

HOSPITAL ACQUIRED INFECTION:

A Study to Measure Its Impact on
Increase Average Length of Stay and Cost
of Care in Multi-Specialty Hospital.

INTRODUCTION

- HAIs) are social and economic burden to both the patients and the healthcare industry.
- Patients in health care institutions across the country as well as globally acquire healthcare associated infection that results in increase average length of stays as well as economic burden.
- Such infection can cause patients great discomfort and adversely impact the overall quality and cost of health care.

The background is a dark navy blue. It features several large, overlapping, semi-transparent geometric shapes in various colors: bright green, cyan, magenta, orange, and light blue. These shapes are arranged in a way that creates a sense of depth and movement, with some appearing to be layered on top of others. The overall aesthetic is modern and graphic.

HOSPITAL ACQUIRED INFECTION (HAI)

A series of overlapping, semi-transparent geometric shapes in shades of purple, blue, and teal, arranged in a diagonal pattern in the top right corner.

An infection occurring in a patient in a hospital or other health care facility in whom infection was not present or incubating at the time of admission.

This include infection acquired in the hospital but appearing after discharge, and also the occupational infections among staff of the facility.

A series of overlapping, semi-transparent geometric shapes in shades of green, blue, and orange, arranged in a diagonal pattern in the bottom left corner.

(WHO definition)

Infections which occur more then 48 hours after admission are also considered as nosocomial.

AIM

- ❖ Aim of this study was to provide baseline information of incidence rate of HAI and sensitize the administration about its economic impact on hospital's finance as well as on patients so as to guide prior setting in the development of strategy and policy.

OBJECTIVES

- ❖ To calculate the HAI incidence rate among patients admitted in hospital.
- ❖ To ascertain additional out of pocket (OOP) expenditure by patients due to HAI compare with the patients without HAI.

STUDY DESIGN

In this study, analytical approach of measuring of cost of HAI is comparing the group of patients affected with specific type of micro-organism with the group of the patients unaffected with HAI.

Study type: Retrospective analytical, prospective observational

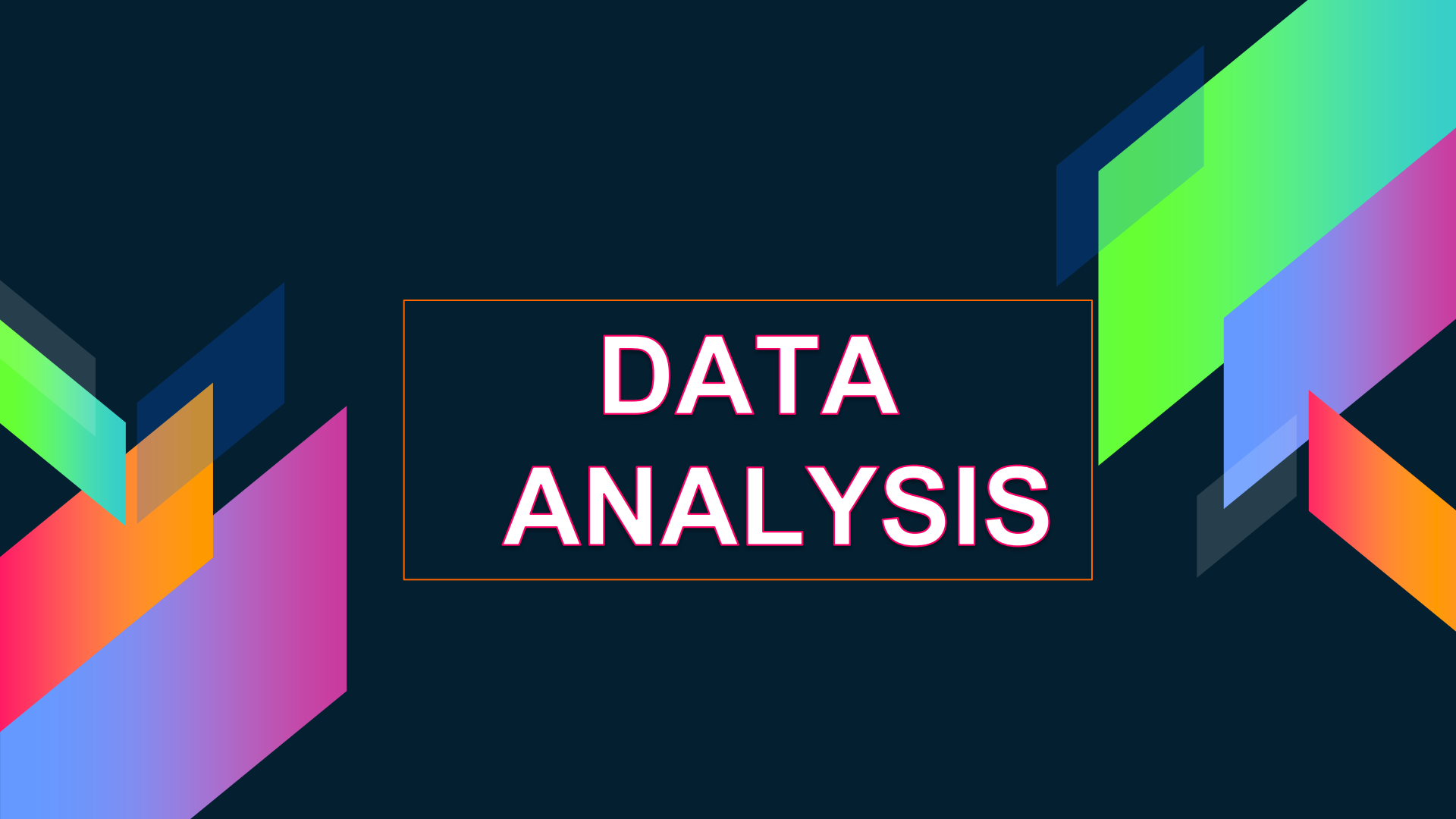
Study area: ICU and Wards

Sample size: 90 cases of HAI in 2022

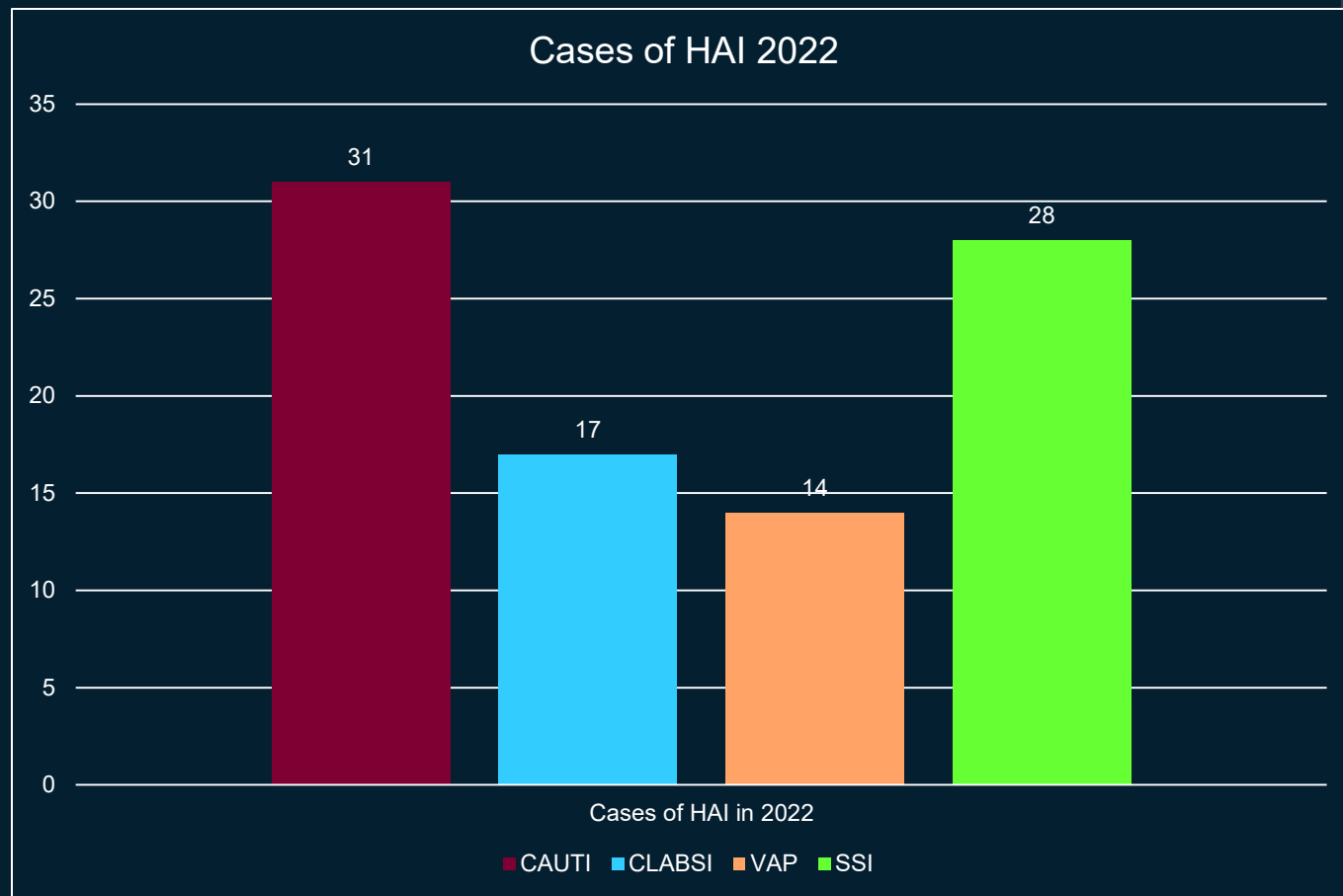
INCLUSION CRITERIA: All patients above 16 years of age admitted in ICU and wards with different complains and presentations and developed clinical evidence of infection which does not originate from the patients original admitting diagnosis were included in this study.

EXCLUSION CRITERIA: According to the definition of HAI, patients admitted before 48 hrs excluded from the study.

DATA COLLECTION TOOL: Retrospective from records maintained by infection control department, prospectively by observation, interviewed with experts and care takers. (Nurses, ICN, Intensivists, Doctors)

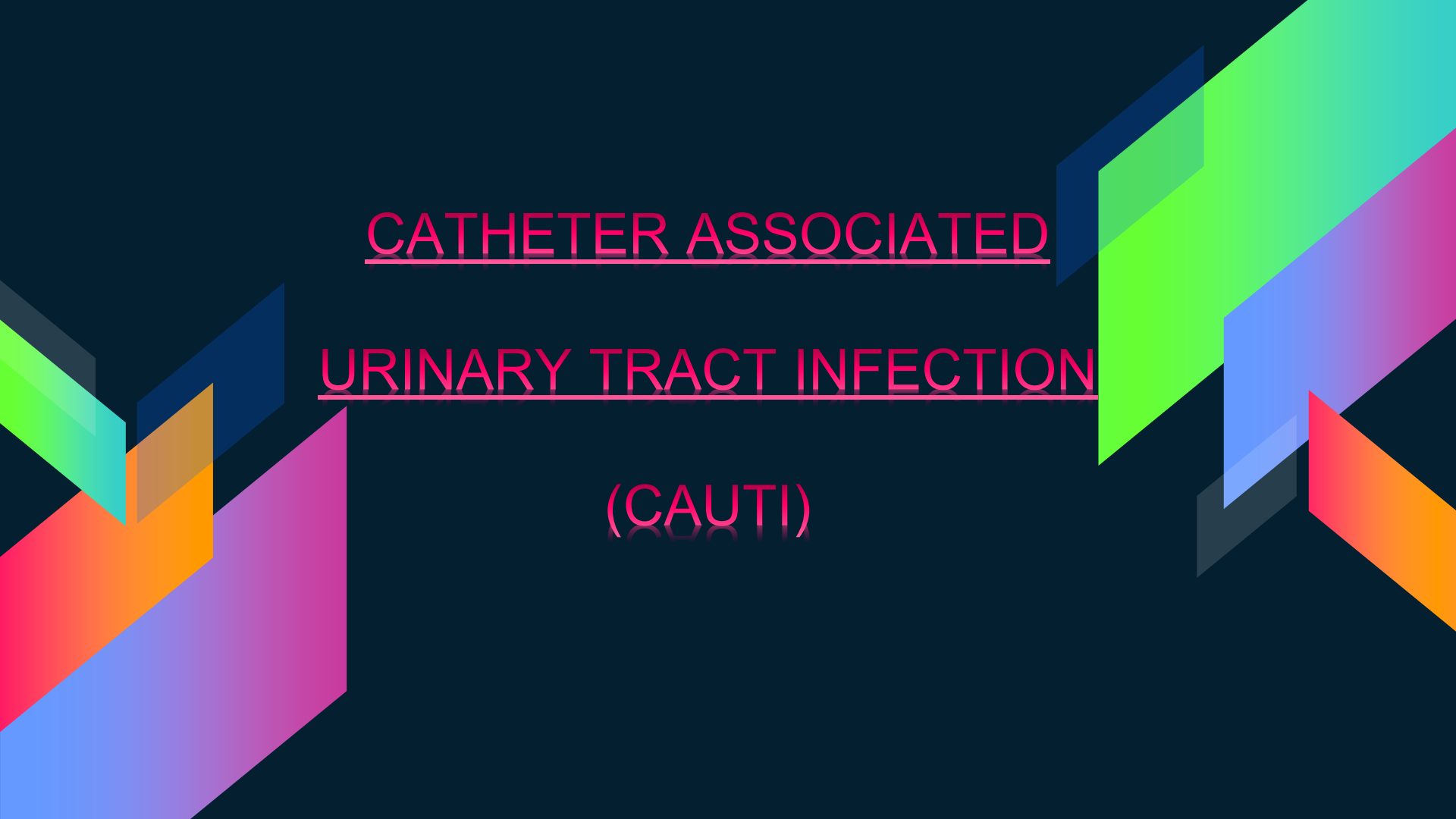
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DATA ANALYSIS



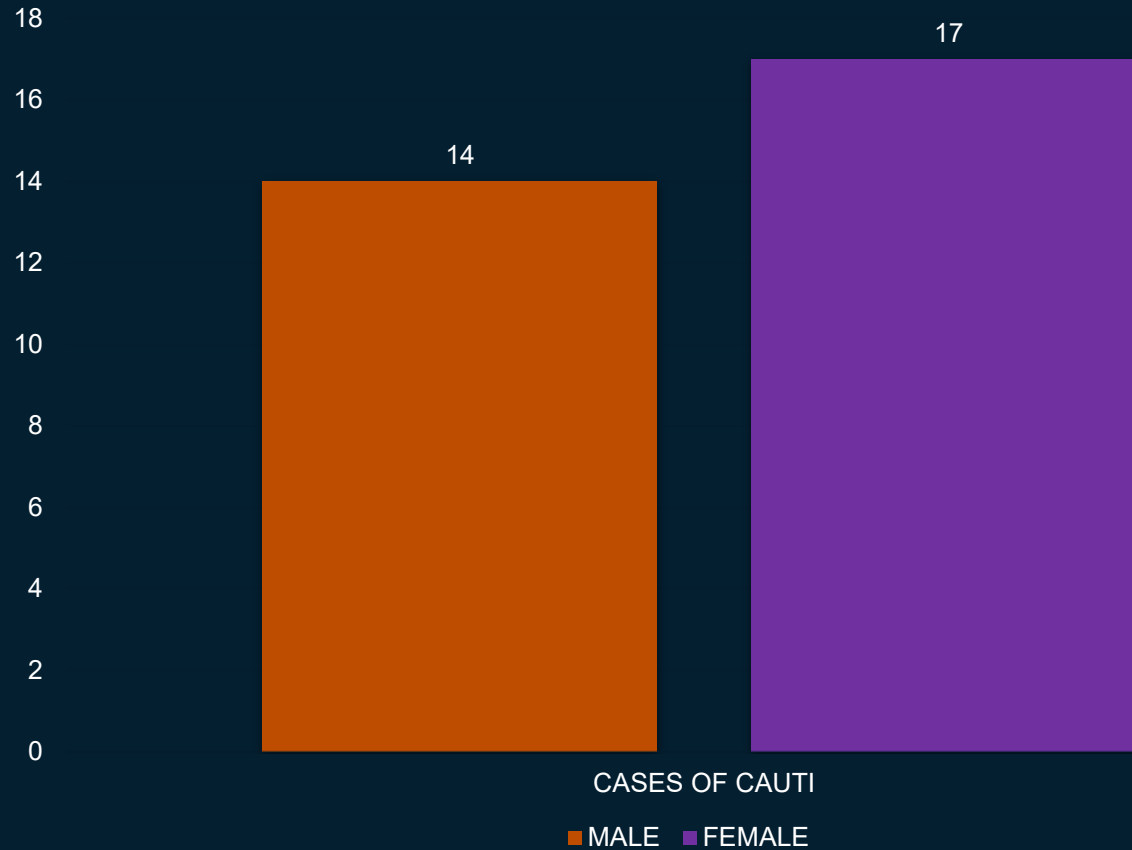
ANNUAL INFECTION RATE OF HAI

HAI	Annual Infection Rate
CAUTI	1.83
CLABSI	2.03
VAP	2.65
SSI	5.47

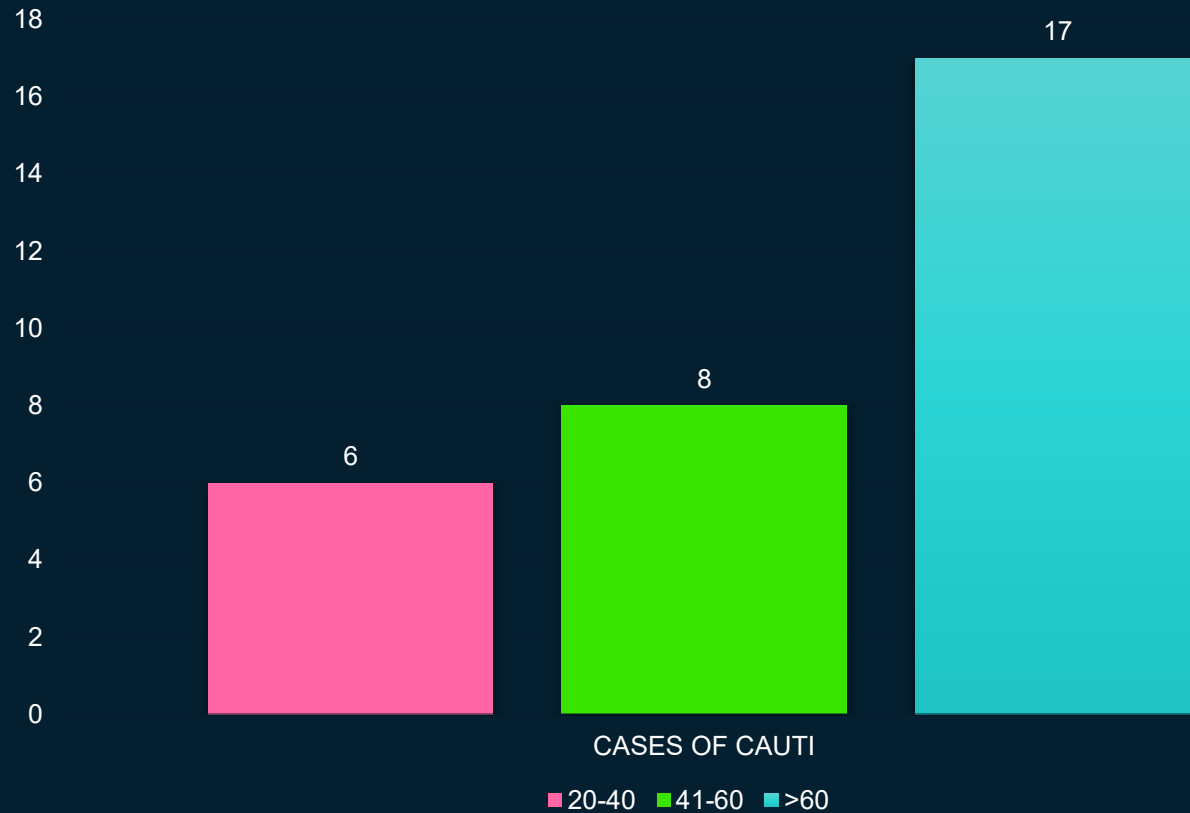
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CATHETER ASSOCIATED URINARY TRACT INFECTION (CAUTI)

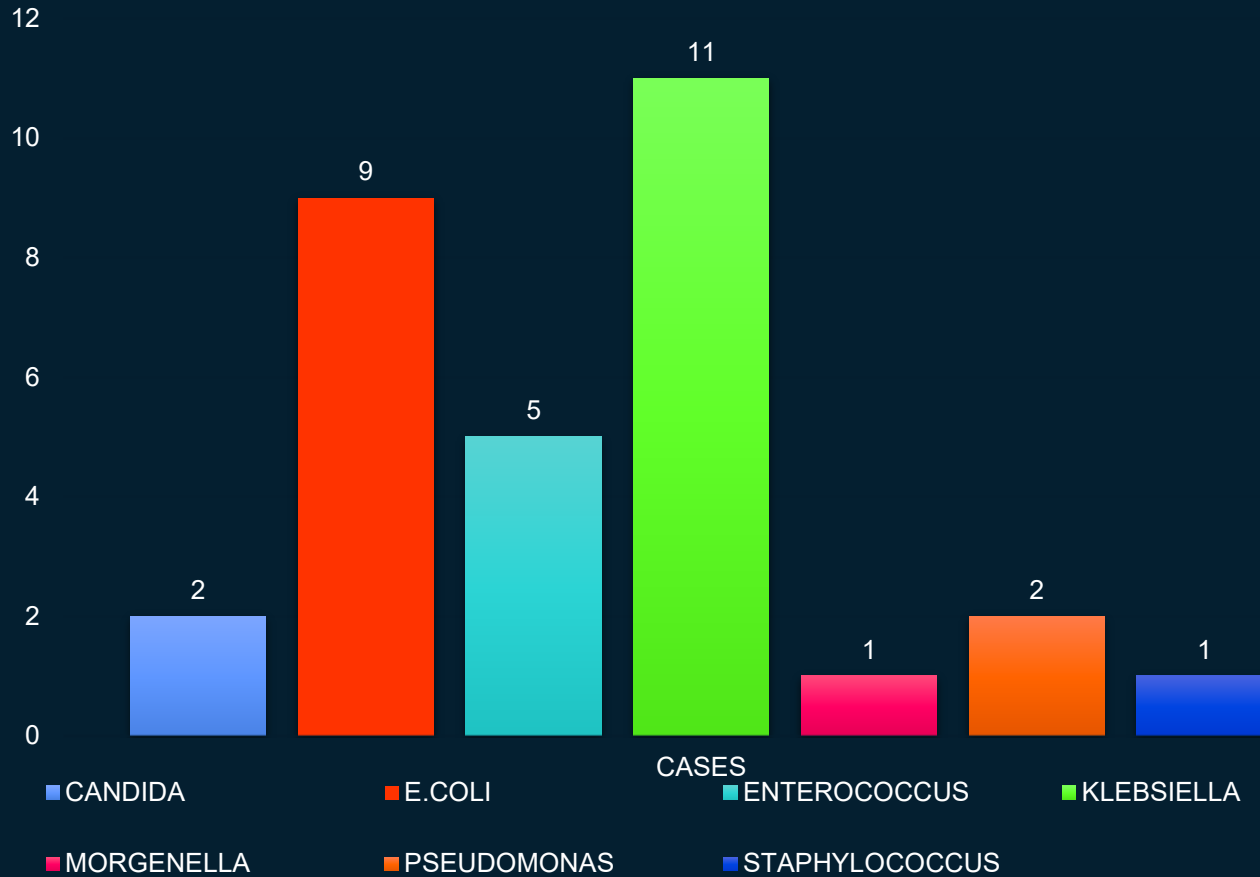
GENDER WISE CAUTI CASES



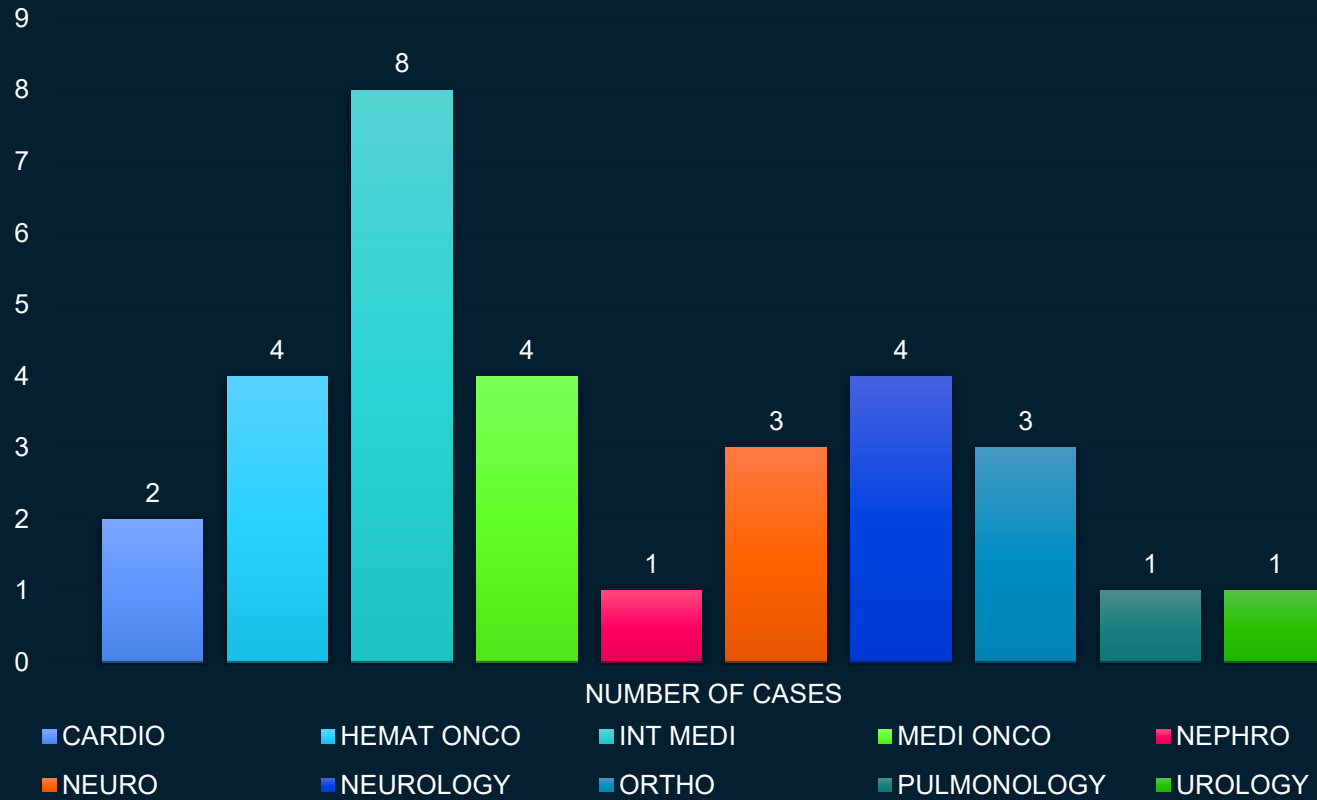
AGE WISE CAUTI CASES

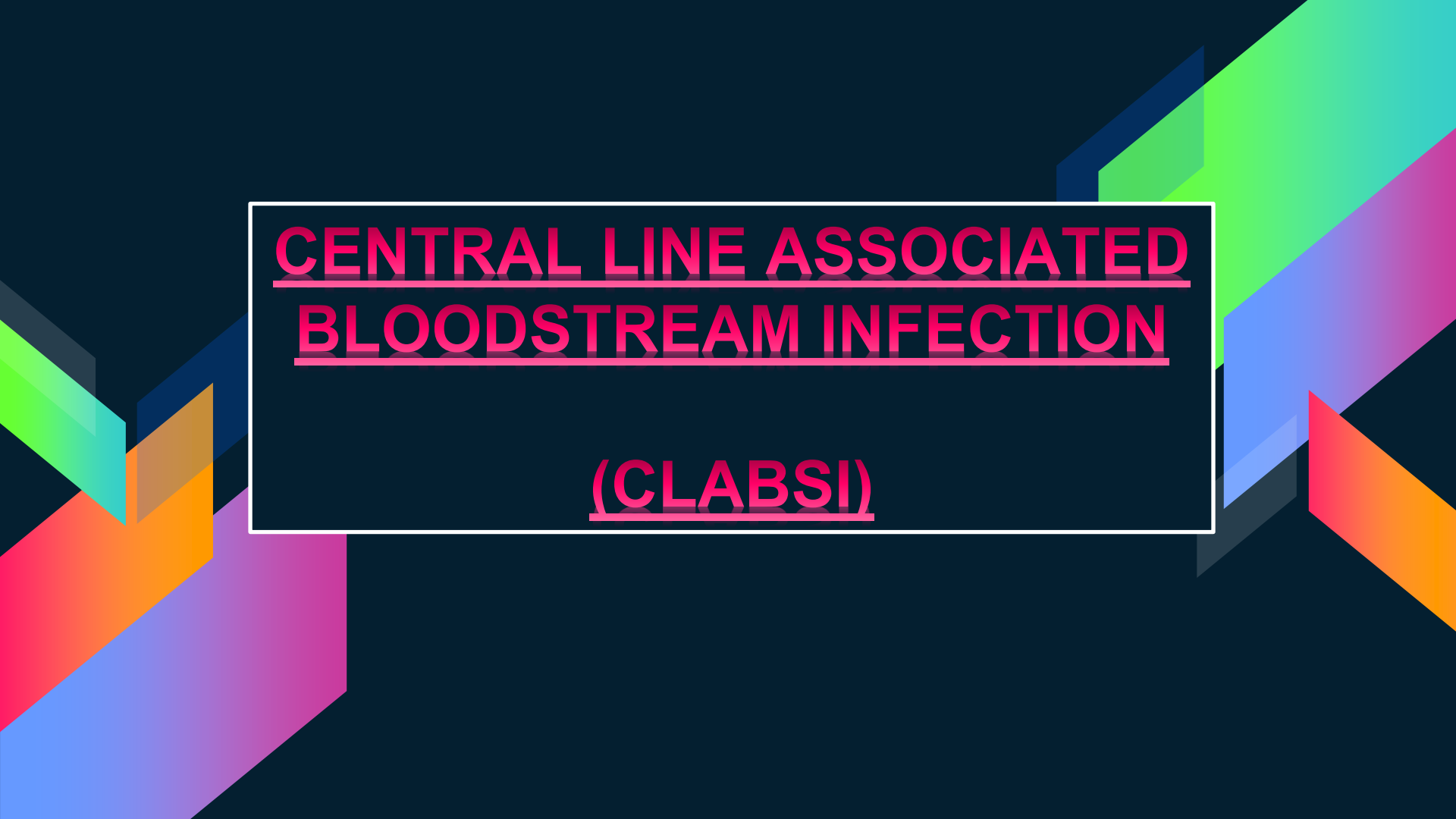


MICRO-ORGANISM WISE CAUTI CASES



SPECIALITY WISE CAUTI CASES

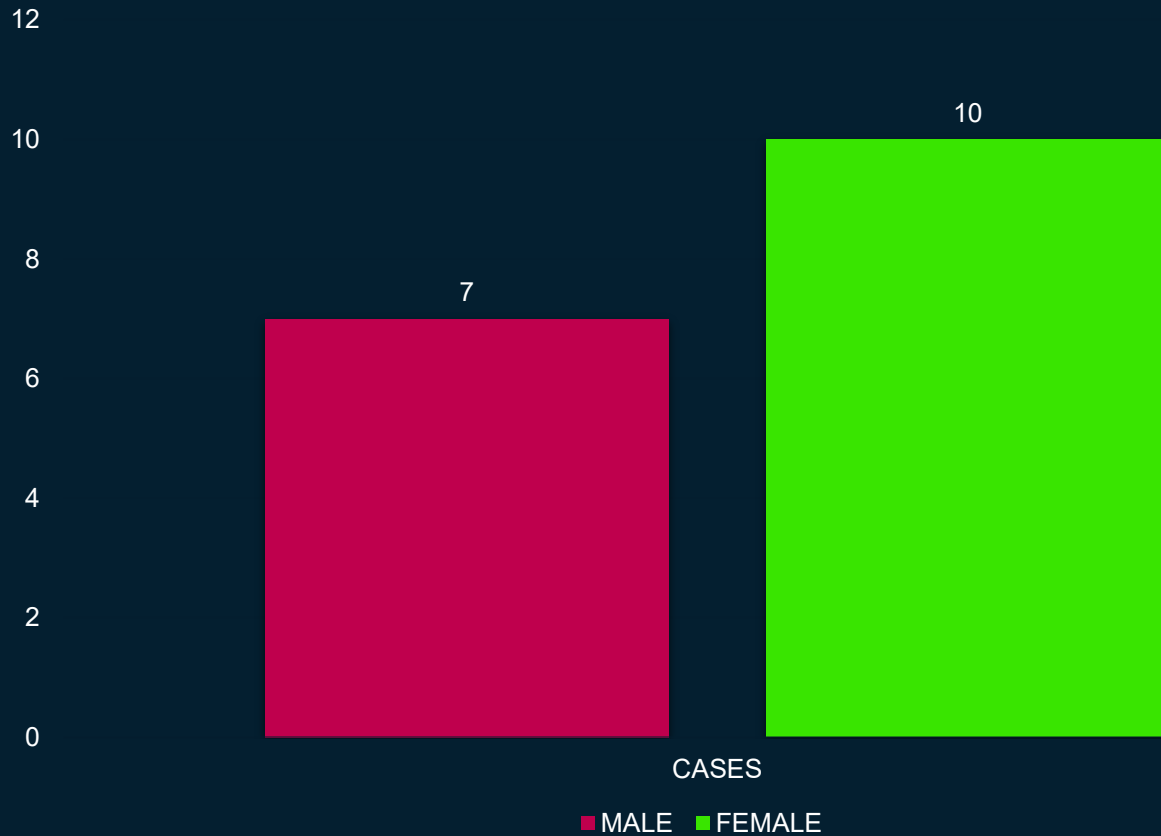




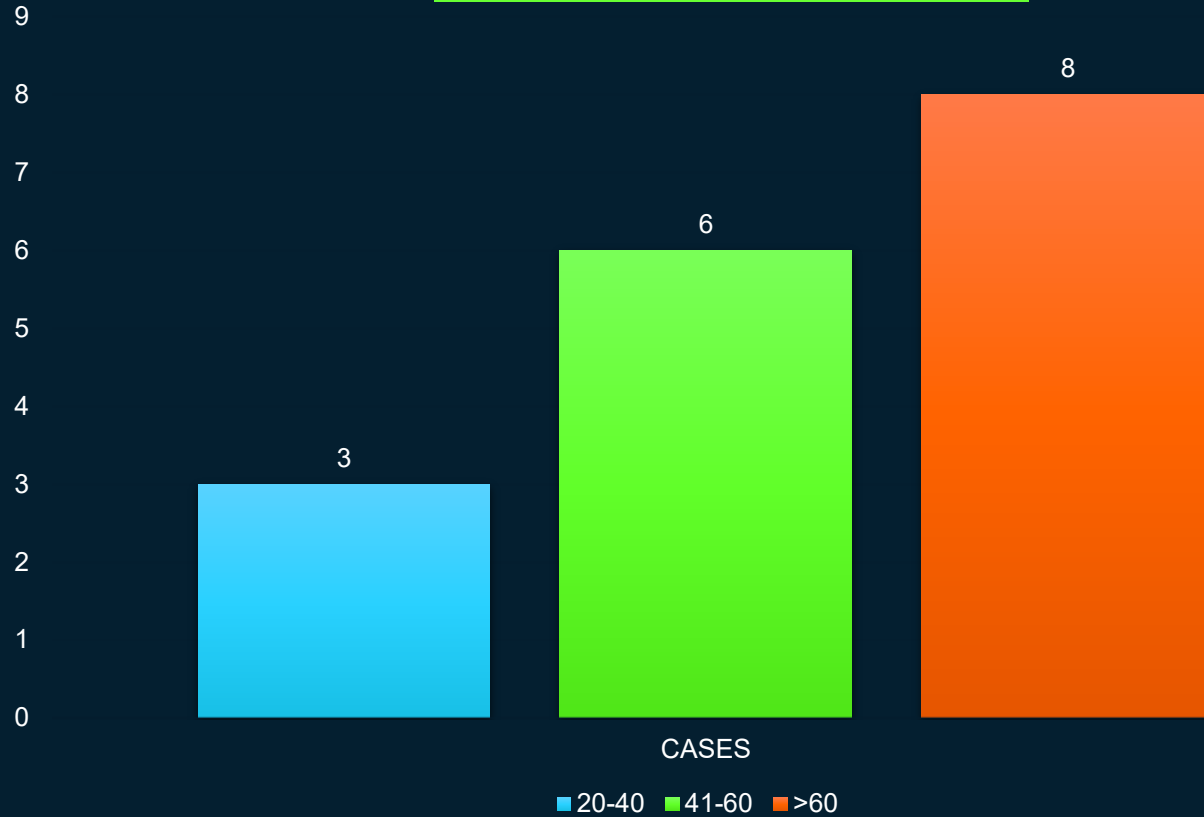
CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTION

(CLABSI)

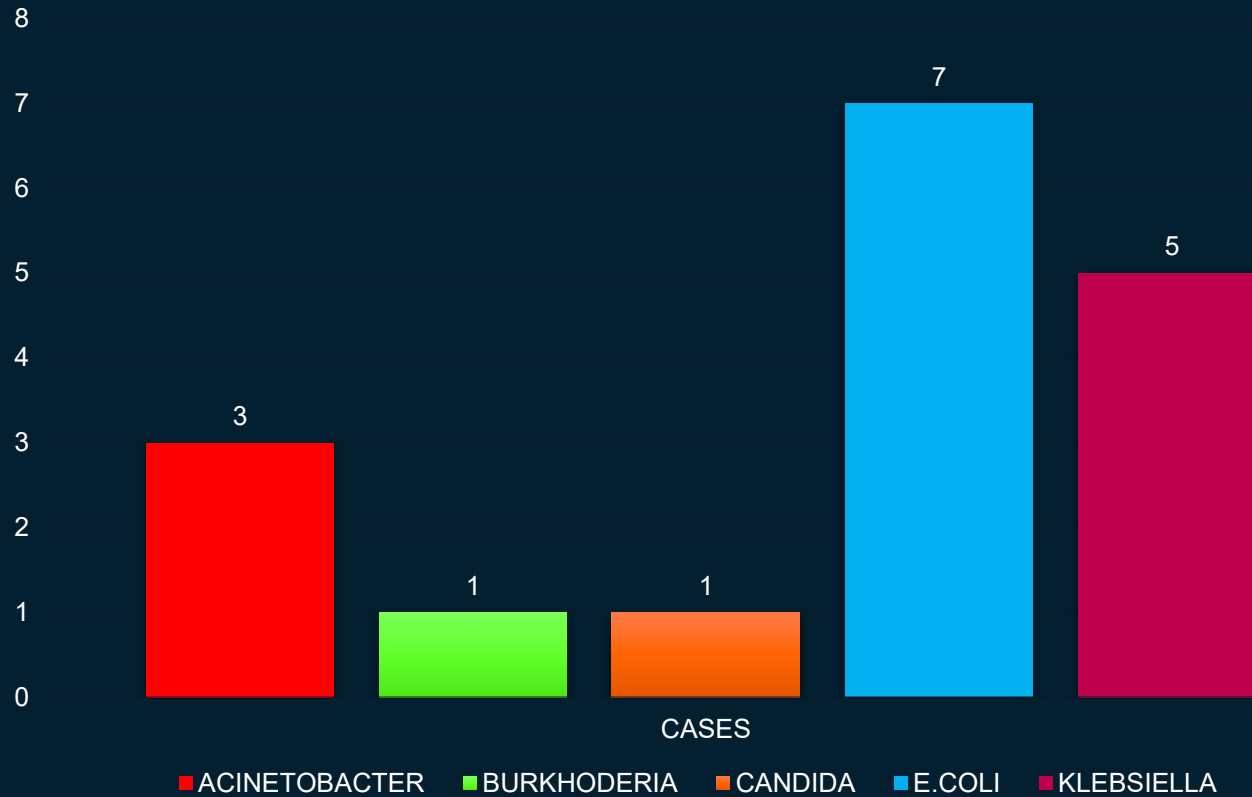
GENDER WISE DISTIBUTION



AGE WISE DISTRIBUTION



MICRO-ORGANISM WISE DISTRIBUTION

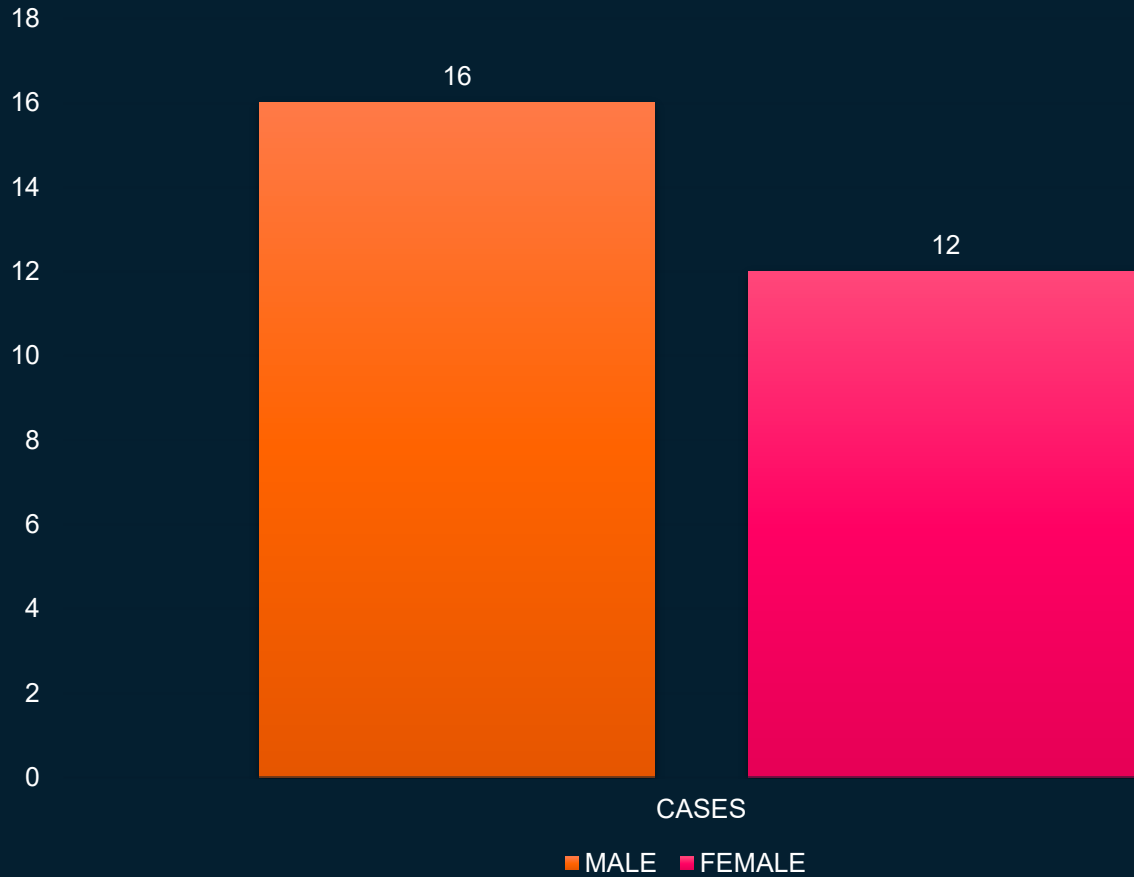


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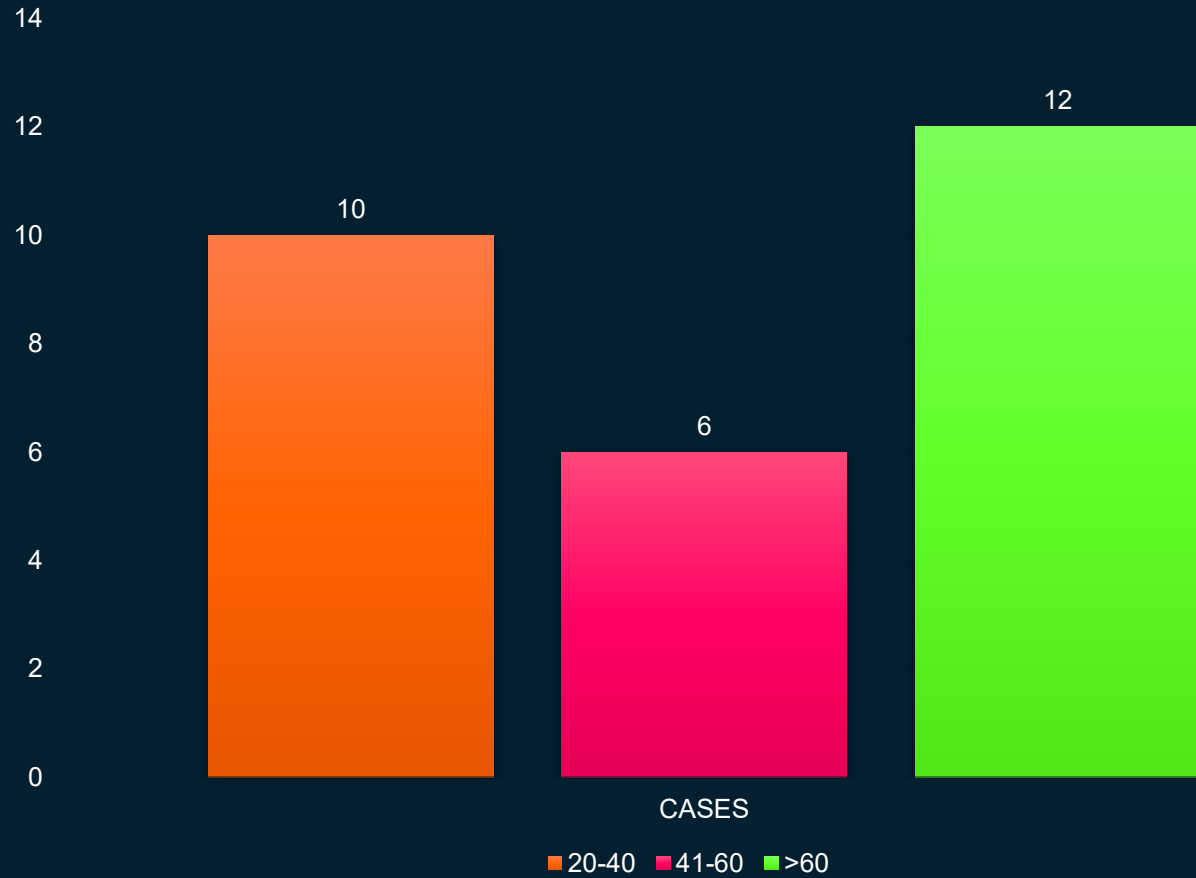
SURGICAL SITE INFECTION

(SSI)

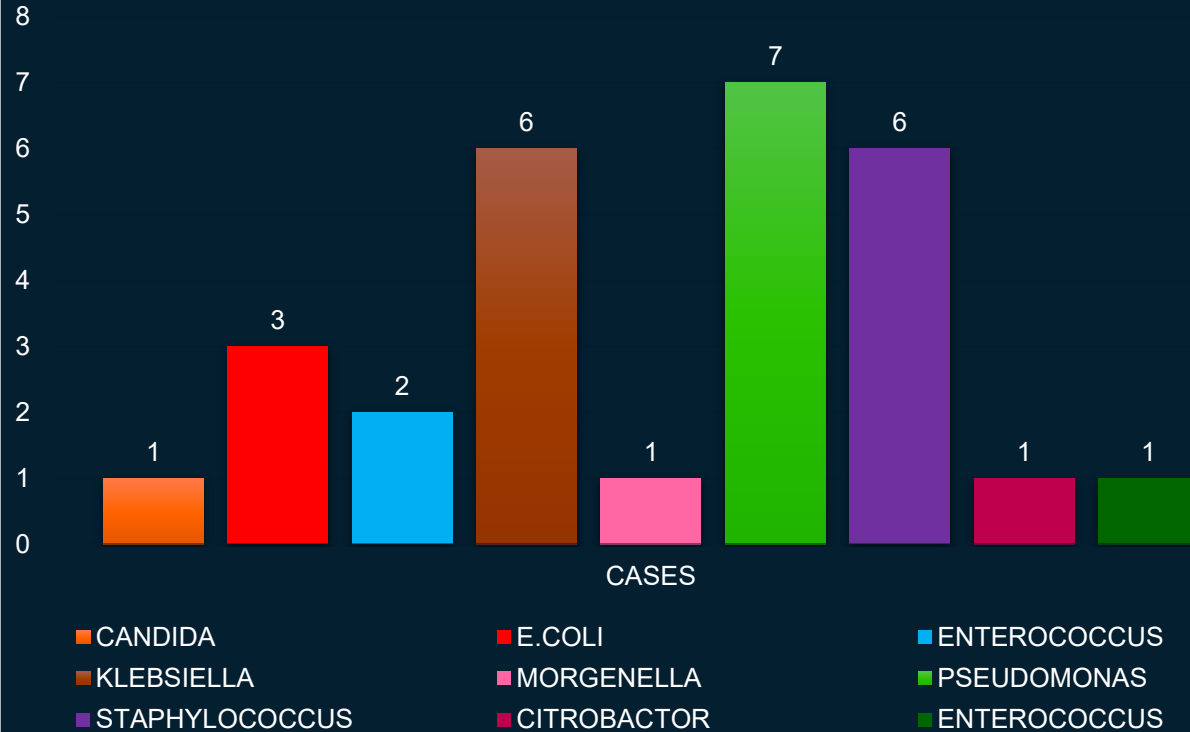
GENDER WISE DISTRIBUTION



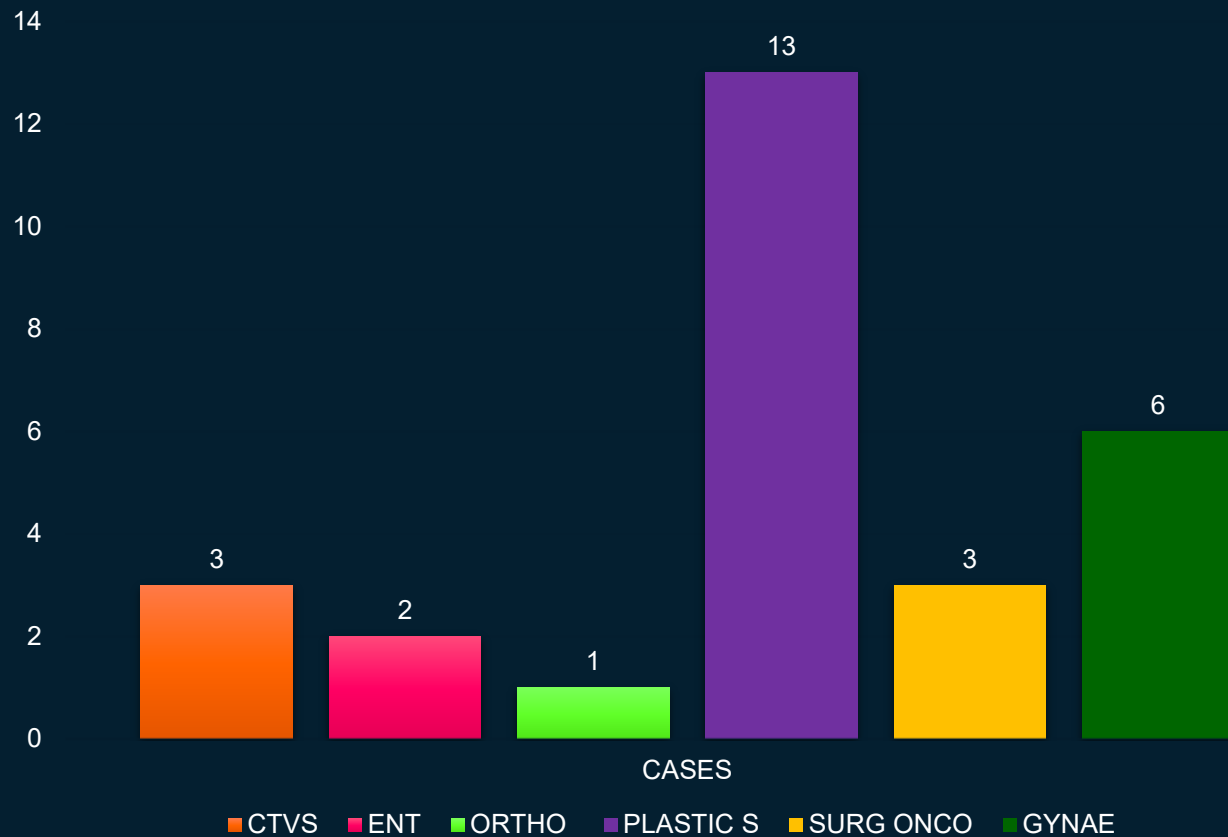
AGE WISE DISTRIBUTION



MICRO-ORGANISM WISE DISTRIBUTION



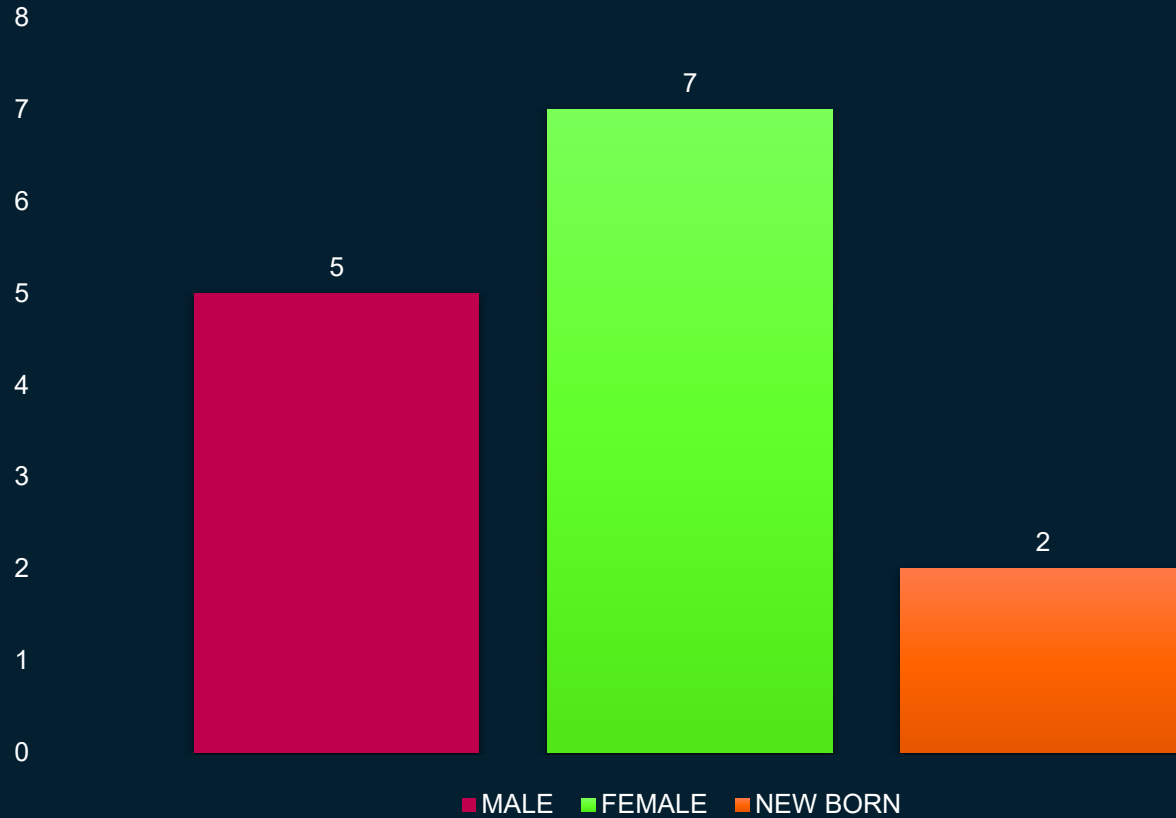
SPECIALITY WISE DISTRIBUTION



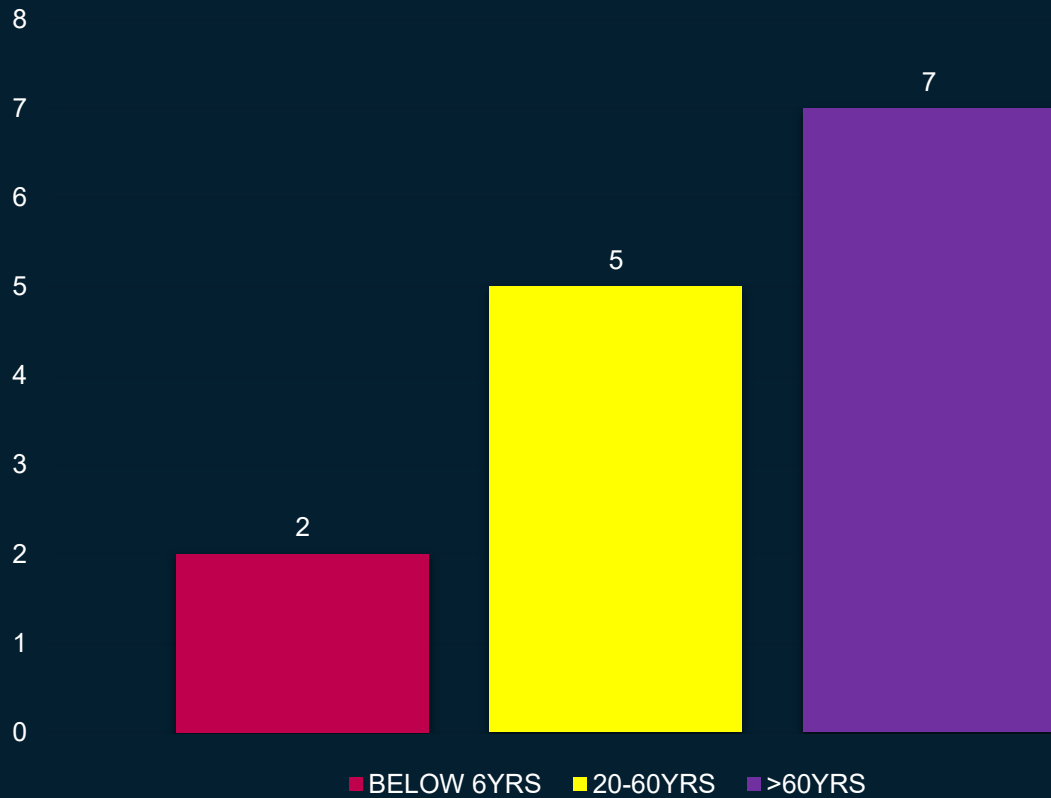
VENTILATOR ASSOCIATED PNEUMONIA

(VAP)

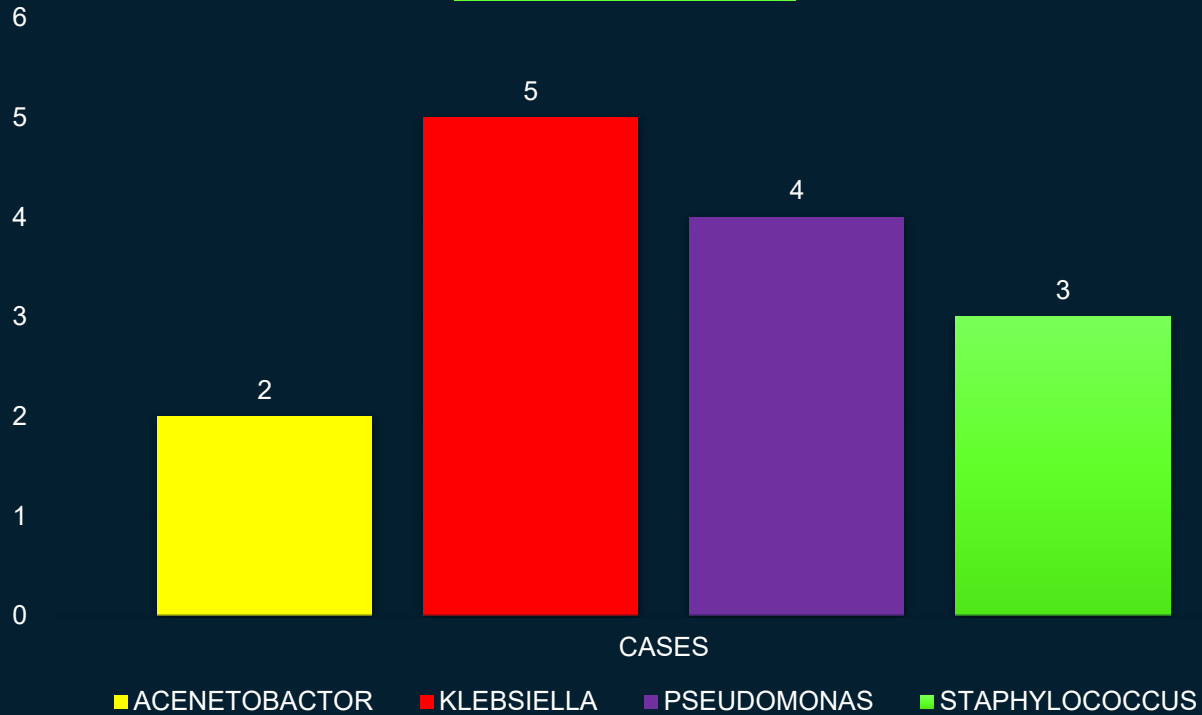
GENDER WISE VAP



AGE WISE VAP DISTRIBUTION



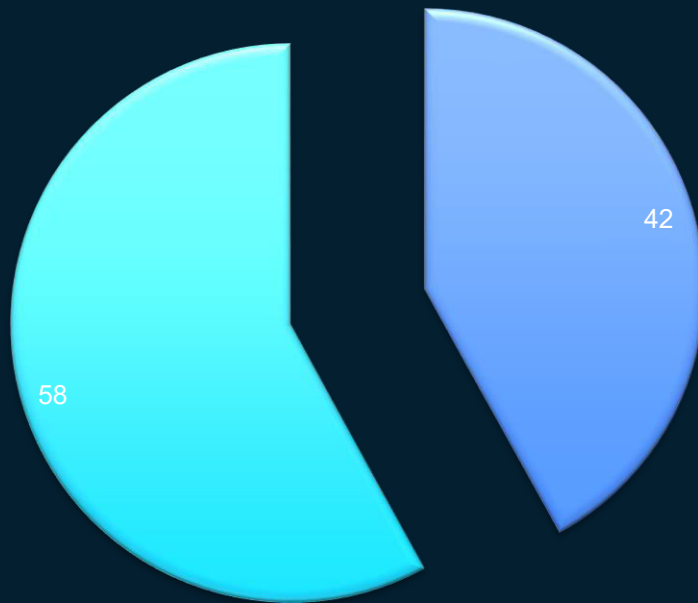
MICRO-ORGANISM WISE VAP DISTRIBUTION



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IMMUNOCOMPROMISED

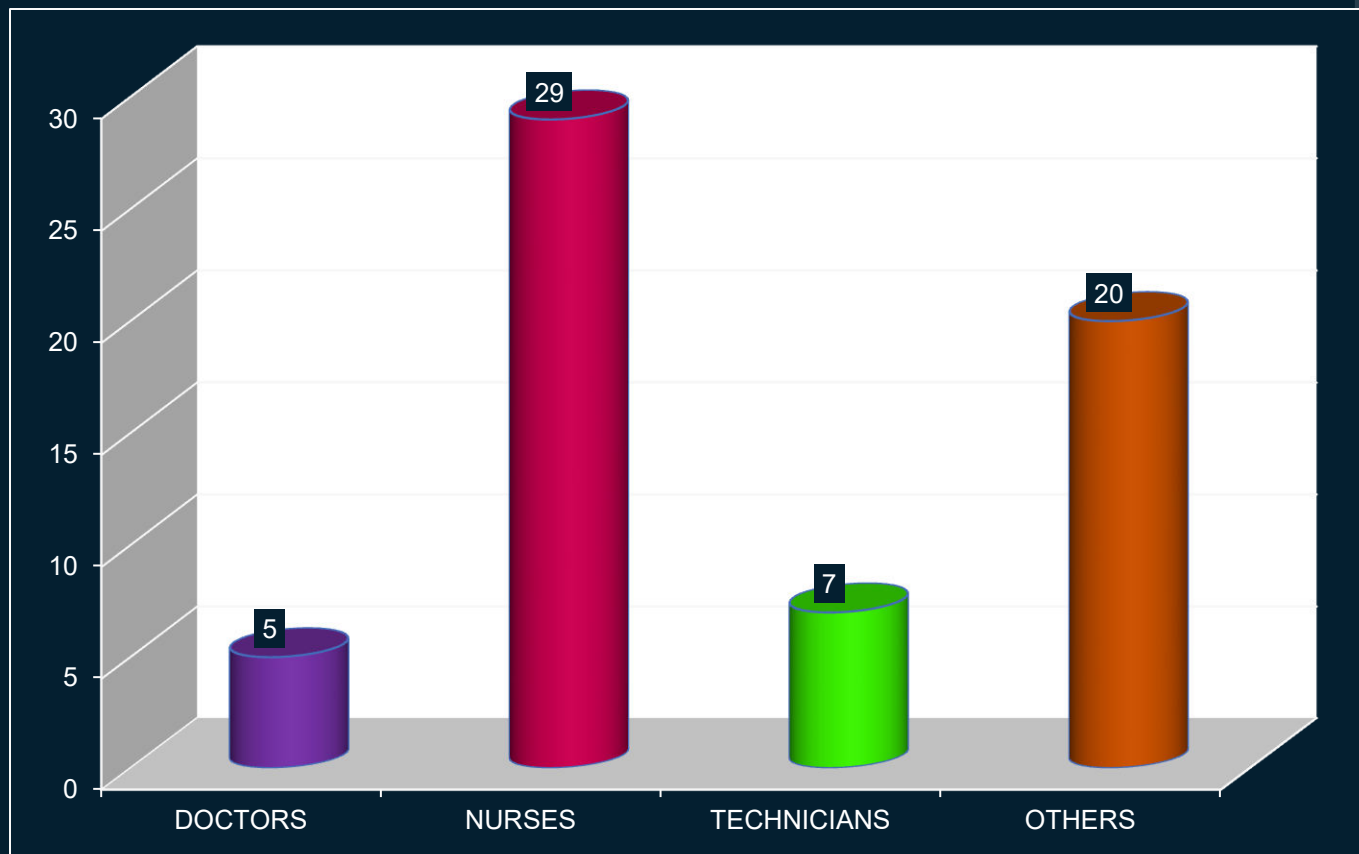
PATIENT RATIO

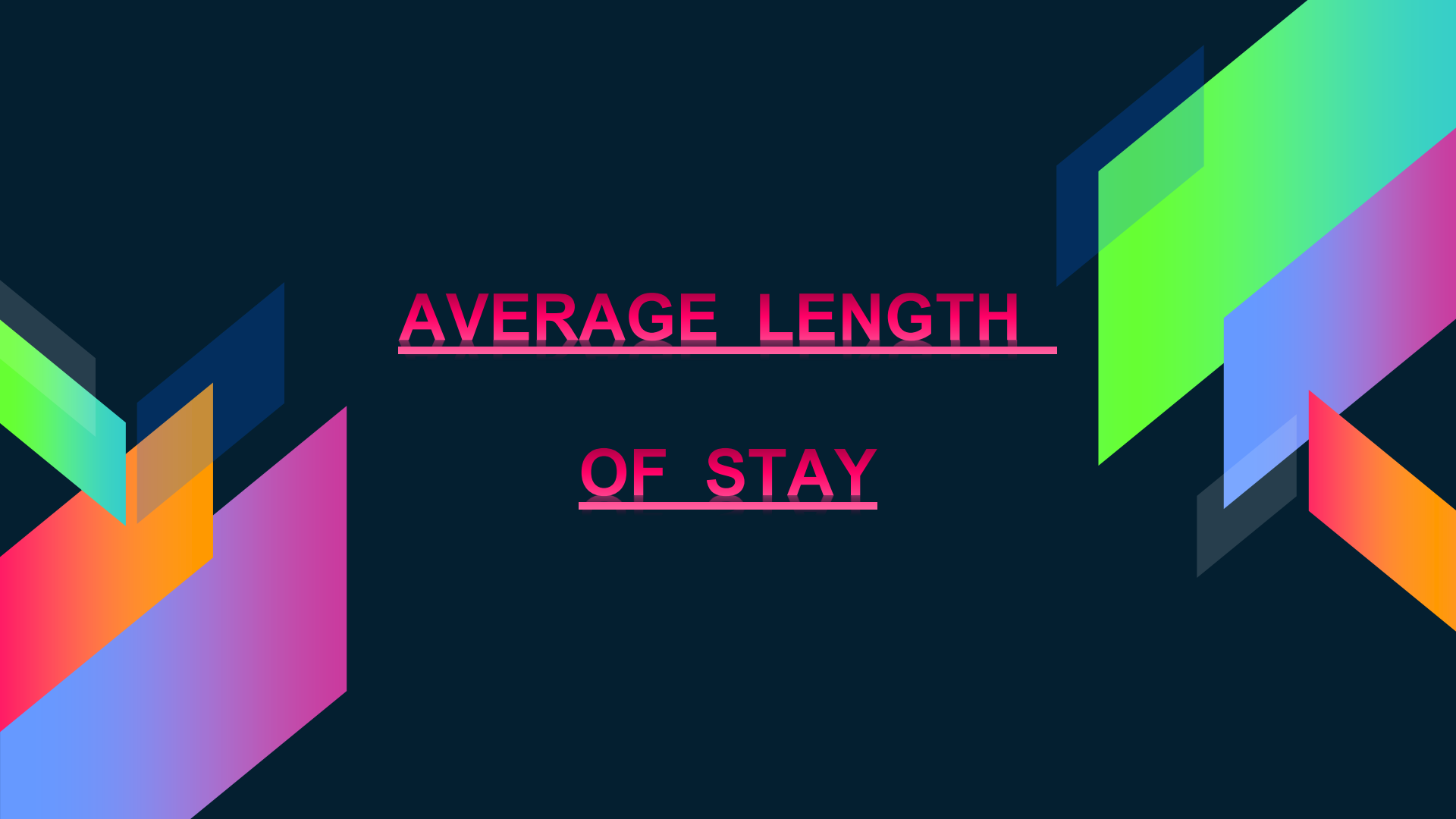


- IMMUNOCOMPROMISED
- NON-IMMUNOCOMPROMISED

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NEEDLE STICK INJURIES



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AVERAGE LENGTH

OF STAY

HAI	Total ALOS	Total ALOS after infection
CAUTI	17.4	6.8
CLABSI	19.3	14.7
VAP	44.17	29.7
Multiple Infection	30.4	17.9

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HAI MORTALITY RATE

➤ Number Of Deaths In 2022(up to June) Due To HAI= 07

➤ Main Cause- Either Septic Shock or Sepsis

❖ Mortality Rate(up to June):

Number of death/ total number of HAI in a year*100

$$= 7/90 * 100 = 7.77\%$$

Abstract geometric shapes in the top-left corner, including a green triangle, a blue parallelogram, and a pink parallelogram.

ECONOMIC

IMPACT OF

HAI

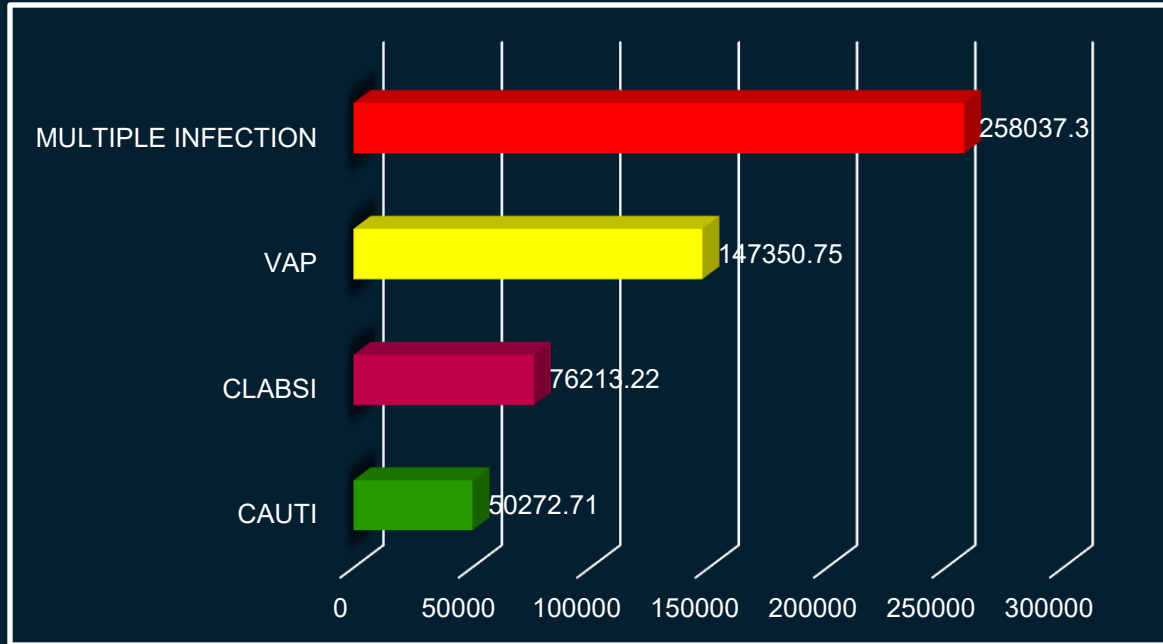
Abstract geometric shapes in the bottom-right corner, including a large green triangle, a blue parallelogram, and a pink parallelogram.

- Although it is very difficult to decide that which cost is contributed because of HAI because patients were admitted in critical condition.
- Still we categorized the cost on the basis that if patient is admitted only 1 day because of HAI what financial impact will be on patient.

We have taken time period after infection in which we took

- cost of antibiotic administered to the patient,
- Room rent,
- Nursing charges,
- Consultancy of doctor,
- Investigation charges and
- Some consumables.

We identified average cost incurred by patient of CAUTI, CLABSI, VAP and Multiple infections



❖ As per the cost and ALOS after infection, the extra cost incurred by CAUTI was 50,272.71 rupees, by CLABSI was 76,213.22 rupees, by VAP it was 1,47,350.75 rupees and for multiple infection it was 2,58,037.3 rupees.

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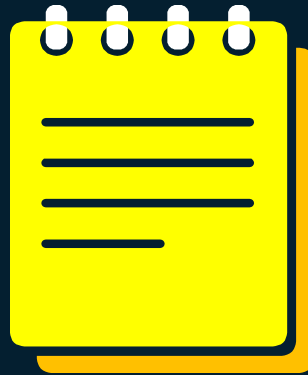
ECONOMIC IMPACT OF HAI ON HOSPITAL

❖ Economic impact of HAI on hospital mainly seen in TPA patients or package patients, where charges to the patients remain constant but cost to the hospital increases. The extra charges mean the patient with HAI consume more hospital resources.

❖ To estimate the cost impact, a hospital can convert charges into cost by multiplying by an appropriate ratio of cost to the charges (RCC).

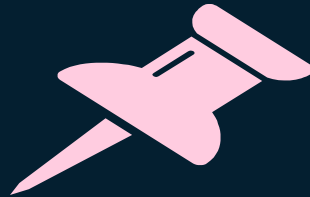
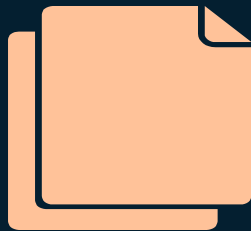
❖ In SSI cases there is multiple visit of OPD for daily dressing after surgery and re-admission or re-exploration costs a huge amount which is really difficult to calculate. It also bear a huge opportunity cost because of multiple visit in hospital to the patient and their attendant.

RECOMMENDATIONS



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1. Sanitization should be done properly.
 2. Increase education of hospital staff.
 3. Spreading awareness among healthcare workers.
 4. Preventing the Patients from Walking Barefoot.

CONCLUSION



- ❖ The economic burden is increased by 2-4 times due to increase ALOS to both the hospital and patient, further compounded by the social burden of one attendant having to stay with the patient, resulting in notional loss of income.
- ❖ Considering the low per capita income and high out of pocket expenditures in India HAI lead to functional disability and emotional stress to the patient that reduce the quality of life.
- ❖ HAI add to the imbalance the resource allocation between primary and secondary health care by diverting scarce fund to the management of potentially preventable condition

Thank you

