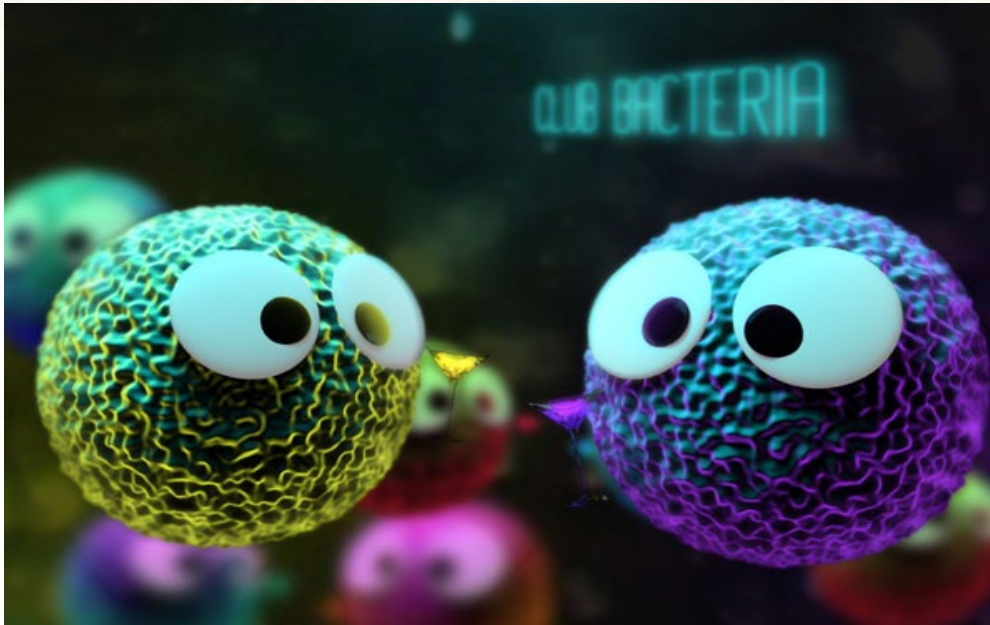


# Surgical Site Infection (SSI) Reduction Learning Module – Part I



*Created by MSQC for the purpose of initiating and maintaining Surgical Site Infection (SSI) Quality Improvement projects by hospitals in the Collaborative*



# Objectives

## Part I:

1. Define SSI
2. Conduct Data Drill Down
3. Develop SSI Reduction Team

## Part II:

4. Develop SSI Reduction Plan
5. Provide Resources for SSI Prevention

# SSI Statistics

## **MSQC QI NEWS** THE WORLD'S FAVORITE NEWSPAPER

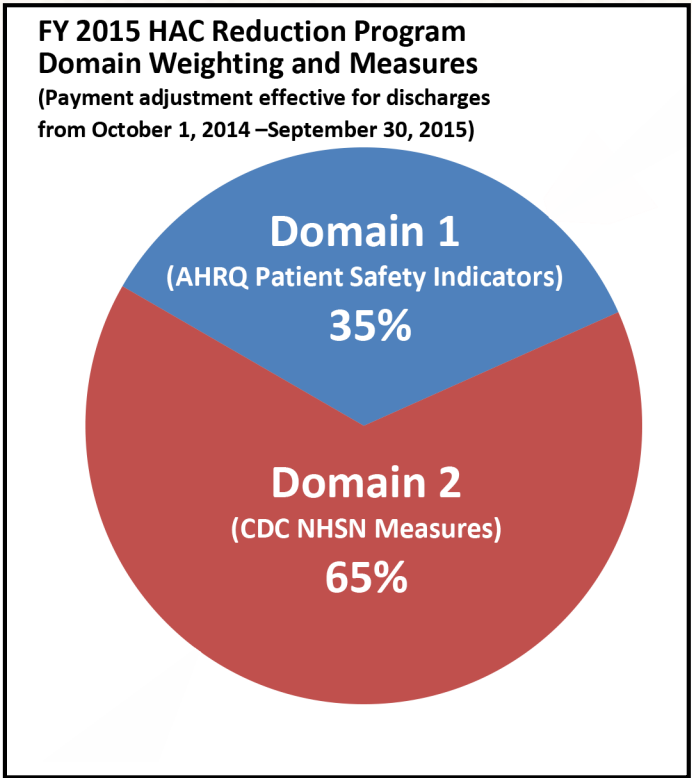
- Since 2005

### **Surgical Site Infections**

- **Between 2% - 5% surgical patients acquire SSI (between \$160,000 & \$300,000/year)**
- **60% of SSIs have been estimated to be preventable**
- **Account for 20% of the Hospital Acquired Infections (HAIs) in hospitalized patients**
- **Each SSI is associated with an additional 7-11 post-operative hospital days**
- **Patients with SSIs have a 2-11 times higher risk of death**
- **Accounts for \$3.5 billion to \$10 billion annually in healthcare expenditures**
- **Most estimates do not account for re-hospitalization, outpatient treatment, post-discharge expenses, quality of life for the patient, or any long term disability costs**

# Hospital Acquired Condition (HAC) Reduction Program

In 2015, the Centers for Medicare & Medicaid Services (CMS) began reducing hospital payments by 1% for hospitals that rank among the lowest performing 25%.



DOMAIN 1	
	Performance Period
	July 1, 2011 – June 30, 2013
AHRQ* PSI 90 Measure	Score 1-10
PSI 3 Pressure ulcer rate	
PSI 6 Iatrogenic pneumothorax rate	
PSI 7 Central venous catheter-related blood stream infection rate	
PSI 8 Postoperative hip fracture rate	
PSI 12 Postoperative pulmonary embolism (PE) or deep vein thrombosis rate (DVT)	
PSI 13 Postoperative sepsis rate	
PSI 14 Wound dehiscence rate	
PSI 15 Accidental puncture and laceration rate	

\*The Agency for Healthcare Research and Quality

DOMAIN 2	
	Performance Period
	January 1, 2012 – December 31, 2013
CDC NHSN* Measures	Average Score 1-10
CLABSI SIR rate	1-10
CAUTI SIR rate	1-10
Future Measures for FY2016	
SSI Colon	
SSI Abdominal Hysterectomy	
Future Measures for FY2017	
MRSA	
CDI	

\*Centers for Disease Control and Prevention National Healthcare Safety Network



This material was prepared by Stratis Health, the Medicare Quality Improvement Organization for Minnesota, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. 10SOW-MN-C7-13-120 Revised 030514



# SSI Total = Superficial, Deep, & Organ/Space

## Superficial Incisional SSI

Denominator: All Cases

Numerator: Infection occurs within 30 days of the procedure and involves only skin and subcutaneous tissue of the incision and patient has at least 1 of the following:

- a. purulent drainage from the superficial incision
- b. organisms isolated from an aseptically-obtained culture of fluid or tissue from the superficial incision
- c. superficial incision that is deliberately opened by a surgeon and is culture-positive or not cultured and patient has at least one of the following signs or symptoms of infection: pain or tenderness; localized swelling; redness; or heat. A culture negative finding does not meet this criterion
- d. diagnosis of superficial incisional SSI by the surgeon or attending physician or other designee

## Deep Incisional SSI

Denominator: All Cases

Numerator: Infection occurs within 30 days of the procedure *and* involves deep soft tissues of the incision (e.g., fascial and muscle layers) *and* patient has at least one of the following:

- a. purulent drainage from the deep incision
- b. a deep incision that spontaneously dehisces or is deliberately opened by a surgeon, attending physician or other designee and is culture-positive or not cultured *and* patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness. A culture-negative finding does not meet this criterion.
- c. an abscess or other evidence of infection involving the deep incision is found on direct examination, during invasive procedure, or by histopathologic examination or imaging test.
- d. diagnosis of a deep incisional SSI by a surgeon or attending physician or other designee

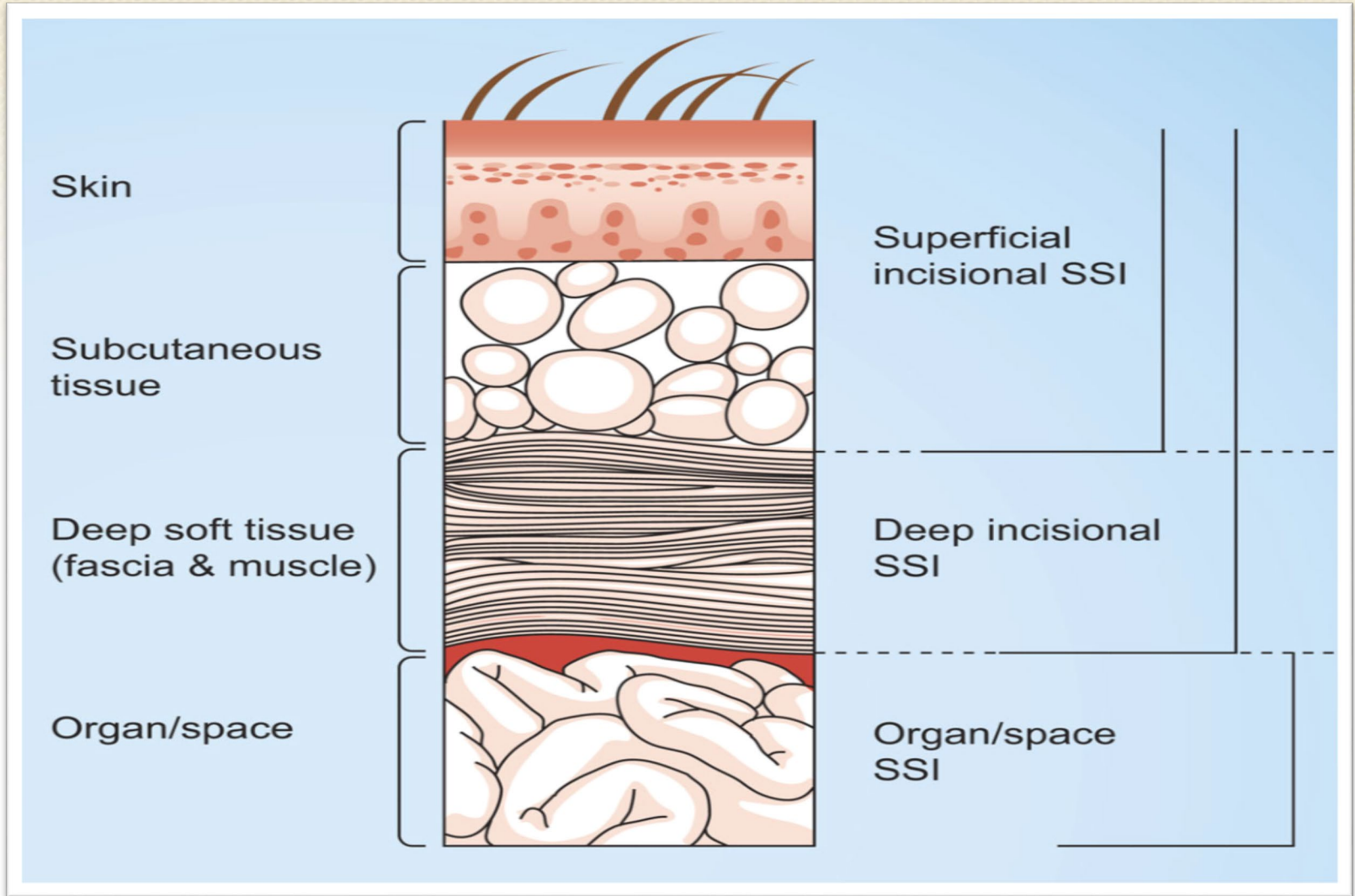
## Organ/Space SSI

Denominator: All Cases

Numerator: Infection occurs within 30 days of the procedure *and* infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure *and* patient has at least 1 of the following:

- a. purulent drainage from a drain that is placed into the organ/space
- b. organisms isolated from an aseptically-obtained culture of fluid or tissue in the organ/space
- c. an abscess or other evidence of infection involving the organ/space that is found on direct examination, during invasive procedure, or by histopathologic examination or imaging test
- d. diagnosis of an organ/space SSI by a surgeon or attending physician or other designee *and* meets at least one criterion for a specific organ/space infection site listed in *Table 1 - See MSQC Operational Manual*

# Diagram of SSIs



# Plan of Action

## To Improve SSI Outcomes for Your Site Assemble Your Toolkit

**#1** Retrieve  
SSI data for  
your site

**#2** Form a  
SSI QI  
Committee

**#3** Review  
present SSI  
protocol and  
care delivery for  
gaps

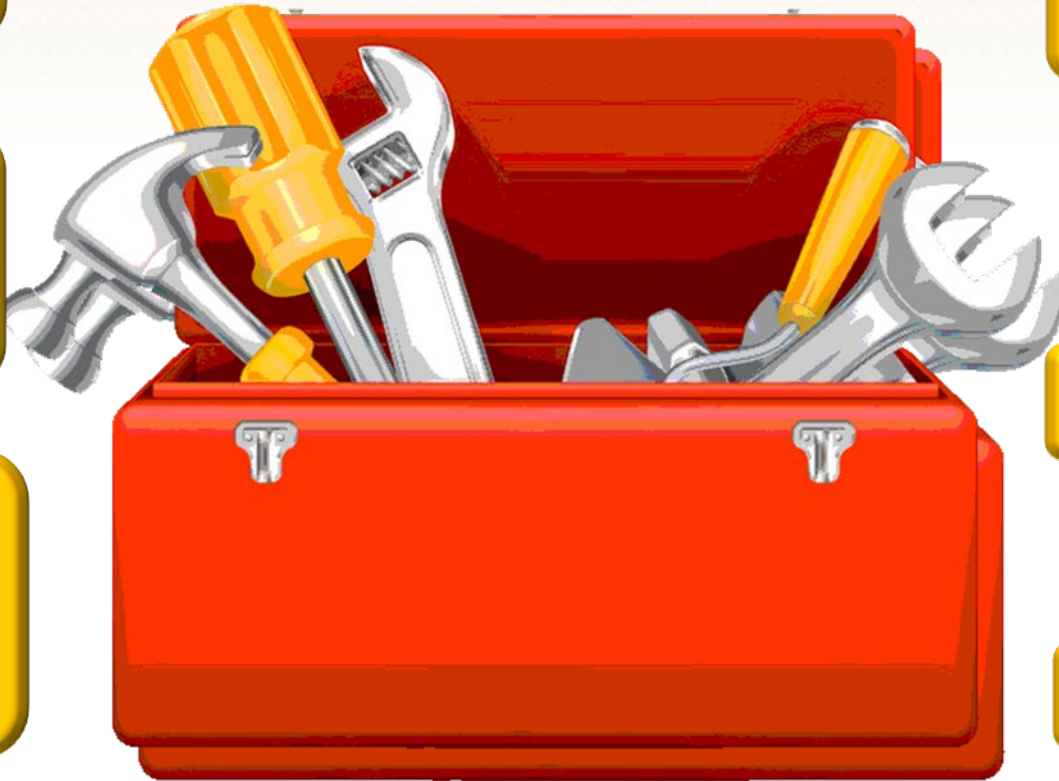
**#4** Develop a  
Plan of Action

**#5** Education

Physician

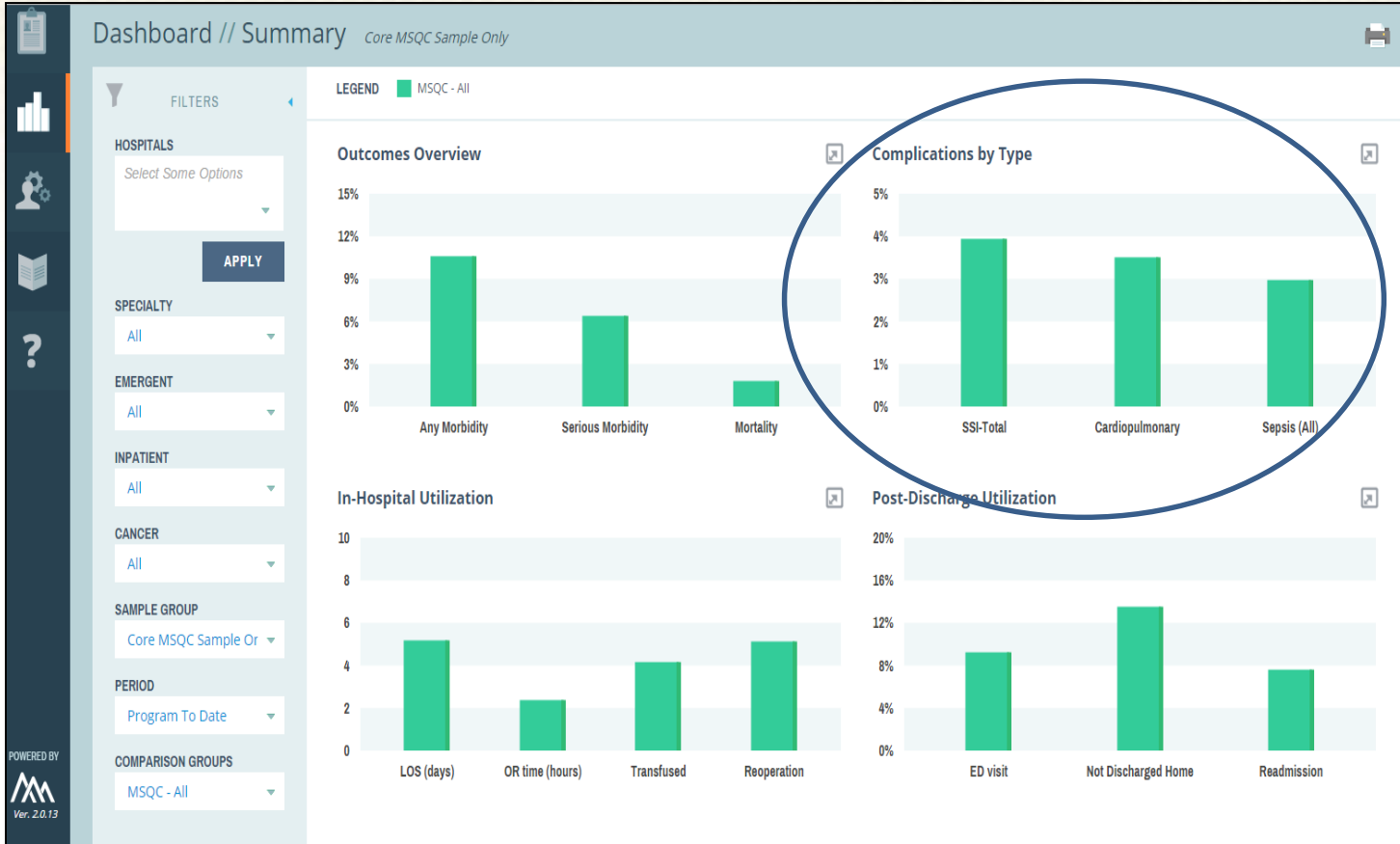
Nurse

Patient



# Data Drill Down

Once you log on, you will see the screen as displayed below.\*  
 Total SSI rates are seen in the upper right graph.



\* Individual hospital score has been removed for confidentiality reasons. Your actual view will have both site and Collaborative average displayed.

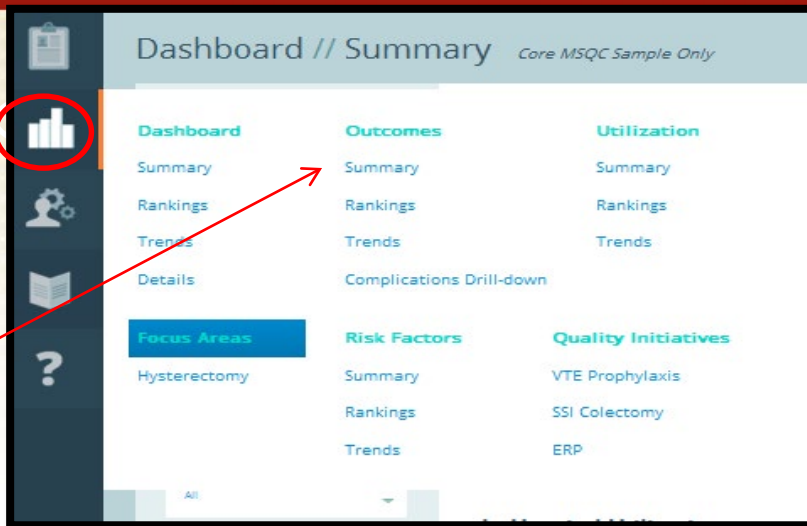


# Data Drill Down (cont.)

1. In order to get more detailed SSI information, click on the bar graph in the gray area on the left of the graphs.

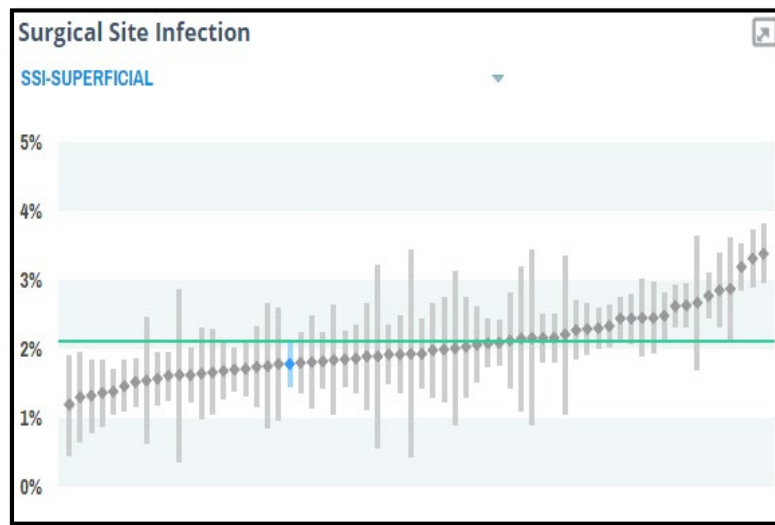
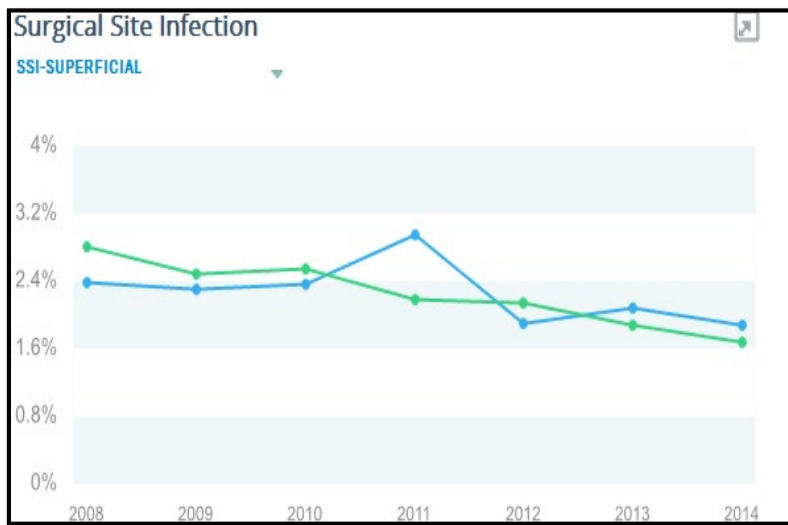
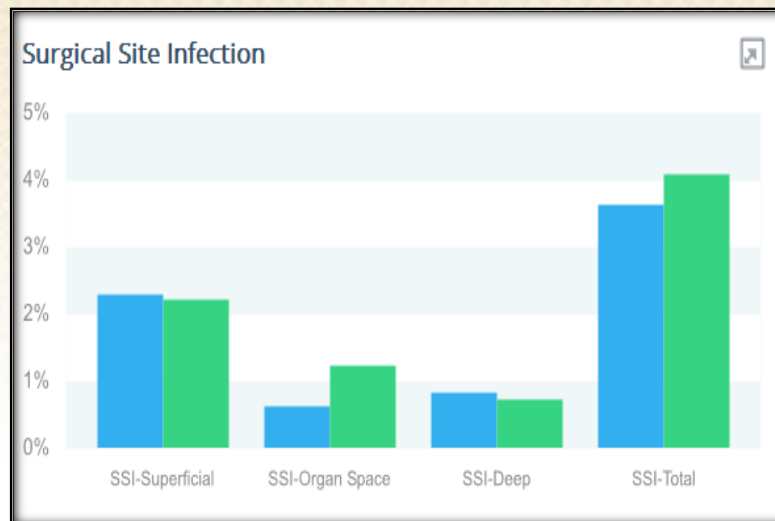
2. The next screen will appear with a menu of options. Click on Outcomes and choose Summary for more specific data regarding SSI: Total, Superficial, Deep, and Organ Space. Again, this graph will be located in the right upper quadrant of the page.

3. You may also choose to view this data by ranking or trend by going back to the gray bar graph on the side, and clicking on Outcomes and choosing any of the other options listed.

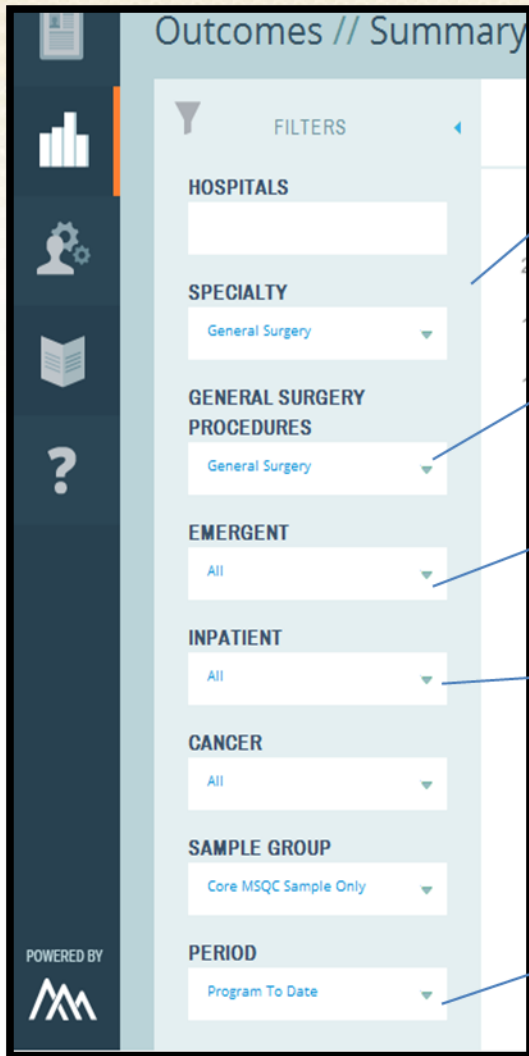


# Data Drill Down (cont.)

In addition to the Summary graph (right) you may choose to review and/or display data by Trends or Rankings for Total SSI, Superficial, Deep, or Organ Spaces SSI. Advanced drill down can be conducted using the export function and additional filters.



# Data Drill Down (cont.)



All  
General Surgery  
Hysterectomy  
Vascular

General Surgery  
Appendectomy  
Cholecystectomy  
Colectomy, etc.

All  
Emergent  
Non-emergent

All  
Inpatient  
Outpatient

Program to date  
Last 24 months  
Last 12 months  
3.0  
Custom  
2014 etc.

Further data drill down to get rates by procedure, case type, time period, can be accomplished by using the drop down buttons located on the left sidebar.

**The MSQC private website has video tutorials to assist you with navigating various Reporting Applications in more detail.**

# Data Drill Down: Case Reviews

MSQC Michigan Society of Quality Collaboration						Surgical Site Infection (SSI) Case Review					
Patient ID		Service		Surgeon		Date of Surgery					
Age	Gender = Male = Female	Source of Admission		Admit Date		Discharge Date					
Principal Diagnosis			Principal Procedure								
Findings											
Evidence for SSI (culture results with dates)				SSI Classification* = Superficial = Deep = Organ/Space		Date of Diagnosis					
Predisposing Factors											
BMI	Diabetes History = Yes = No	Smoking History = Yes = No	Chronic Hemodialysis = Yes = No	Nasal Culture = Yes = No = Not done							
Pre-operative Laboratory Values		ASA Classification		Concomitant Infection = Yes = No		On Scheduled Antibiotics Pre-operatively = Yes = No					
Cr	Surgical Priority* = Elective = Urgent = Emergent		Type of Infection:								
Alb	Surgical Approach = Laparoscopic = Laparoscopic converted to Open = Open = Robotic = Robotic converted to Open		Wound Classification* = Clean = Clean/Contaminated = Contaminated = Dirty		Duration of Surgery (surgery start time through surgery finish time) _____ minutes						
TB					In Room Time _____						
WBC					Out of Room Time _____						
Hgb											
Hct											
Plt											
INR											
Blood Glucose											
HbA1c											
Lactate/Lactic Acid											
Intraoperative Hypotension* = Yes = No		Blood Transfusion* = Yes = No		PCA = Yes = No		Prosthetic Materials = Yes = No					
Perioperative Preventive Measures											
Skin Antisepsis/Skin Prep (type)				Mupirocin = Yes = No							
Prophylactic Antibiotics Administered		SCIP-inf-1 Compliant* = Yes = No	SCIP-inf-2 Compliant* = Yes = No	Weight-based Dosing = Yes = No	Redosing (procedure > 2 hrs) = Yes = No = N/A						
Intraoperative Normothermia* = Yes = No		Intraoperative Normoglycemia* = Yes = No = N/A		Oral Antibiotics (for colon procedures) = Yes = No = N/A							
Event Determination											
= Not Preventable <sup>1</sup>				= Possibly Preventable <sup>2</sup>							
Reviewed by: _____ Date: _____						Event Determination by: _____ Date: _____ (Physician Reviewer)					
* See attachment for defining criteria											
Insert Your Hospital Confidentiality Statement											

Discussion Questions	Comments
= Is case clean or contaminated* = Is the organism cultured a skin contaminant or enteric? = Is the organism cultured drug resistant (example: CRE)? = Was CHG used for skin prep? = Were appropriate antibiotics administered (SCIP-inf-2 Compliant)* = Were antibiotics given timely (SCIP-inf-1 Compliant)? = Was appropriate antibiotic dose administered? = Was the patient redosed appropriately (if applicable)? = Was the patient's intra-operative glycaemic control satisfactory? = Was intra-operative normothermia maintained? = Were oral antibiotics administered (if applicable)? = Could blood transfusion have been avoided (if applicable)?	
Big Picture Questions	Comments
= Are our SSIs primarily due to skin contaminants or enteric organisms? = Do we have a firm policy to culture all SSIs? = Is the problem primarily in emergent or elective cases? = Do we have a policy to use CHG-alcohol as skin prep? = Does our institution have an evidence-based policy regarding intra-operative blood transfusion? = Do the SSIs seem localized to particular surgeon, or operating room? = Do we have a concerted approach to increase bundle compliance? = Do we need a policy of culturing nares pre-operatively (if high volume of MRSA cases)? = Are our high-risk patients enrolled in an Enhanced Recovery Program?	
Additional Comments	

**Data Definitions:**

<sup>1</sup> **Not Preventable:** SSI occurrence whereby the standard of care was met with ALL of the following:

1. Skin Disinfectant
2. SCIP-inf-1 Compliant\*
3. SCIP-inf-2 Compliant\*
4. Appropriate Weight-based dosing (if applicable)
5. Appropriate Redosing (if applicable)
6. Intra-operative Normothermia Maintained\*
7. Intra-operative Normoglycemia Maintained\*
8. Oral Antibiotics (if colon case)

<sup>2</sup> **Possibly Preventable:** At least one identified process failure with opportunity for improvement

\* See attachment for defining criteria

Insert Your Hospital Confidentiality Statement

# Perform Gap Analysis

## Current Practice

- Identify current practices related to SSI prevention such as patient education/prep; surgical scrub, glucose management, intraoperative practices, etc.

## Best Practice

- Identify modifiable risks associated with SSI and Best Practices related to SSI prevention.

## Changes in Practice

- Compare current practice with Best Practice, then identify and prioritize changes and strategies to improve SSI outcomes.

## Surgical Site Infection (SSI) Prevention Strategies

Component of SAFE HAI 2.0 Roadmap

Gap Analysis Questions	Yes	No	If answered question "No" – identify the Specific Action plan(s) including persons responsible and timeline to complete.
<b>Patient/family education</b>			
1a) Prior to procedure, the patient/family is educated on SSI prevention including identifying modifiable risk factors e.g., smoking, obesity, diabetes management, and preoperative skin care.	<input type="checkbox"/>	<input type="checkbox"/>	
1b) The patient has been educated about symptoms of a surgical site infection, what the health care personnel (HCP) and prescribers are doing to prevent an infection, and what the patient can do to help prevent an infection.	<input type="checkbox"/>	<input type="checkbox"/>	
1c) Prior to discharge, the patient/family is educated using teach back on post-op surgical care e.g., when to resume showering, swimming and other activities, hand hygiene, wound care and signs and symptoms of infection to report to provider.	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Cleaning surgical equipment &amp; environment</b>			
The facility manages use of immediate use steam sterilization.			
2a) Limit immediate use steam sterilization (IUSS) to instances when there are not other viable options (i.e., do not use for convenience, preference or when adequate inventory could eliminate the need for it).	<input type="checkbox"/>	<input type="checkbox"/>	
2b) Audit IUSS practices.	<input type="checkbox"/>	<input type="checkbox"/>	
2c) Review IUSS audit data on a quarterly basis and consider improvement activities.	<input type="checkbox"/>	<input type="checkbox"/>	
2d) Follow appropriate preparation methods for IUSS.	<input type="checkbox"/>	<input type="checkbox"/>	
Appropriate cleaning and disinfection of the surgical environment.			
The facility has a process in place to:			
3a) Follow AAMI guidelines, Spaulding scale definitions and other nationally recognized guidelines, e.g., The Joint Commission, AORN, HICPAC in determining appropriate cleaning and disinfection practices.	<input type="checkbox"/>	<input type="checkbox"/>	
3b) Assign responsibility for cleaning and disinfecting the surgical environment.	<input type="checkbox"/>	<input type="checkbox"/>	
3c) Routinely evaluate and audit the cleaning and disinfection process.	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Undergoing surgery pre-procedure</b>			
The facility has clearly communicated to providers that they are expected to address the following:			
4a) Pre-op planning which includes assessment of modifiable risk factors and offering education and services for risk reduction (e.g., smoking cessation, weight loss, glucose management).	<input type="checkbox"/>	<input type="checkbox"/>	
4b) The patient's pre-op physical is in the patient medical record and reviewed by pre-op team prior to surgery.	<input type="checkbox"/>	<input type="checkbox"/>	
4c) The pre-op physical includes evaluation for existing infections including, but not limited to; skin, urinary tract, sinus and periodontal.	<input type="checkbox"/>	<input type="checkbox"/>	
4d) If identified, infections are treated before elective surgery and surgery is postponed until resolution of infection (excludes emergency surgery).	<input type="checkbox"/>	<input type="checkbox"/>	

The complete form is available in the resource section of this toolkit.



# Gap Analysis Instruction Tool

**PURPOSE:** Provides project teams with a format to do the following:

- Compare the best practices with the processes currently in place in your organization.
- Determine the “gaps” between your organization’s practices and the identified best practices.
- Select the best practices you will implement in your organization.

**TARGET AUDIENCE:** The project lead will be the primary individual to prepare written gap analysis, but the entire improvement project team should be engaged in performing the gap analysis.

## HOW DOES THIS HELP ?

Project team will have:

- An understanding of the differences between current practices and best practice.
- An assessment of the barriers that need to be addressed before successful implementation of best practices.

Column 1	Column 2	Column 3	Column 4	Column 5
List the expected evidence-based best practice.	List all of the steps associated with the best practice process.	Document your organization’s best practices & describe how they differ from each practice element (include policies, protocols, guidelines, & staffing).	Identify barriers that may hinder successful implementation of each best practice strategy (systems, procedures, policies, people, equipment).	Indicate whether your organization will implement best practice strategy. If not, then explain why?

# Gap Analysis Tool

AHRQ Quality Indicators Toolkit

## Gap Analysis Tool

**Project:**

**Best Practice:**

**Individual Completing This Form:**

Column 1

Column 2

Column 3

Column 4

Column 5

Best Practice	Best Practice Strategies	How Your Practices Differ From Best Practice	Barriers to Best Practice Implementation	Will Implement Best Practice (Yes/No; why not?)

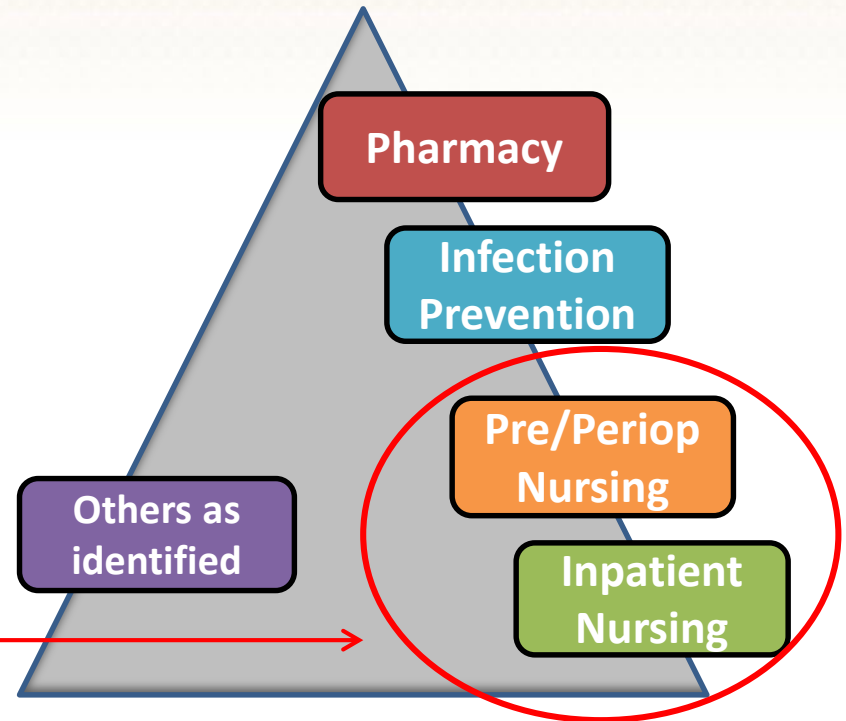


# SSI Key Team Members

## Core Membership (Leadership)



## Integral Members (Managers & Staff)



# Physician Engagement

## Surgeon Champion/Project Lead

Respected as a physician

Excellent Communication skills

Strong social & leadership skills

Committed to the project  
(shows courage)

## Make physicians partners not customers

Identify what is important to them:

- ❖ Improved patient outcomes (evidence based: data-driven)
- ❖ Reduced difficulties & wasted time

Understand the existing culture (beliefs, norms, values)

Understand legal barriers & opportunities

## Use “Engaging” Improvement Methods

Standardize what is  
“standardizable” - no more

Generate light, not heat with  
data (use data sensibly)

Make the right thing easy to do



# Forming a SSI Team

## State the Problem/ Purpose

- \* Provide data to support the problem or purpose.

- \* Why is a team necessary?

## Define the Scope of the Project

- \* Define inclusions (a specific procedure i.e. colectomy, or ALL surgical cases)
- \* Set time frame

## Define the Goal Statement

Must be:

- \* Specific
- \* Measurable
- \* Realistic

## Develop the Action Plan

- \* Establish priorities- what are you going to do and how are you going to do it?

- \* Identify the steps in the process

- \* Identify process owners /key team members

- \* Develop Timeline

## Assign Team Roles

- \* Champion(s)
- \* Facilitator
- \* Recorder
- \* Timekeeper

***Refer to Steering Committee Document for more details***

# Now you're ready for the Next Steps

