DESCRIPTIVE ANALYSIS OF SURGICAL SITE INFECTIONS FOLLOWING CAESAREAN SECTIONS IN A ONE-YEAR PERIOD AT VILA CENTRAL HOSPITAL

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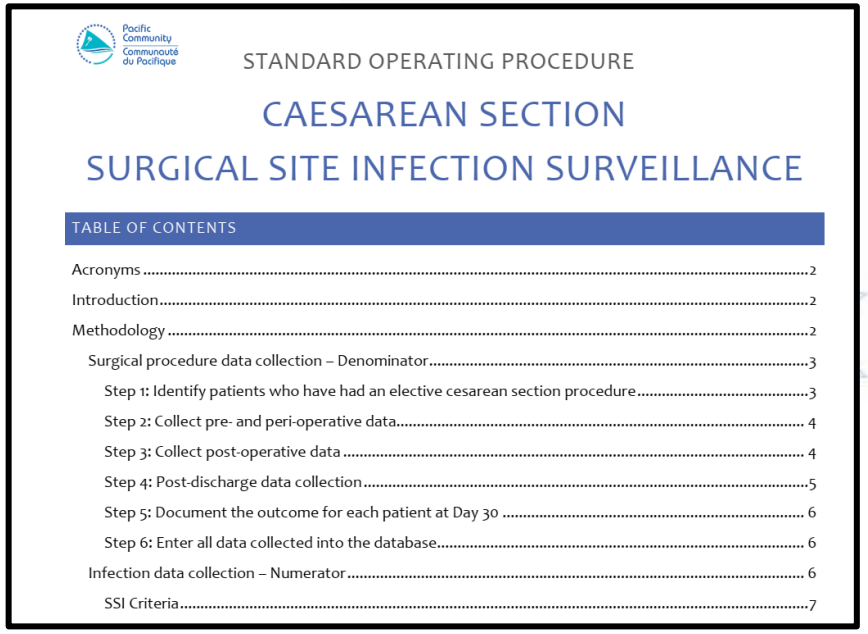
Vila Central Hospital

- Vila central hospital (VCH) is situated in Port Vila, Efate, the central part of Vanuatu and provides health services to a population of 78,721
- 300 plus staff
- 150 beds
- Five major in-patient wards and 10 specialist clinics.
- Main referral hospital in the country

Background

- The Surgical Site infection (SSI) surveillance program was developed and introduced to VCH by the **Pacific Community (SPC)**

- SSI surveillance is part of VCH Health-care Associated Infection (HAI) Surveillance System.



Pacific Community / Communauté du Pacifique

STANDARD OPERATING PROCEDURE

CAESAREAN SECTION

SURGICAL SITE INFECTION SURVEILLANCE

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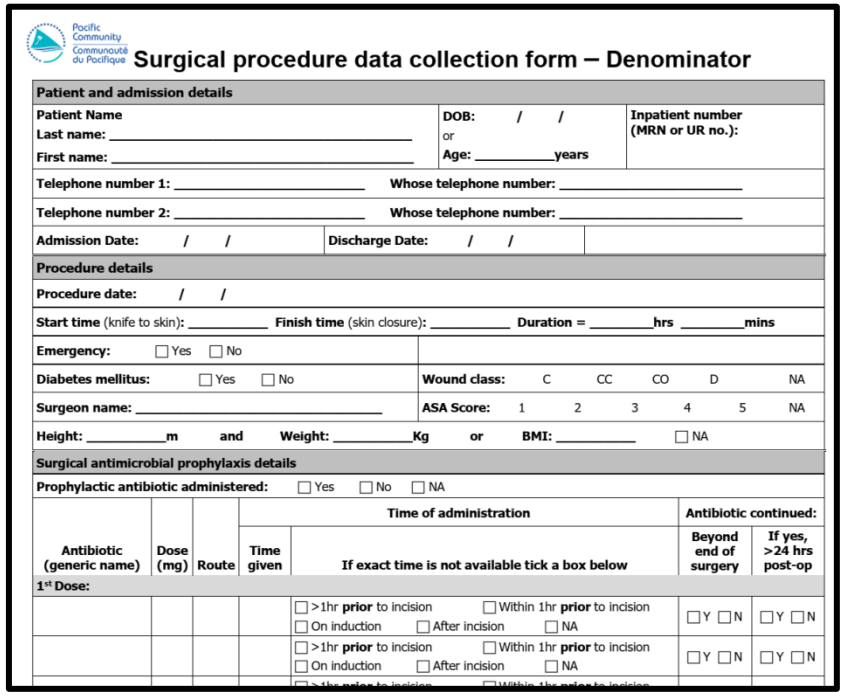


Pacific Community / Communauté du Pacifique

Surgical procedure data collection form – Denominator

Patient and admission details

Patient Name
Last name: _____
First name: _____

DOB: / /
or
Age: _____ **years**

Inpatient number (MRN or UR no.):

Telephone number 1: _____ **Whose telephone number:** _____

Telephone number 2: _____ **Whose telephone number:** _____

Admission Date: / / **Discharge Date:** / /

Procedure details

Procedure date: / /

Start time (knife to skin): _____ **Finish time** (skin closure): _____ **Duration =** _____**hrs** _____**mins**

Emergency: ☐ Yes ☐ No

Diabetes mellitus: ☐ Yes ☐ No

Wound class: C CC CO D NA

Surgeon name: _____

ASA Score: 1 2 3 4 5 NA

Height: _____**m** **and** **Weight:** _____**Kg** **or** **BMI:** _____ ☐ NA

Surgical antimicrobial prophylaxis details

Prophylactic antibiotic administered: ☐ Yes ☐ No ☐ NA

Antibiotic (generic name)	Dose (mg)	Route	Time of administration: Time given	Time of administration: If exact time is not available tick a box below	Antibiotic continued: Beyond end of surgery	Antibiotic continued: If yes, >24 hrs post-op
1st Dose:						
				☐ >1hr **prior** to incision ☐ Within 1hr **prior** to incision ☐ On induction ☐ After incision ☐ NA	☐ Y ☐ N	☐ Y ☐ N
				☐ >1hr **prior** to incision ☐ Within 1hr **prior** to incision ☐ On induction ☐ After incision ☐ NA	☐ Y ☐ N	☐ Y ☐ N

Background

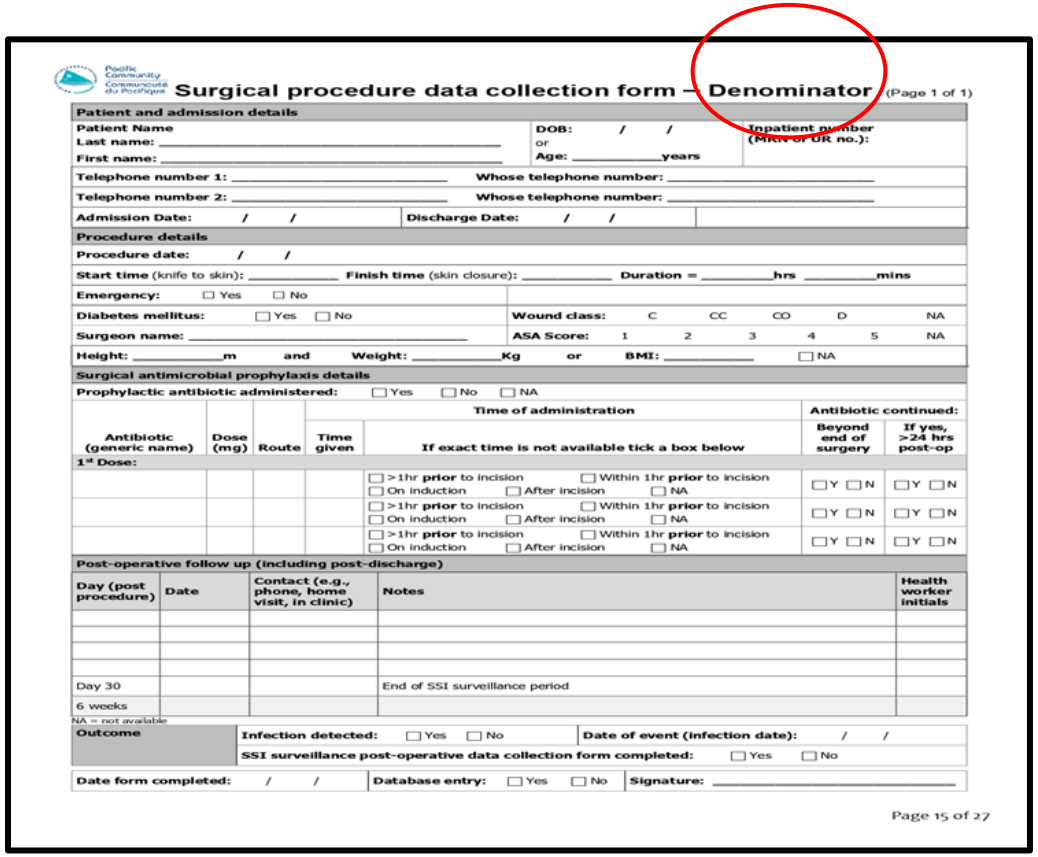
- SSI's following caesarean sections are significant concern in healthcare.
- SSIs are common in low- and middle-income countries with an estimated one-in-ten people undergoing surgery developing an SSI resulting in morbidity, extended hospital stays, increased health-care costs, or mortality. (WHO)
- WHO recommends surveillance of HAI's and timely reporting of results with feedback of appropriate data to relevant staff of the hospital.
- This is part of the core components of an effective IPC program to reduce SSI risks within health care facilities.

Introduction

- This study aims to describe SSIs following caesarean section among patients at VCH to enhance our understanding of SSI incidence and associated risk factors, that will help give us fair picture, allowing for more targeted prevention efforts and improved patient outcomes.

Methods

- A prospective descriptive method was used, involving analysis of patients records at VCH from August 2022 to August 2023-



Surgical procedure data collection form – Denominator (Page 1 of 1)

Patient and admission details

Patient Name
Last name: _____
First name: _____

DOB: / /
or
Age: _____years

Inpatient number (Mich or UR no.):

Telephone number 1: _____ Whose telephone number: _____
Telephone number 2: _____ Whose telephone number: _____
Admission Date: / / Discharge Date: / /

Procedure details

Procedure date: / /
Start time (knife to skin): _____ Finish time (skin closure): _____ Duration = _____hrs _____mins
Emergency: ☐ Yes ☐ No
Diabetes mellitus: ☐ Yes ☐ No
Wound class: C CC CO D NA
Surgeon name: _____
ASA Score: 1 2 3 4 5 NA
Height: _____m and Weight: _____Kg or BMI: _____ ☐ NA

Surgical antimicrobial prophylaxis details

Prophylactic antibiotic administered: ☐ Yes ☐ No ☐ NA

Antibiotic (generic name)	Dose (mg)	Route	Time given	Time of administration: If exact time is not available tick a box below	Antibiotic continued: Beyond end of surgery	Antibiotic continued: If yes, >24 hrs post-op
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				☐ >1hr prior to incision ☐ Within 1hr prior to incision ☐ On induction ☐ After incision ☐ NA	☐Y ☐N	☐Y ☐N
				☐ >1hr prior to incision ☐ Within 1hr prior to incision ☐ On induction ☐ After incision ☐ NA	☐Y ☐N	☐Y ☐N

Post-operative follow up (including post-discharge)

Day (post procedure)	Date	Contact (e.g., phone, home visit, in clinic)	Notes	Health worker initials
Day 30			End of SSI surveillance period	
6 weeks				

NA – not available

Outcome
Infection detected: ☐ Yes ☐ No Date of event (infection date): / /
SSI surveillance post-operative data collection form completed: ☐ Yes ☐ No

Date form completed: / / Database entry: ☐ Yes ☐ No Signature: _____

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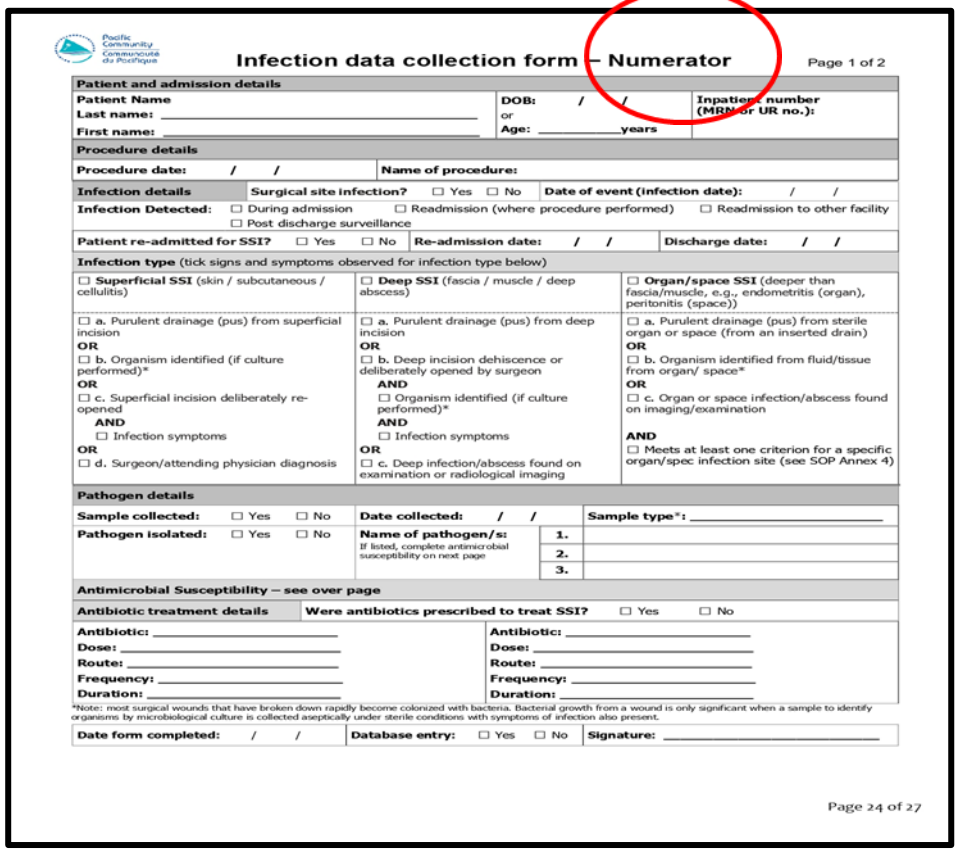

Infection data collection form – Numerator Page 1 of 2

Patient and admission details

Patient Name
Last name: _____
First name: _____

DOB: / /
or
Age: _____years

Inpatient number (MRN or UR no.):

Procedure details

Procedure date: / / Name of procedure:

Infection details

Surgical site infection? ☐ Yes ☐ No Date of event (infection date): / /
Infection Detected: ☐ During admission ☐ Readmission (where procedure performed) ☐ Readmission to other facility ☐ Post discharge surveillance
Patient re-admitted for SSI? ☐ Yes ☐ No Re-admission date: / / Discharge date: / /

Infection type (tick signs and symptoms observed for infection type below)

☐ **Superficial SSI** (skin / subcutaneous / cellulitis)	☐ **Deep SSI** (fascia / muscle / deep abscess)	☐ **Organ/space SSI** (deeper than fascia/muscle, e.g., endometritis (organ), peritonitis (space))
☐ a. Purulent drainage (pus) from superficial incision **OR** ☐ b. Organism identified (if culture performed)* **OR** ☐ c. Superficial incision deliberately re-opened **AND** ☐ Infection symptoms **OR** ☐ d. Surgeon/attending physician diagnosis	☐ a. Purulent drainage (pus) from deep incision **OR** ☐ b. Deep incision dehiscence or deliberately opened by surgeon **AND** ☐ Organism identified (if culture performed)* **AND** ☐ Infection symptoms **OR** ☐ c. Deep infection/abscess found on examination or radiological imaging	☐ a. Purulent drainage (pus) from sterile organ or space (from an inserted drain) **OR** ☐ b. Organism identified from fluid/tissue from organ/ space* **OR** ☐ c. Organ or space infection/abscess found on imaging/examination **AND** ☐ Meets at least one criterion for a specific organ/spec infection site (see SOP Annex 4)

Pathogen details

Sample collected: ☐ Yes ☐ No Date collected: / / Sample type*: _____
Pathogen isolated: ☐ Yes ☐ No Name of pathogen/s: (If listed, complete antimicrobial susceptibility on next page) 1. 2. 3.

Antimicrobial Susceptibility – see over page

Antibiotic treatment details

Were antibiotics prescribed to treat SSI? ☐ Yes ☐ No

Antibiotic: _____ Dose: _____ Route: _____ Frequency: _____ Duration: _____

Antibiotic: _____ Dose: _____ Route: _____ Frequency: _____ Duration: _____

*Note: most surgical wounds that have broken down rapidly become colonized with bacteria. Bacterial growth from a wound is only significant when a sample to identify organisms by microbiological culture is collected aseptically under sterile conditions with symptoms of infection also present.

Date form completed: / / Database entry: ☐ Yes ☐ No Signature: _____

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Population Study in a Year

VILA CENTRAL HOSPITAL
INFECTION CONTROL & PREVENTION PROGRAM

Caesarean Section Operations

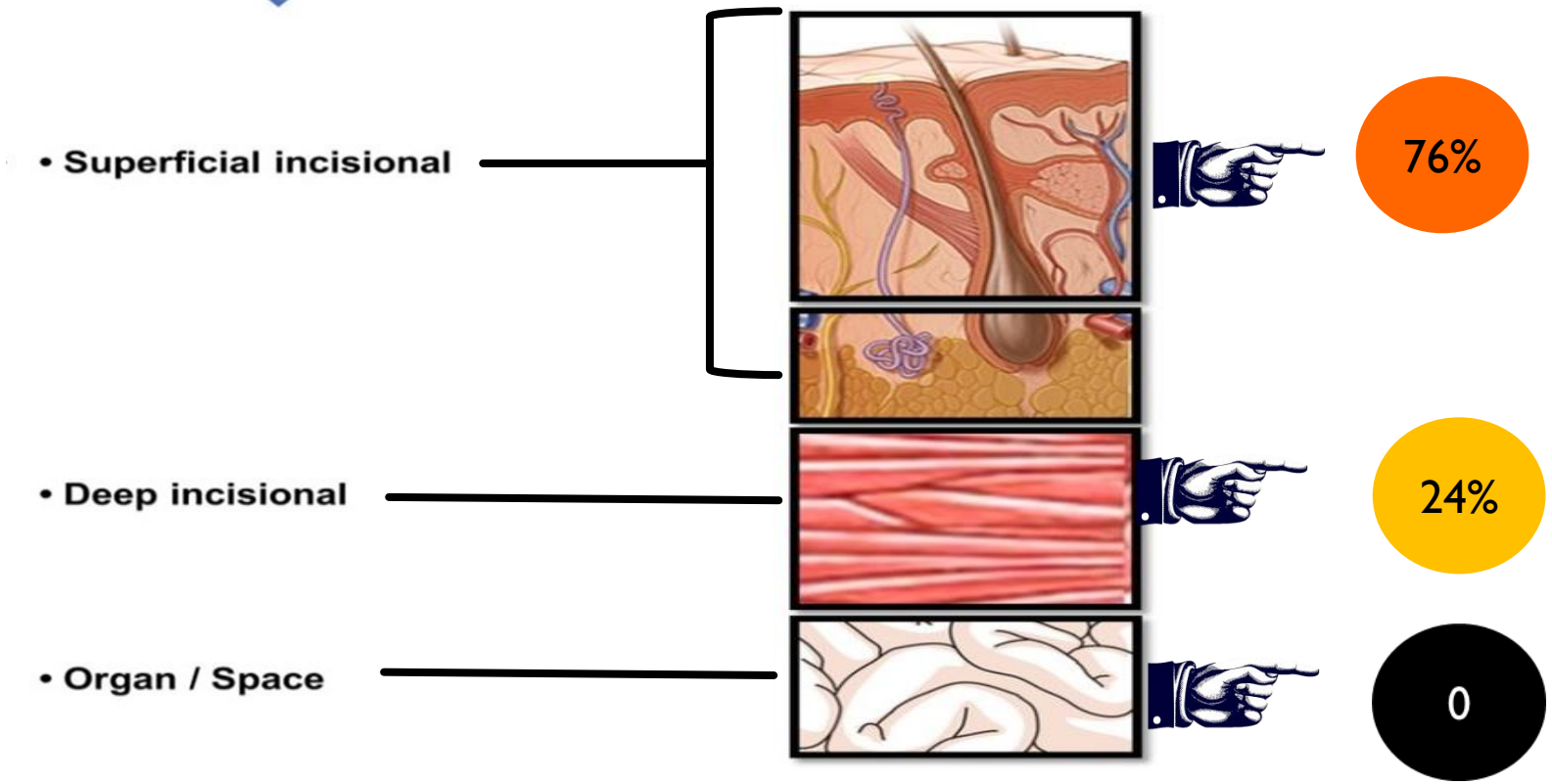
269 C/Section Cases
- 41 Elective Cases
- 228 Emergency Cases

31 SSI Cases

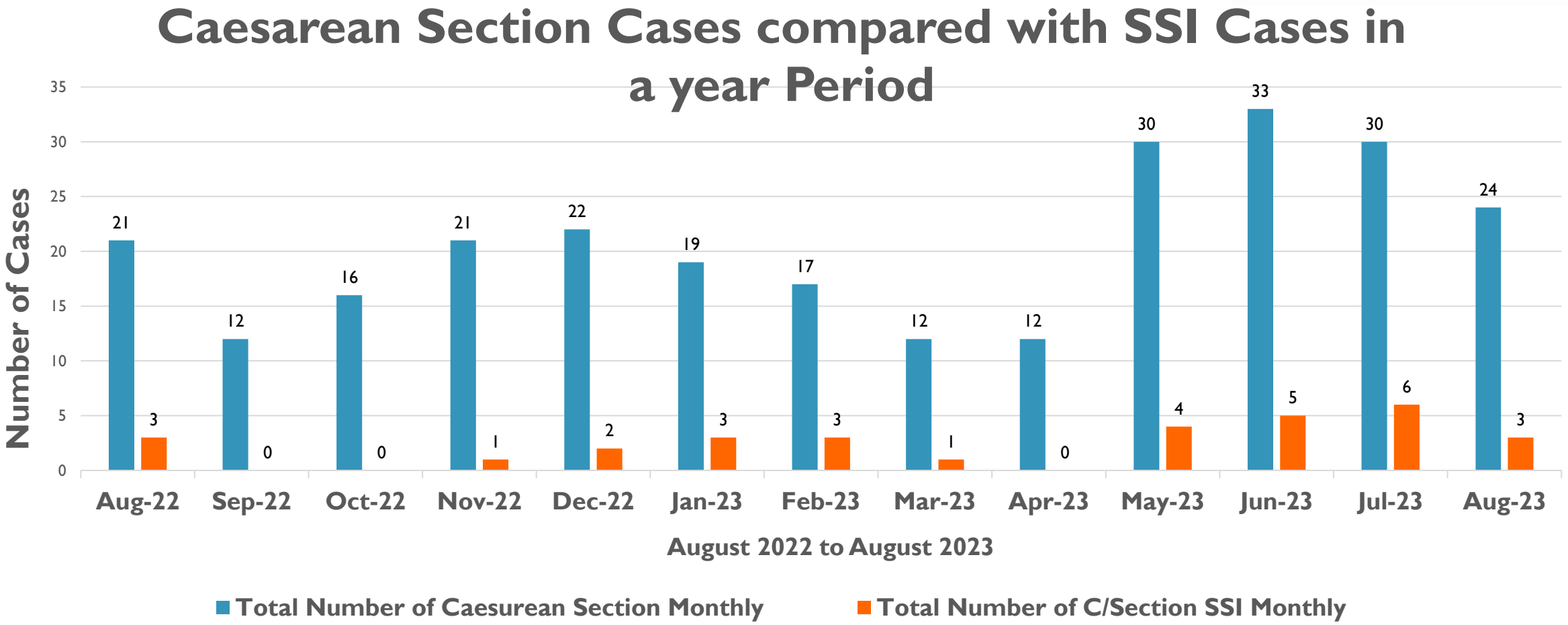
RESULTS : Wound classified In 3 Categories

VILA CENTRAL HOSPITAL
INFECTION CONTROL & PREVENTION PROGRAM

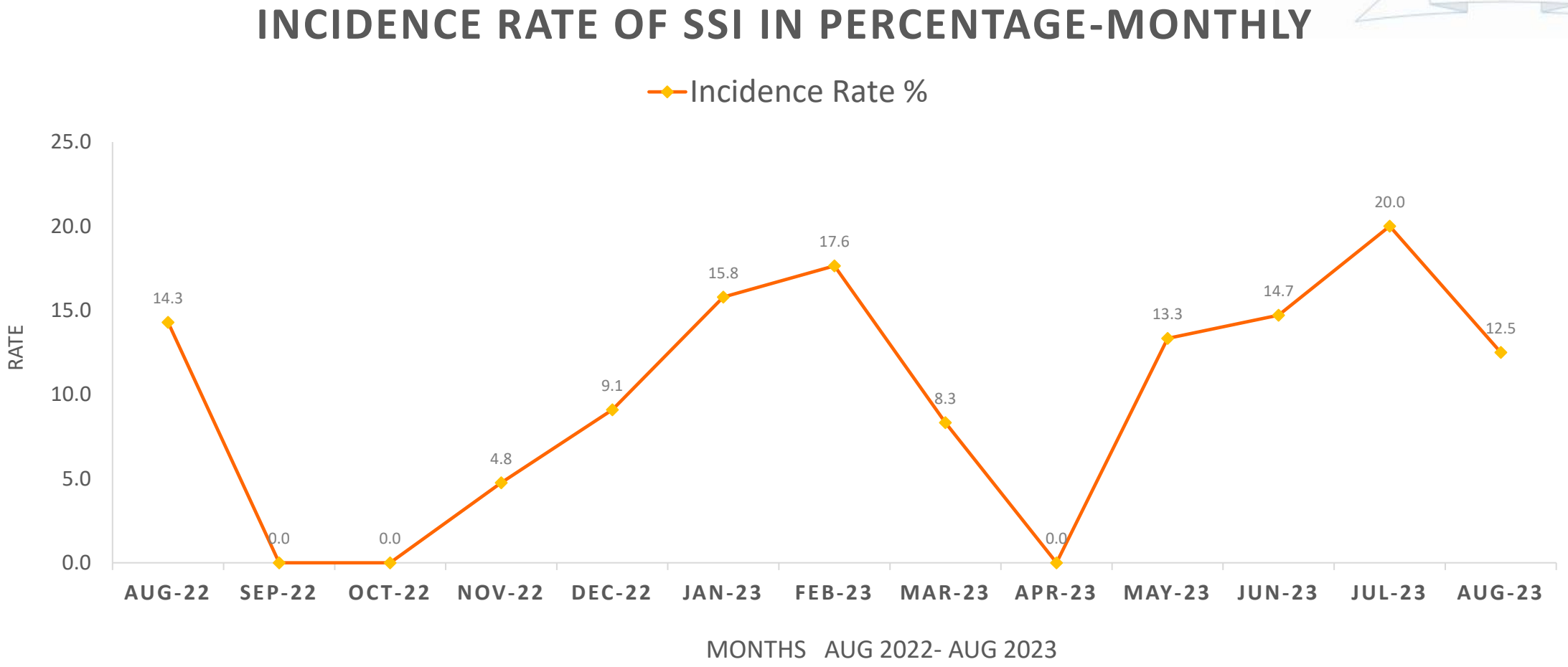
Surgical Site Infections



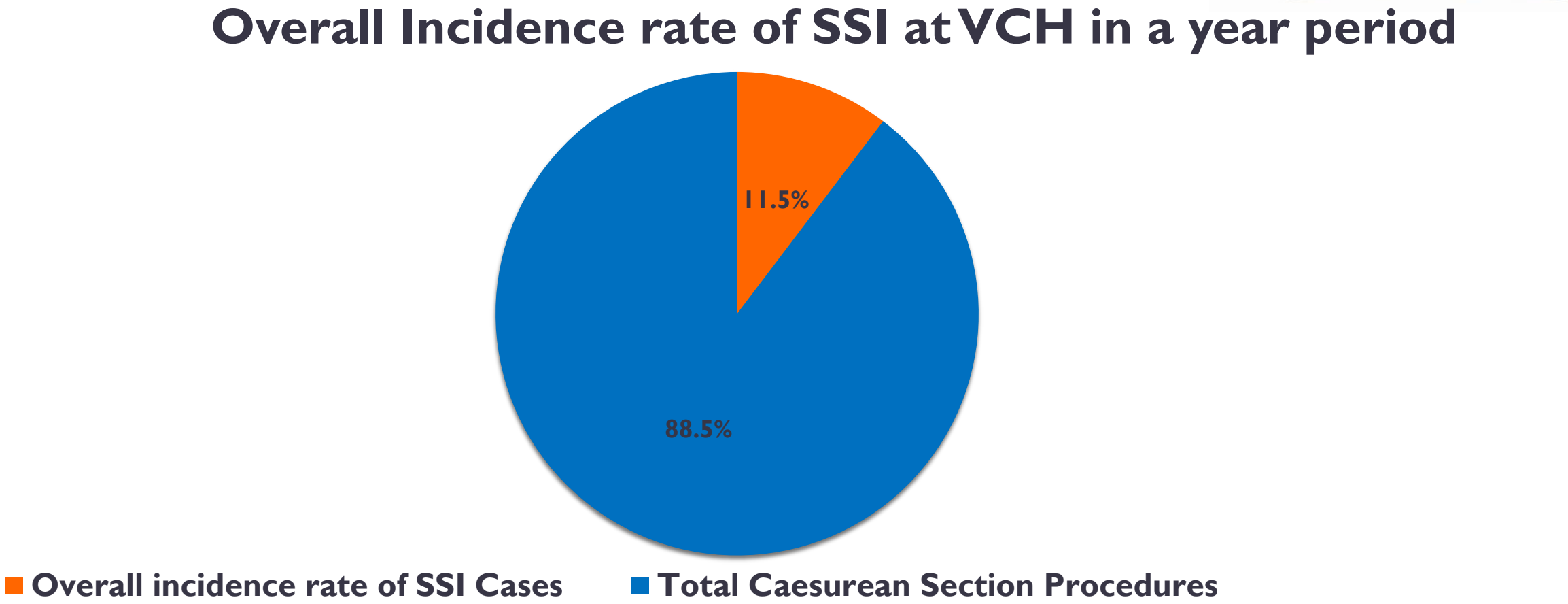
Results


Caesarean Section Cases compared with SSI Cases in a year Period
Number of Cases
35
30
25
20
15
10
5
0
21
3
12
0
16
0
21
1
22
2
19
3
17
3
12
1
12
0
30
4
33
5
30
6
24
3
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
August 2022 to August 2023
Total Number of Caesurean Section Monthly
Total Number of C/Section SSI Monthly

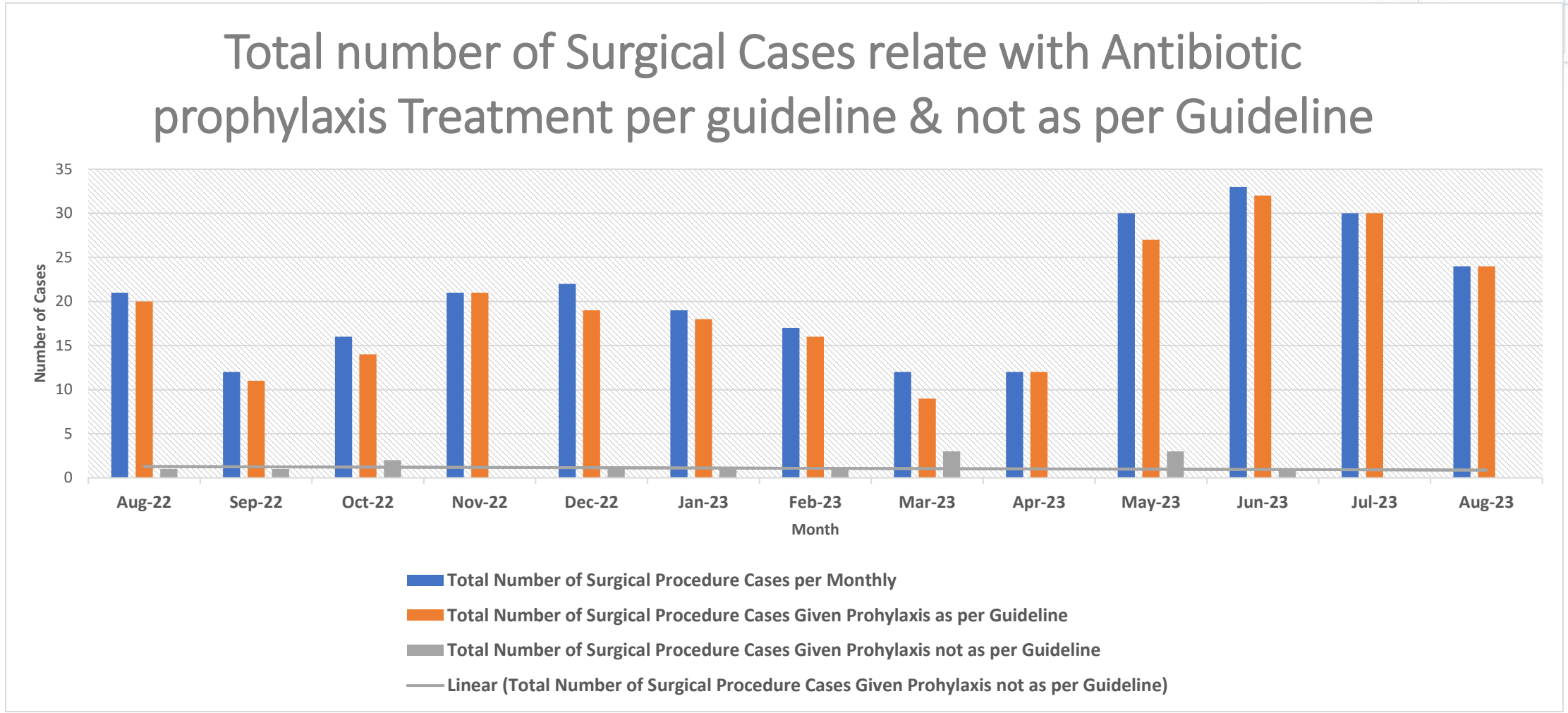
Results: from Aug 2022-Aug 2023



Results:


Overall Incidence rate of SSI at VCH in a year period
11.5%
88.5%
Overall incidence rate of SSI Cases
Total Caesurean Section Procedures

Results: TREATMENT PROPHYLAXIS

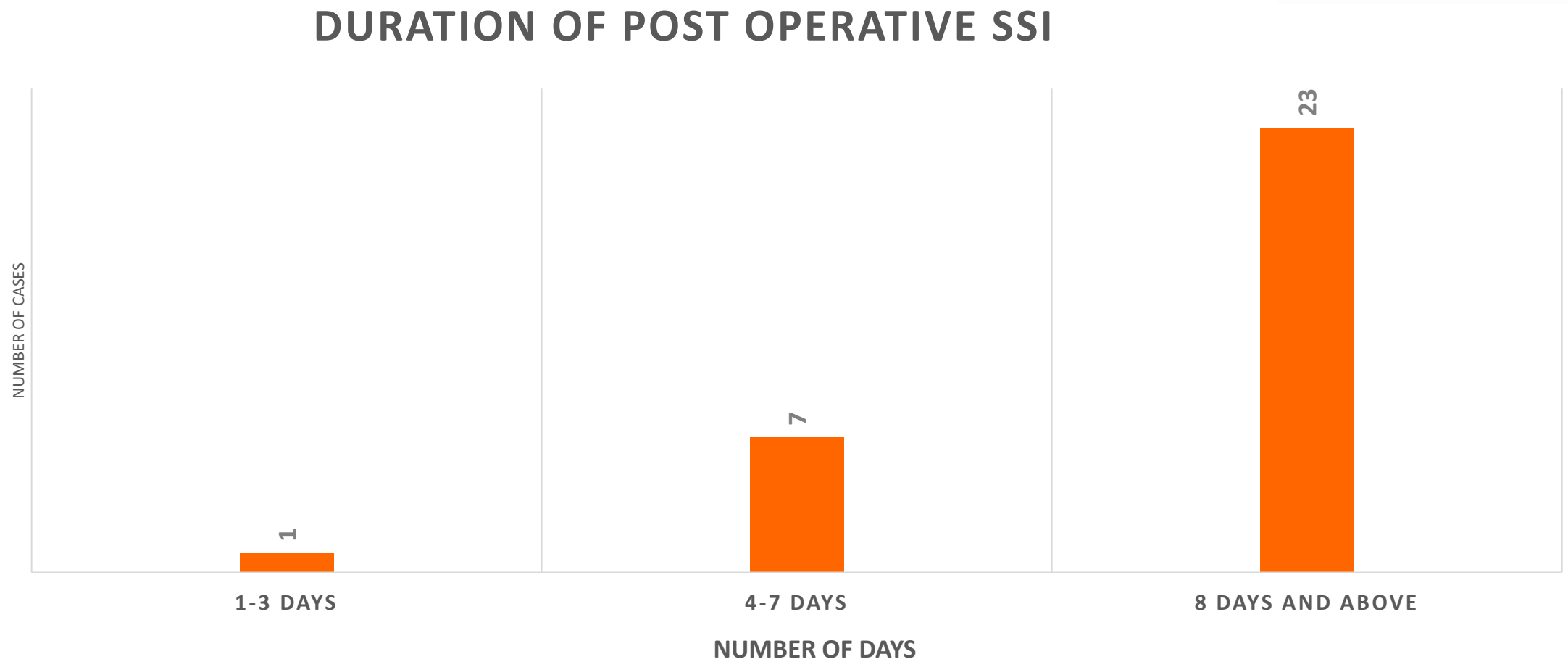


Antimicrobial Stewardship (AMS)

- **Group 1 -No Antibiotic Prophylaxis per guideline**
- **Group 2 –Antibiotic prophylaxis per Guideline**
- **Risk Ratio= Group1:4/14= 0.28**
- **Group 2: 27/255= 0.1**
- **=0.28/0.1 = 2.8**

GROUP	SSI	NO SSI	Total
Group 1	4	10	14
Group 2	27	228	255
Total	31	238	269

RESULTS:


DURATION OF POST OPERATIVE SSI
NUMBER OF CASES
1
7
23
1-3 DAYS
4-7 DAYS
8 DAYS AND ABOVE
NUMBER OF DAYS

Discussion

Incidence Rate

- In every 100 caesarean cases there are 11.5 cases of SSI in VCH

Antibiotic Prophylaxis

- No Antibiotic prophylaxis group compared to the Antibiotic Prophylaxis group risk ratio is 2.8 which means risk of SSI is 2 to 3 times high to those who are Non antibiotic prophylaxis.

Timing of SSI from the date of surgical Procedure to the date of infections. Shows most infections occurs after mother discharge from the hospital.

Challenges/ Way forward to Strengthen SSI Surveillance at VCH

CHALLENGES

- Filling up the patient's procedure details on time
- Missing information in patient's clinical notes
- Lack of proper SSI registrations
- Lack of proper consultation with IPC and Doctors to verify SSI wounds and indifferent category (C-Sections)
- Timely collection of swab sample of any wound breakdown.
- Consistent follow up within 30 days of post surveillance SSI's

WAY FORWARD

Way Forward to improve or strengthening

- Complete all procedure details in the Denominator form including Antibiotics given and time administered during or after operation.
- Complete all personal details in the clinical notes
- SSI Registration book was allocated for C/Section procedures
- Strengthen communication links between IPC officers and Doctors regarding confirm SSI cases
- Swab sample for SSI cases to be collected on first date of detections
- Provide phone and refill cards to do follow up cases.
- Create SSI group Page, for SSI's
- Create a system in place for Suspected SSI's for review by Doctor

Recommendations / implications

- Maintain Aseptic Techniques – pre-operations and post operations.
- Give prophylaxis treatment as per guideline to all Caesarean Mothers
- Provide education to Post-Op Mothers on Proper Hygiene Care. Before discharge from Hospital.
- Expand SSI Surveillance to other clean Surgical Operation Procedures
- Refresher Training on SSI Surveillance
- Capacity building on how to Manage data
- Storage of Hospital data and reliable internet Services

Acknowledgements

- Vanuatu Ministry of Health
- Pacific Community, IPC Advisor (Margaret Leong)
- Vila Central Hospital - Administration- Hospital IPC team
- Obstetric & Gynecology and Operating Theatre Team
- Burnet Institute- for their technical supports

Reference

- SPC, SSI SOP and Guidelines
- WHO Report; 2011
- IPC Vanuatu Policy and Guidelines
- Obstetric c/section records
- IPC data base & records