

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

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INTRODUCTION/BACKGROUND

- Surgical site infections (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-SSI Guideline, SPC SOP)
- WHO recommends surveillance of Hospital Acquired infections (HAI) and timely reporting of results with feedback of appropriate data to Surgeons and nursing Staff
- This is part of the core components of an effective infection prevention and control program to reduce SSI risks within health care facilities.



AIM

- This study aims to describe SSIs following caesarean section among patients at Vila Central Hospital (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 retrospective descriptive method was used, involving analysis of patients records at VCH from August 2022 to August 2023-

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Surgical procedure data collection form – Denominator

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Patient and admission details

Patient Name: Last name: / / First name: / / DOB: / / / 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

Surgeon name: / / / Wound class: C CC CD D NA

ASA Score: 1 2 3 4 5 NA

Height: / m and Weight: / Kg or BMI: /

Surgical antimicrobial prophylaxis details

Prophylactic antibiotic administered: Yes No NA

Antibiotic (generic name)	Dose (mg)	Route	Time given	Time of administration	Antibiotic continued:
				If exact time is not available tick a box below	Beyond end of surgery
1 st Dose:				<input type="checkbox"/> >1hr prior to incision <input type="checkbox"/> On induction <input type="checkbox"/> After incision <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Y <input type="checkbox"/> N
				<input type="checkbox"/> >1hr prior to incision <input type="checkbox"/> On induction <input type="checkbox"/> After incision <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Y <input type="checkbox"/> N
				<input type="checkbox"/> >1hr prior to incision <input type="checkbox"/> On induction <input type="checkbox"/> After incision <input type="checkbox"/> NA	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Y <input type="checkbox"/> 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

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Patient and admission details

Patient Name: Last name: / / First name: / / DOB: / / / 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) Re-admission 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))
<input type="checkbox"/> a. Purulent drainage (pus) from superficial incision OR <input type="checkbox"/> b. Organism identified (if culture performed)* OR <input type="checkbox"/> c. Superficial incision deliberately re-opened AND <input type="checkbox"/> Infection symptoms OR <input type="checkbox"/> d. Surgeon/attending physician diagnosis	<input type="checkbox"/> a. Purulent drainage (pus) from deep incision OR <input type="checkbox"/> b. Deep incision dehiscence or deliberately opened by surgeon AND <input type="checkbox"/> Organism identified (if culture performed)* AND <input type="checkbox"/> Infection symptoms OR <input type="checkbox"/> c. Deep infection/abscess found on examination or radiological imaging	<input type="checkbox"/> a. Purulent drainage (pus) from sterile organ or space (from an inserted drain) OR <input type="checkbox"/> b. Organism identified from fluid/tissue from organ/ space* OR <input type="checkbox"/> c. Organ or space infection/abscess found on imaging/examination AND <input type="checkbox"/> 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: / / /

Antimicrobial Susceptibility – see over page

Antibiotic treatment details: Were antibiotics prescribed to treat SSI? Yes No

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: / / /



POPULATION STUDY IN A YEAR

Caesarean Section Operations

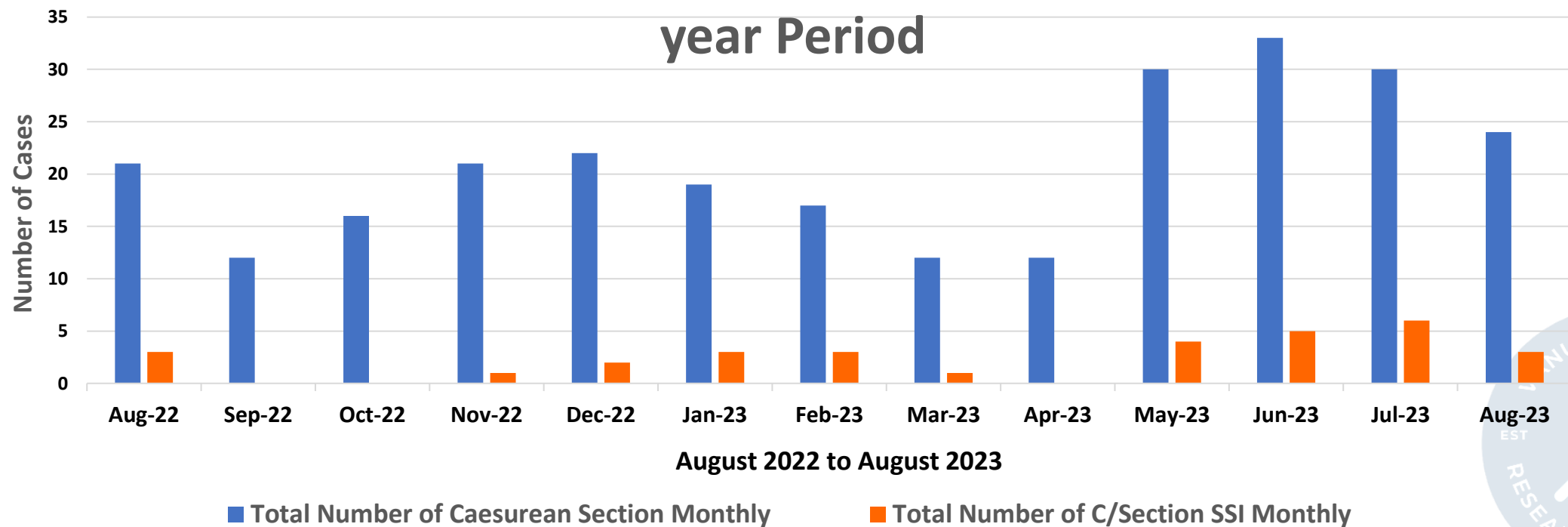


269 C/Section Cases
- 41 Elective Cases
- 228 Emergency Cases

31 SSI Cases

RESULTS

Caesarean Section Cases compared with SSI Cases in a year Period

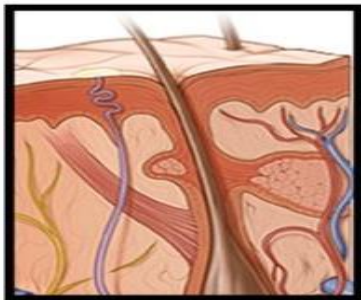


RESULTS : WOUND CLASSIFIED IN 3 CATEGORIES

Surgical Site Infections



• Superficial incisional



76%

• Deep incisional



24%

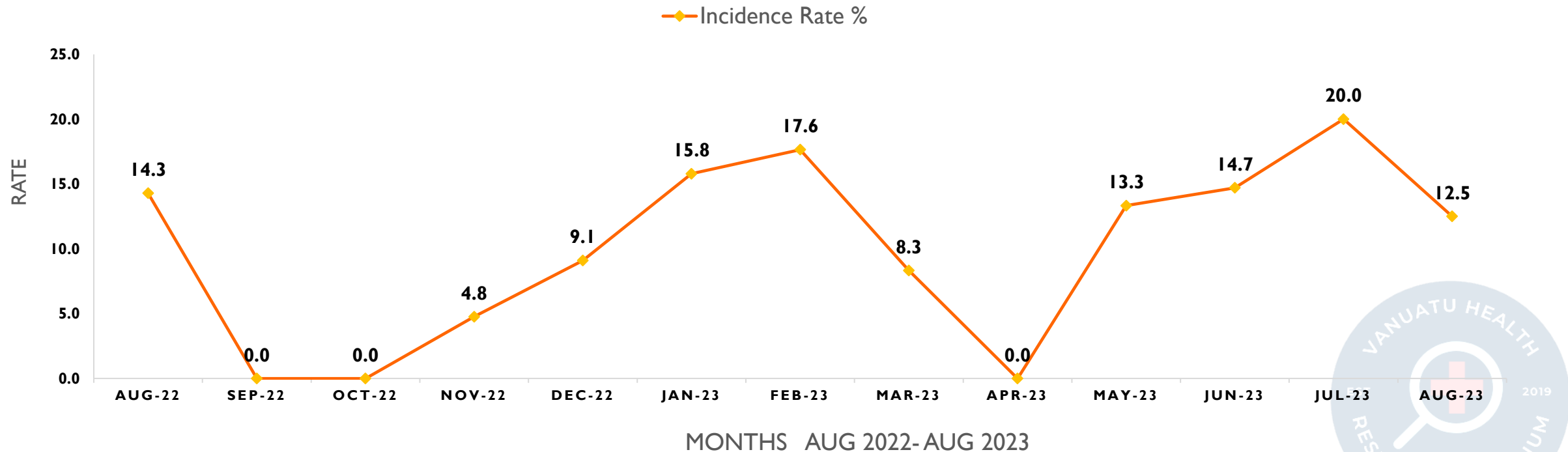
• Organ / Space



0

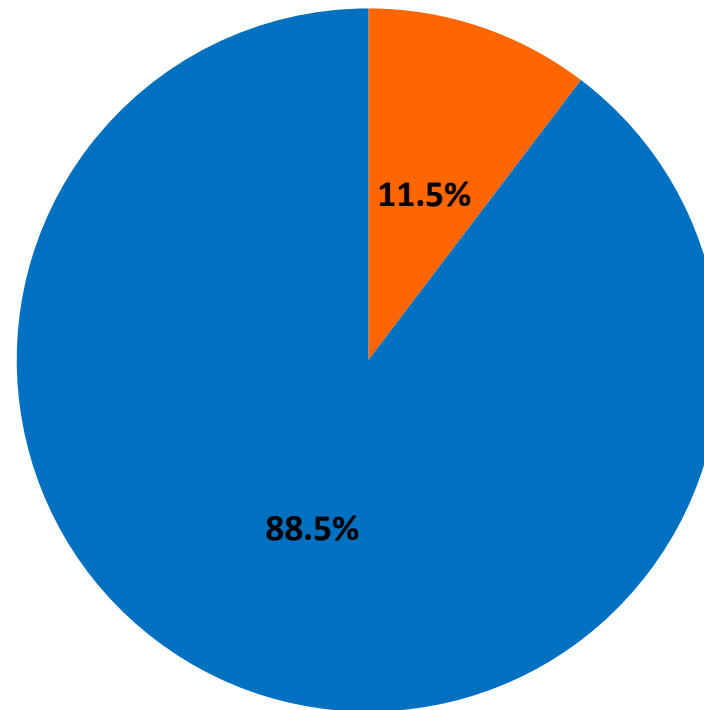
RESULTS: FROM AUG 2022-AUG 2023

INCIDENCE RATE OF SSI IN PERCENTAGE-MONTHLY



RESULTS:

Overall Incidence rate of SSI at VCH in a year period



■ Overall incidence rate of SSI Cases

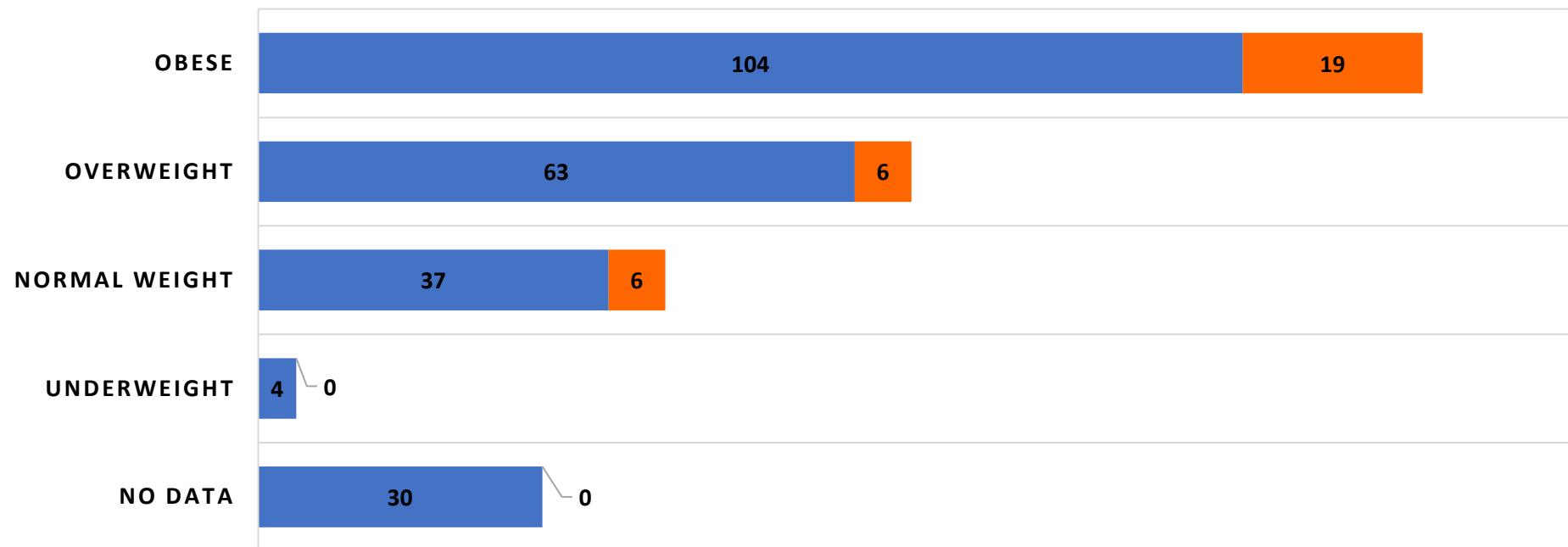
■ Total Caesurean Section Procedures



RESULTS: BODY MASS INDEX (BMI)

BMI

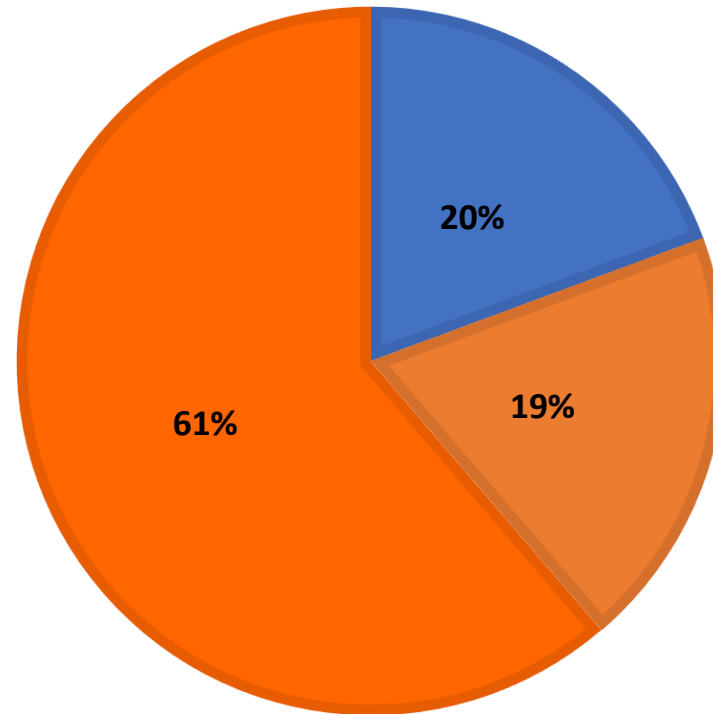
■ C/S cases ■ SSI cases



RESULTS: BMI OF 31 SSI CASES

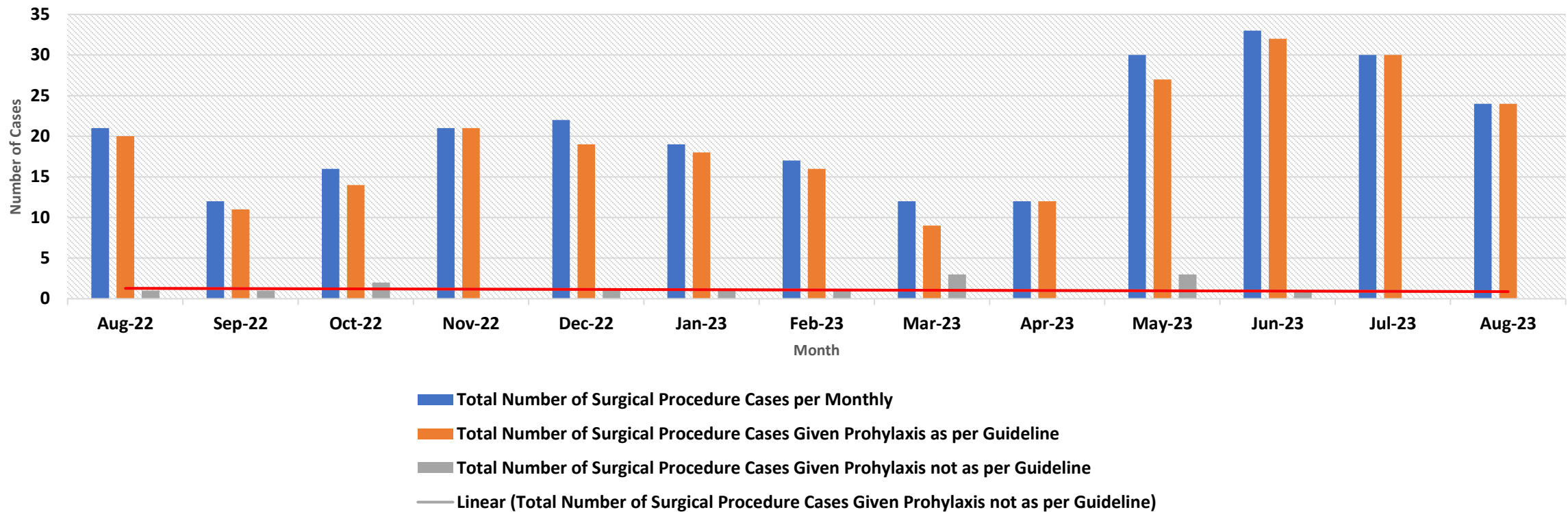
RELATIONSHIP OF BMI TO SSI MOTHERS

■ Normal weight ■ Over weight ■ Obese



RESULTS:

Total number of Surgical Cases relate with Antibiotic prophylaxis Treatment per guideline & not as per Guideline



RISK RATIO

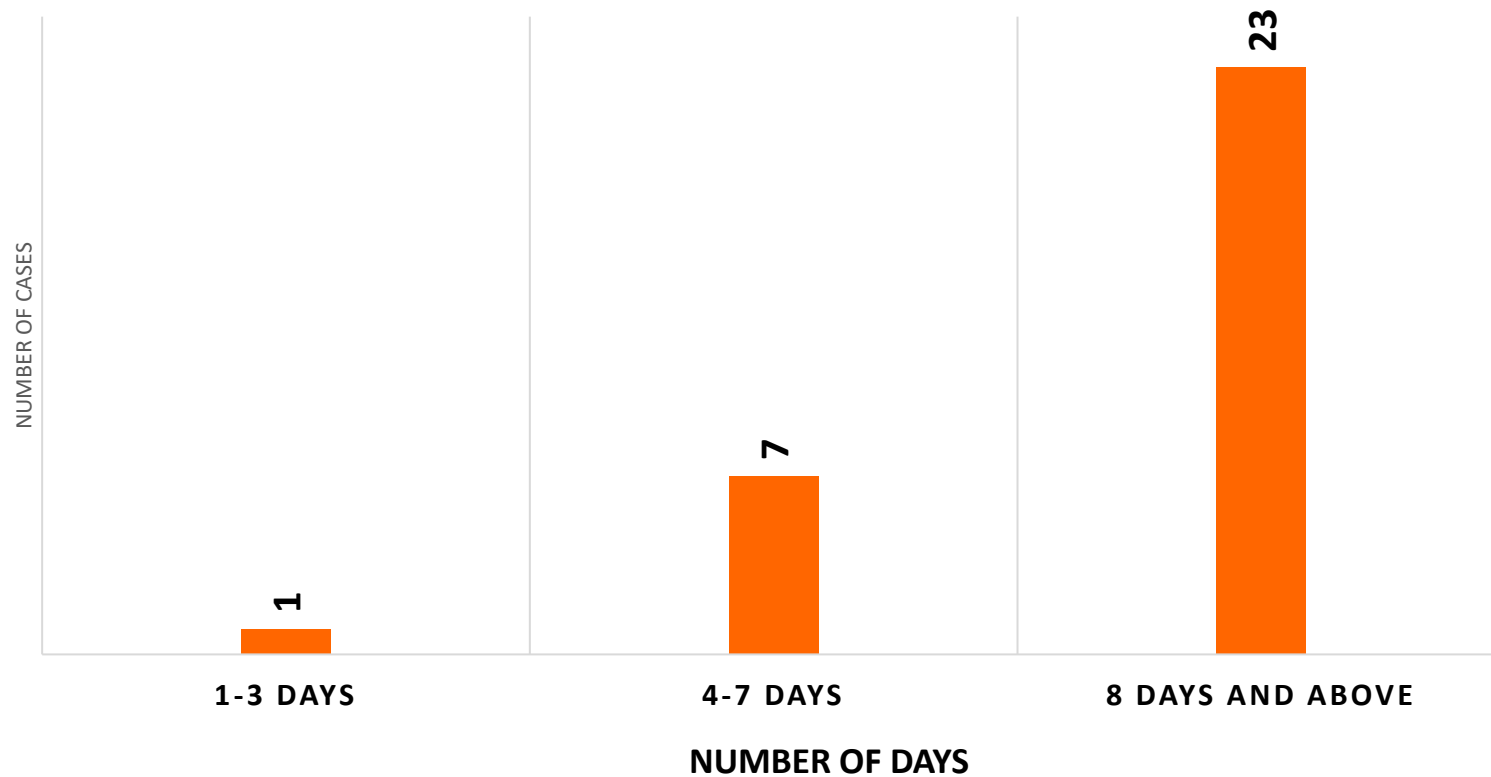
- Group 1 -No Antibiotic Prophylaxis per guideline
- Group 2 –Antibiotic prophylaxis per Guideline
- $RR = \text{Gr 1} - 4/14 = 0.28$
- $\text{Gr 2 } 27/255 = 0.1$
- $= 0.28/0.1 = 2.8$

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



RESULTS: TIME OF PROCEDURE TO INFECTION DATE

DURATION OF POST OPERATIVE SSI



DISCUSSION

Incidence Rate

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

We might not fully capture the risks factors that contribute to the incidence of SSI to our C/section mothers.

- **Risk factors: in BMI of SSI cases,**
- **Antibiotic Prophylaxis**
- No Antibiotic prophylaxis group compared to the Antibiotic Prophylaxis group risk ratio is a 2.8. which means risk of SSI is 2 times high to those who are Non antibiotic prophylaxis.

Timing of Procedure to SSI.-Interesting finding we found out that Most of the SSI cases happens 8 days and above, which infection acquired outside of Hospital Facilities. Out of SSI cases (31) wound Swab done for 2 cases only. With Normal flora result



CHALLENGES

- Over looked wound swab of all SSI Cases
- Inconsistent of Antibiotic prophylaxis Administrations as per guideline
- Incomplete patients information e.g. Antenatal Card, pre/post operative form
- Lack of continue follow up of post operative C/section mothers (care e.g. wound care, education)after discharge



RECOMMENDATIONS

- To collect swabs of all wound break down. (C/Sections)
 - (from this we can confirm that this infections had been acquired in the hospital)
- Consistent use of Antibiotic prophylaxis as per guideline for all C/Section mothers (for the Purpose of SSI)
- Improve and strengthens data collection from primary sources
- Comprehensive efforts to do follow up on post operative Mothers at nearby Clinics and hospitals
- More education on wounds (personnel Hygiene, wound care, Hand Hygiene etc)



CONCLUSIONS

- This descriptive study provides an overall profile baseline of SSIs following Caesarean sections at VCH over one year period.
- And we hope that this findings Shows the importance of targeted prevention efforts that will enhanced patient care practices.
- Though it does not establish casual relationships, it served as a foundation for future research and quality improvement efforts.



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REFERENCE

- SPC SSI SOP and Guidelines
- WHO Report; GLOBAL GUIDELINES FOR THE PREVENTION OF SURGICAL SITE INFECTION <https://iris.who.int/bitstream/handle/10665/250680/9789241549882-ita.pdf>
- IPC Vanuatu Policy and Guidelines

