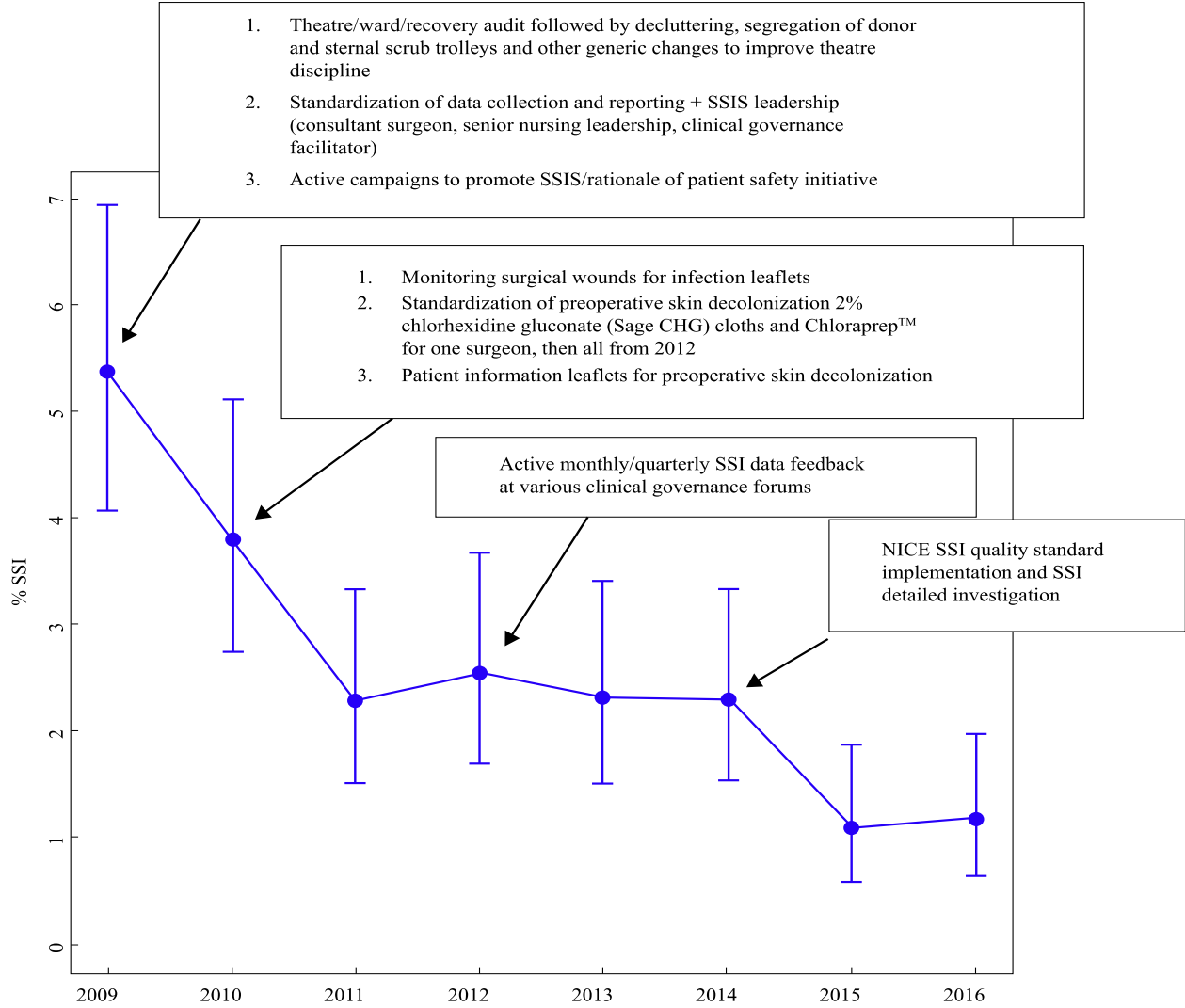
Arch Surg/Vol 145 (no. 10), Oct 2010

Level	Barriers	Interventions	Strategies
Personal factors (related to physicians' knowledge and attitudes)	Physicians' knowledge	Increased dissemination of guideline	Dissemination strategies
		Use of mass media to increase awareness	<ul style="list-style-type: none"> Standard dissemination (e.g., receiving guideline via e-Mail) Dissemination of training material
		CME	
		Making guideline available with practical instruments	Continuing education
		Educational posters in examination rooms	Active learning from experts: opinion leaders
		CME that focuses on specific guideline recommendations	Educational meetings
	Lack of familiarity		Individualized feedback and group performance audit
			Quality circle
		Opinion leaders	Educational meetings
		Physician participation in guideline development	Educational outreach visits
		Special society endorsement of guideline	Marketing outreach visits
		Small group education	Identifying opinion leaders
	Lack of agreement		Financial opportunities/penalties
			Standing orders
		CME focusing on skills	
		Interactive learning / group training	
		Audit and feedback of individual performance: positive individualized feedback during training and subsequently in practice, assistance with questions	
	Physicians' attitudes		Dissemination
		CME focusing on skills	Educational outreach visits
		Audit and feedback of individual performance	(individualized) audit and feedback
		Promoting learning organizations	
		Audit and feedback of practice wide performances	
		Citation of previous published success at improving outcomes through guideline implementation	
	Lack of outcome expectancy		
	Lack of motivation	Motivational strategies that utilize audit and feedback	
		Opinion leaders	

Level	Barriers	Interventions	Strategies
Guideline- related factors	Lack of evidence	Use of methods of evidence-based medicine	Use of methods of evidence-based medicine for guideline development Communication strategies Marketing outreach visits (Computerized) decision support systems Reminders Pilot projects
		Appraisal of evidence in recommendations	
		Regular updates	
	Plausibility of recommendations	Short and user-friendly versions of guidelines	
		Checklists	
	Complexity (too theoretical)	Simplicity	
	Poor layout	Design and development of guideline	
	Access to guideline	Provide easy access to guideline	
		Decision support systems	
	Lack of applicability	Using tablets, smartphones, and mobiles for provision of guidelines	
	Focus on patients with single disease entities	Consideration of comorbidity and multimorbidity in guidelines	
	Exclusion of patients with complex disease entities		
	Lack of clear intervention goals	Setting clear intervention goals	
Trialability	Pilot projects		
External factors	Organisational constraints	Standardisation of processes and procedures	Improvements in organisation of care
		Development of protocols specifically targeting practice assistants	
		Guideline development needs to consider the care setting	
		Link to quality management	
	Lack of resources (time restrictions, heavy workload, facilitation)	Financial incentives/compensation	Standing orders
		Providing time for documentation and utilization of guidelines	
		Clear roles	
		External facilitation	
	Lack of collaboration	Improving multiprofessional collaboration with other healthcare professionals	Local adaptation Local consensus groups
	Social and clinical norms	Local consensus groups	Incorporation into established structures

Pay for participation approach pays off: power of hospital collaboration





- Overall adult cardiac SSI rates fell from 5.4% in 2009 to 1.2% in 2016
- CABG rates from 6.5% in 2009 to 1.7% in 2016 (P < 0.001)

	Campaign states			Non-campaign states			Campaign vs. non-campaign states (difference-in-difference)	
	Pre-intervention <i>n</i> = 77	Post-intervention <i>n</i> = 74	<i>p</i>	Pre-intervention <i>n</i> = 94	Post-intervention <i>n</i> = 91	<i>p</i>	Percentage point change	<i>p</i>
	% (S.D.)			% (S.D.)				
New evidence-based infection control practices								
1. Screening and decolonization								
1.a. Pre-operative nasal screening for <i>Staphylococcus aureus</i> carriage	49.6 (4.5)	60.2 (4.4)	<0.0001	59.0 (4.3)	60.7 (4.2)	0.558	8.8	0.022
1.b. Intranasal mupirocin prescribed for methicillin- resistant <i>S. aureus</i> (MRSA) carriers	49.7 (4.3)	65.5 (4.2)	<0.0001	71.9 (4.3)	78.0 (4.0)	0.090	9.7	0.042
1.c. Intranasal mupirocin prescribed for methicillin-sensitive <i>S. aureus</i> (MSSA) carriers	37.0 (4.7)	55.0 (4.4)	<0.0001	52.4 (4.8)	54.5 (4.4)	0.642	15.9	0.008
2. Chlorhexidine bathing 3 or more times preoperatively	31.1 (4.1)	39.7 (3.8)	0.024	34.1 (4.3)	36.2 (3.9)	0.624	6.5	0.263
3. Alcohol-containing antiseptic used to prepare skin in operating room	96.9 (1.2)	99.0 (1.1)	0.019	96.4 (1.2)	96.5 (1.1)	0.863	1.9	0.150
All-or-none composite of the new evidence-based infection control practices	19.6 (3.8)	37.9 (5.1)	0.0007	29.1 (4.9)	24.5 (4.3)	0.420	23.0	0.004

Schneider *et al.* *Implementation Science* (2017) 12:51

“.....a quality improvement campaign increased the use of evidence-based practices that evidence demonstrates can reduce surgical site infections in hip and knee arthroplasty. We conclude that a carefully crafted campaign can accelerate the spread of evidence-based practices, scaling results from clinical trials and promising local initiative to larger regions and states.”

APSIC SSI Prevention Guidelines

- Available on APSIC website:
 - <http://apsic-apac.org>
- Translations
 - Chinese
 - Thai
 - Vietnamese
 - Japanese
 - Korean
 - Indonesian



THE APSIC GUIDELINES
FOR
THE PREVENTION OF SURGICAL SITE INFECTIONS

Endorsement

- Association Infection Prevention Control Nurse Indonesia
- Chinese Society for Infection Control Sector, Chinese Preventive Medicine Association, China
- Ho Chi Minh City Infection Control Society (HICS)
- Hong Kong Infection Control Nurses Association (HKICNA)
- Infection Control Society of Taiwan (ICST)
- Infection Control Association of Singapore (ICAS)
- Indonesian Society of Infection Control (INASIC)
- National Nosocomial Infection Control Group of Thailand
- Persatuan Kawalan Infeksi dan Antimikrobia Kota Kinabalu Sabah (PKIAKKS), Borneo
- Korean Surgical Infection Society (KSIS)

GUIDELINES ARTICLE

Open Access

APSIC guidelines for the prevention of surgical site infections



Moi Lin Ling^{1*} , Anucha Apisarnthanarak², Azlina Abbas³, Keita Morikane⁴, Kil Yeon Lee⁵, Anup Warriar⁶ and Koji Yamada⁷

Abstract

Background: The Asia Pacific Society of Infection Control (APSIC) launched the APSIC Guidelines for the Prevention of Surgical Site Infections in 2018. This document describes the guidelines and recommendations for the setting prevention of surgical site infections (SSIs). It aims to highlight practical recommendations in a concise format designed to assist healthcare facilities at Asia Pacific region in achieving high standards in preoperative, perioperative and postoperative practices.

Method: The guidelines were developed by an appointed workgroup comprising experts in the Asia Pacific region, following reviews of previously published guidelines and recommendations relevant to each section.

Results: It recommends that healthcare facilities review specific risk factors and develop effective prevention strategies, which would be cost effective at local levels. Gaps identified are best closed using a quality improvement process. Surveillance of SSIs is recommended using accepted international methodology. The timely feedback of the data analysed would help in the monitoring of effective implementation of interventions.

Conclusions: Healthcare facilities should aim for excellence in safe surgery practices. The implementation of evidence-based practices using a quality improvement process helps towards achieving effective and sustainable results.

Keywords: Surgical site infection, SSI, Prevention, Safe surgery

APSIC Safe Surgery Program

- Assist hospitals in Asia-Pacific in successful implementation of the APSIC SSI Prevention Guidelines
- Goal - To reduce Surgical Site Infections significantly hospital-wide within 12-18 months
- Soft launch in 2018
- Approach
 - Collaborative model
 - QI tools using rapid PDSA cycles

About the Award

- Recognition of hospitals
 - Delivers the highest level of patient safety and quality patient outcome
 - Committed to ensuring dedicated infection prevention and control teams for to undertake SSI surveillance
 - Takes on a leadership role to and follows the recommendations of APSIC Guidelines for Prevention of SSI
 - Implements quality improvement projects to reduce surgical site infections and minimizing the no-show rate for elective surgeries
- The hospital identified as a Centre of Excellence will be invited to the APSIC Congress 2021 to receive the APSIC Safe Surgery Award
 - Return economy class air ticket, congress registration and hotel accommodation

Overview of APSIC Safe Surgery Program





3M Science.
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APASIC Surgical Site Assessment Tool

APASIC Surgical Site Assessment Tool

INSTRUCTIONS: Fill in each question. For each patient, score "Yes" for each correct item. "No" for incorrect item, select "NA" if not applicable for selected item.

Patient _____

Note: Make
sure to select
only ONE "Yes"
or "No"

Action plan

General		
1 Surveillance of SSIs is done using accepted international methodology	<input type="radio"/> Yes <input type="radio"/> No	
2 Laminar airflow is not installed in new or renovated operating rooms to prevent SSI	<input type="radio"/> Yes <input type="radio"/> No	
Pre-operative		
3 Patients who will undergo surgery have at least 1 preoperative bath with soap (antimicrobial or non-antimicrobial)	<input type="radio"/> Yes <input type="radio"/> No	
4 Mechanical bowel preparation and oral antibiotic preparation are used in combination for all elective colorectal surgery in adults	<input type="radio"/> Yes <input type="radio"/> No	
5 Hair removal is avoided unless hair interferes with the operative procedure	<input type="radio"/> Yes <input type="radio"/> No	
6 If hair removal is necessary, a razor is avoided and an electric clipper is used	<input type="radio"/> Yes <input type="radio"/> No	
7 Screening for MRSA is done because of high incidence rates	<input type="radio"/> Yes <input type="radio"/> No	
8 Patients undergoing cardiothoracic and orthopaedic surgery with known nasal carriage of <i>S. aureus</i> receive perioperative intranasal application of mupirocin 2% ointment with or without a combination of CHG body wash	<input type="radio"/> Yes <input type="radio"/> No	
Perioperative		
9 Surgical hand preparation is performed either by scrubbing with a suitable antiseptic soap and water or a suitable ABHR before surgical team dons sterile gown and gloves	<input type="radio"/> Yes <input type="radio"/> No	
10 ABHR used in surgical hand preparation complies with EN 12791 or ASTM E-1115 standards	<input type="radio"/> Yes <input type="radio"/> No	
11 Where the quality of water used is not assured, surgical hand rub with ABHR is used	<input type="radio"/> Yes <input type="radio"/> No	
12 Alcohol based skin antiseptic preparations is used, unless contraindicated	<input type="radio"/> Yes <input type="radio"/> No	
13 Administration of antimicrobial surgical prophylaxis is only performed when indicated	<input type="radio"/> Yes <input type="radio"/> No	
14 Prophylactic antimicrobials are administered within 1 hour before incision for all antimicrobials except vancomycin and fluoroquinolones where these are administered within 2 hours	<input type="radio"/> Yes <input type="radio"/> No	
15 Re-dosing is considered to maintain adequate tissue levels based on agent half-life	<input type="radio"/> Yes <input type="radio"/> No	
16 Only a single dose of antimicrobial prophylactic is given, unless re-dosing is required	<input type="radio"/> Yes <input type="radio"/> No	

Safe Surgery Workshop 2018

11 Hospitals enrolled

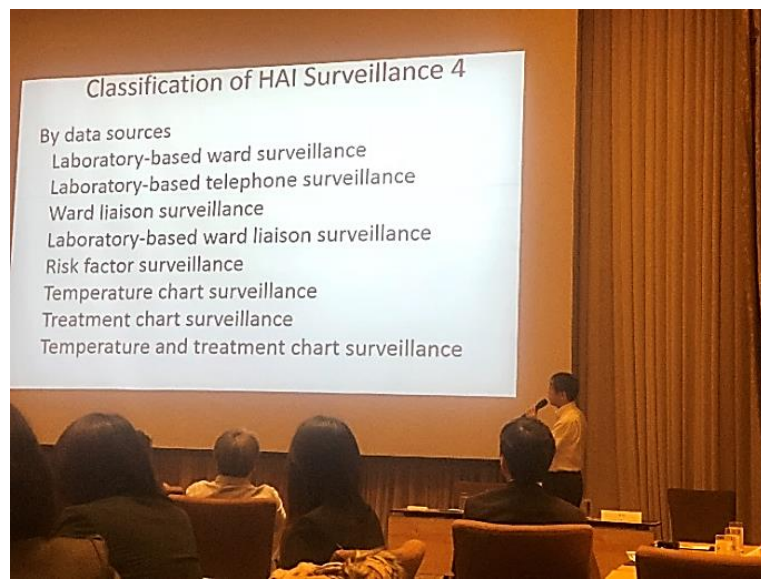
30 Participants

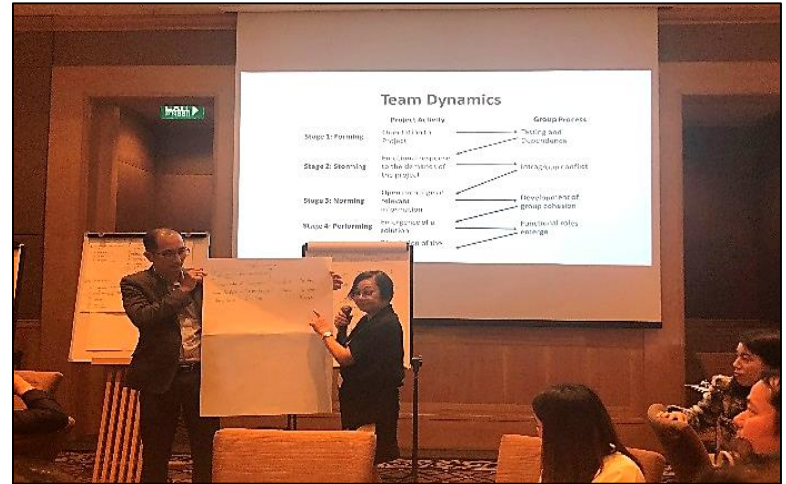
Team members involved surgeons, IPC Lead, OR nurse managers

5 Faculty speakers from APSIC Expert Panel

6 Modules with hands-on workshop









Hospital	Project
Bangkok Hospital – Phuket, Thailand	Surgical prophylaxis
Bangkok Dusit Medical Services, Thailand	Appropriate timing of surgical prophylaxis
Lampang Hospital, Thailand	Redosing of surgical prophylaxis
Naresuan Hospital, Thailand	Preop bathing, surgical hand/forearm preparation and skin antiseptic
Philippine General Hospital, Philippines	Surgical prophylaxis
Police General Hospital, Thailand	Alcohol-based skin preparation and normothermia
Queen Sirikit Hospital, Thailand	Maintain normothermia
University of Malaya Medical Center, Malaysia	Bundle (preop bathing, clipping, alcohol-based skin preparation, prophylaxis and redosing)
HRH Princess Hospital, Thailand	Maintain normothermia

Workshop 2018



Hospital	Project
Fortis Memorial Research Institute, India	Surgical prophylaxis, glycemic control and normothermia
Manipal Hospital Bangalore, India	Pre-op baths and glycemic control
Apollo Hospital Mumbai, India	Pre-op baths and glycemic control
1 st Affiliated Hospital Zhejiang, China	Skin antisepsis, hair remover and surgical prophylaxis
Mackay Hospital, Taiwan	Hair removal and glycemic control
Cathay General Hospital, Taiwan	Normothermia
Taichung Tzu Chi Hospital, Taiwan	Pre-op baths, hair removal, glycemic control and surgical prophylaxis
Kyung Hee University Hospital, South Korea	Alcohol-based skin preparation

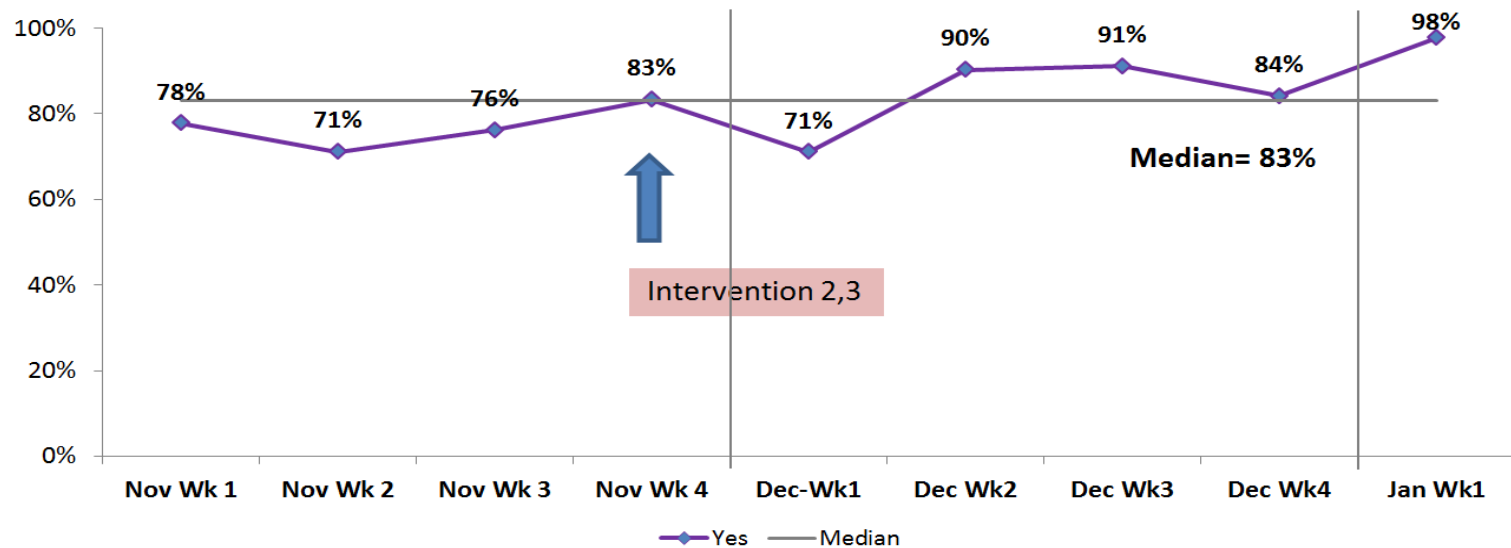
Workshop 2019



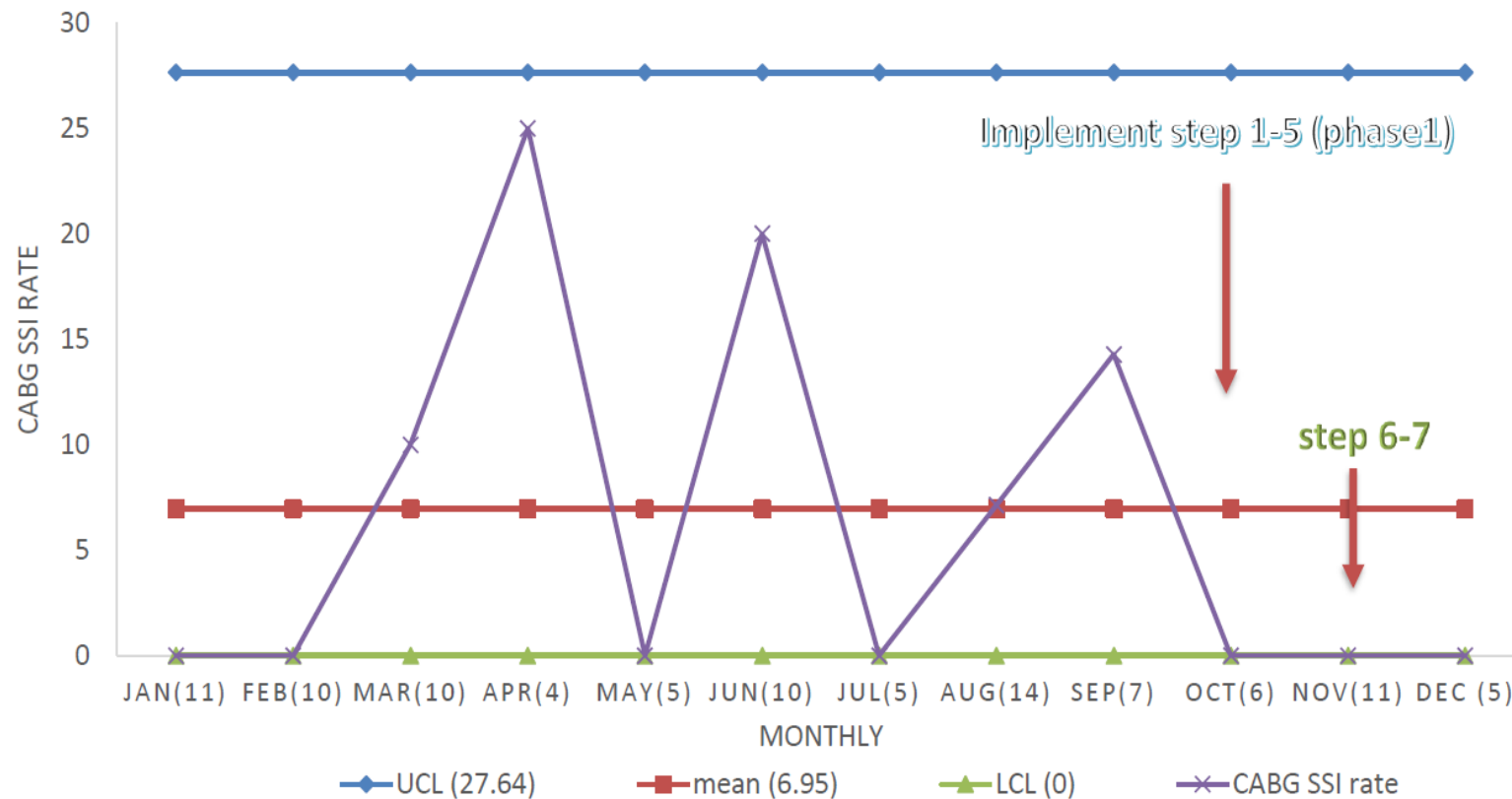
Successful pilots seen in 6 months

%Appropriateness of surgical prophylaxis by Time

Added evaluation By time : November 2018– 7 January 2019



Early results



Expert Review Panel

- Dr. Moi Lin Ling
 - Director, Infection Prevention and Epidemiology, Singapore General Hospital
 - President, Asia Pacific Society of Infection Control (APSIC)
- Dr. Anucha Apisarnthanarak
 - Professor in Infectious Diseases & Chief of Division of Infectious Disease, Thammasat University Hospital, Thailand
 - Professor of Washington University School of Medicine, Saint Louis, MO, USA
- Prof. Azlina Amir Abbas
 - Head, Department of Orthopaedic Surgery, National Orthopaedic Centre of Excellence for Research and Learning (NOCERAL), Faculty of Medicine, University of Malaya, Malaysia
- Dr. Keita Morikane
 - Director, Division of Clinical Laboratory and Infection Control Yamagata University Hospital, Japan
- Prof. Kil Yeon Lee
 - Head, Department of Surgery, Medical College of Kyung Hee University Center, South Korea
- Dr. Anup Warriar
 - Consultant, Infectious Diseases and Infection Control, Aster University, Kochi, India
- Dr. Koji Yamada
 - Department of Orthopaedic Surgery, Kanto Rosai Hospital, Japan

Projects assessment

- Criteria
 - Successful spread of QI initiatives hospitalwide to all surgical departments
 - Significant improvement seen for indicator/s tracked for initiatives
 - Significant reduction in SSI

Benefits from program

- Leadership support
- Team effort
- Best practices get implemented

APSiC2021

S I N G A P O R E

10TH INTERNATIONAL CONGRESS OF THE ASIA PACIFIC SOCIETY OF INFECTION CONTROL

4 - 7 March | Venue: Suntec Singapore Convention & Exhibition Centre

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