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ANALYSIS OF HOSPITAL PERFORMANCE BASED ON THE QUALITY INDICATOR TOOL FOR HOSPITAL AQUIRED INFECTION

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HOSPITAL AND JOB PROFILE

VISION- "Globally preferred centre of excellence"

MISSION-"To operate as world class heart hospital incorporating the latest technological advancement and ethical practices to provide quality heart care at reasonable cost"

CORE VALUES

- Highest customer satisfaction
- Highest quality
- Culture of high performance
- Integrity and ethical practice
- Innovation and change

Accreditation- JCI, NABH, ISO
Department- Quality
Designation- Management trainee

ASIAN HEART INSTITUTE
Saving Hearts, Touching Lives

Quality Indicators Analysed For Hospital Acquired Infection

- **CAUTI** (Catheter acquired urinary tract infection)
- **VAP** (Ventilator associated pneumonia)
- **CLABSI** (Central line associated blood stream infection)
- **SSI** (Surgical site infection)
- **NSI** (Needle stick injury)
- Compliance to hand hygiene

Quality Indicators Analysed For Hospital Acquired Infection… (According to JCI and NABH)

1. **CAUTI =** Total number of CA-UTI cases in a month /Total number of urinary catheter days in a month * Rate per 1000 days

2. **VAP** = Total number of VAP cases in a month / Total number of ventilator days in that month * Rate per 1000 days

3. **CLABSI=** Total number of CLABSI cases in a month/ Total number of central line days * Rate per 1000 days

4. **SSI** = Total number of surgical site infections / Total no. of surgeries performed in a month * Rate per 1000 days

5. **NSI** = No of blood body fluid exposures in IPD areas/ No. of in-patient days * Value per 1000 days

6. **Compliance to hand hygiene**= Observed hand hygiene episodes/ No. Of hand hygiene opportunities * Percentage (%)

RESEARCH QUESTION

What are the challenges and compliances of various quality indicators for infection control being measured for the continuous quality improvement at Asian heart Institute, Mumbai as directed by JCI and NABH.

OBJECTIVES

- To study the quality indicators for infection control in the hospital
- To assess, collect and compile the data on quality indicators related to infection control.
- To evaluate the data for outliers and finding out the Non- compliances, their challenges and rationale
- To recommend suggestions to eliminate the errors to improve the quality performance and elevating compliances.

Review of literature

Sr no	Authors (Published year)	Study location	Sample size	Sampling technique	Salient feature
1	**Title**-A Descriptive Study of Nosocomial Infections in an Adult Intensive Care Unit **Year**- 2011-12 **Author**- Keshni Naidu, IIisapeciNobos e Sharan Kerri, Viney, Sten M. Graham	Colonial War Memorial Hospital Hindawi, (CWMH) in Suva, Fiji	114 Patients	**Type of study**- retrospective, descriptive study **Study duration**- 1 year **Data collection (mode)**-Infection control surveillance records and ICU patient's records crossed checked with microbiology lab records.	The commonest locales of disease were respiratory parcel and circulation system contaminations, and Gram-negative microorganisms were the principle microbes detached from ICU patients. These discoveries are steady with different examinations from agricultural nations. Mortality was exceptionally high among these ICU patients with nosocomial diseases. High mortality has been recently revealed from non-industrial nations ICUs.

Review of literature…

Sr no	Authors (Published year)	Study location	Sample size	Sampling technique	Salient feature
2	**Title-** Knowledge and practices of nurses regarding nosocomial infection control measures in private hospitals in Sana'a City,Yemen **Year-**15th December 2015 **Authors** GamilAlrubaie, AnisahBahar om, Hayati Kadir Shahar, Shaffe Mohd Daud & Huda Omar Basaleem	Private hospitals in the capital city of Yemen	100 Nurses	**Type of study-** Descriptive cross-sectional study **Study duration-** April to May 2016 **Data collection (mode)-**45 Questionnaires	The holes in information and works on with respect to NI control measures show the need to build up a connected medical services strategy in regards to NIs and execute an ordinary preparing project to overhaul and invigorate the attendants' information and works on in regards to NI control measures.

Review of literature…

Sr no	Authors (Published year)	Study location	Sample size	Sampling technique	Salient feature
3	**Title** - A study of risk factors for catheter associated urinary tract infection **Year-** 13 February 2018 **Author-** Leelakrishna P, Karthik Rao B	Department of Urology, Kilpauk Medical College, The Tamil Nadu Dr. MGR Medical University, Chennai, Tamil Nadu, India	210 patients	**Type of study-** Prospective study **Study duration-** September 2012 to February 2014. **Data collection (mode)-** Urine culture sample	A comprehension of the danger factors being developed of CAUTI, fundamentally helps in decreasing the extra weight on the medical services framework. Measures like shortening the term of catheterization, exacting control of diabetes and sterile insurances in addition and support of inhabiting catheters can help in anticipation CAUTI

Review of literature…

Sr no	Authors (Published year)	Study location	Sample size	Sampling technique	Salient feature
4	**Title**- Pediatric Ventilator-Associated Infections: The Ventilator-Associated Infection Study **Year**- January 2017 **Author**- Willson, Douglas F, Hoot, Michelle PhDKhemani, Robinder MS,,	Tertiary hospitals in Nigeria United states, Canada, Australia	290 HCW 47 PICU in The 160 clinical and non- clinical staff in 48 Iranian Hospitals	**Type of study**- Prospective, Observational, cohort study **Study duration- Data collection (mode)-** Culture of respiratory secretion in paediatric patients	The positive culture of the samples was primary determinant of continued antibiotic treatment in those children with suspected ventilator associated infection. Positive culture is not associated with worse outcomes irrespective of antibiotic treatment however the lower mortality in treated subject with endotracheal tube is significant. The importance of continuing antibiotics for a positive respiratory culture in suspected ventilator associated infection requires further

RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

- **Type of study-** Retrospective, descriptive and analytical study.
- **Study area -** In-patient's area v.i.z., wards and ICU
- **Study duration -** 3 months (March 2021 to May 2021)
- **Sample size-** Total number of In-patient in year 2019 were 2058
- **Data collection (mode)-** A primary data collected from the admitted patient's records, HMIS, bundle tools and Incidents reporting forms for CAUTI, VAP,CLABSI, SSI and Needle stick injury forms and hand hygiene practice record.

Materials and Methods

- The study was conducted based on secondary data taken from the various inpatient departments to understand the non-compliance and trend analysis of retrospective data.
- The quality indicators given in HIC, PCI by NABH and JCI respectively are studied for justifying the research objectives.
- Data mentioned in the study is captured from the incident reports, HMIS records, and inpatient records pertaining to the quality indicators given by JCI and NABH standards for prevention and control of infections to know that infection control policies are being documented and implemented.
- The captured raw data is verified against the definition and formula given by standards. The numerator and denominator of each indicator is verified by understanding the given standards.

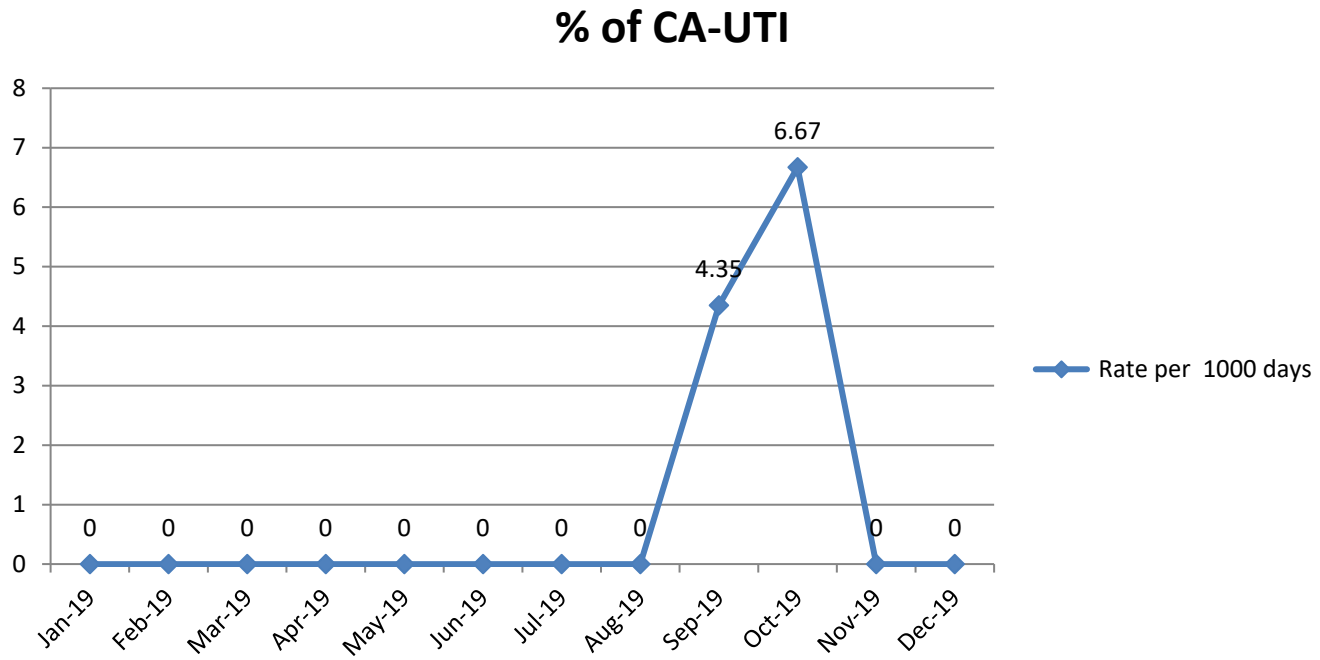
- The trend analysis and interpretation is done by the collected and compiled data in tabular form and henceforth creating graph for 12 months of data.
- The data is set in the numerator and denominator for each indicator to check the non-compliances which is going against the benchmark decided by the organisation for those quality indicators.
- The non-compliance is observed and analysed.
- RCA and CAPA is done for each NCs in order to eliminate the reoccurrence.
- Departmental audit and interaction is done to understand their challenges and Route-cause analysis (RCA)of the incidences.
- Corrective and preventive action(CAPA) thus taken to eliminate the reoccurrence and to close the NCs by the hospital.

DATA ANALYSIS
AND
INTERPRETATION

1. Catheter Associated Urinary Tract Infection (CA-UTI)

Catheter associated Urinary tract infection (CA-UTI) rate			
Months	**Total number of CA-UTI cases in a month**	**Total number of urinary catheter days in a month**	**Rate per 1000 days**
Jan-19	0	421	0
Feb-19	0	480	0
Mar-19	0	402	0
Apr-19	0	325	0
May-19	0	232	0
Jun-19	0	250	0
Jul-19	0	230	0
Aug-19	0	250	0
Sep-19	1	230	**4.35**
Oct-19	2	300	**6.67**
Nov-19	0	280	0
Dec-19	0	330	0

Catheter Associated Urinary Tract Infection (CA-UTI)



Benchmark as per International Nosocomial Infection Control Consortium - 6.1 per 1000 device days

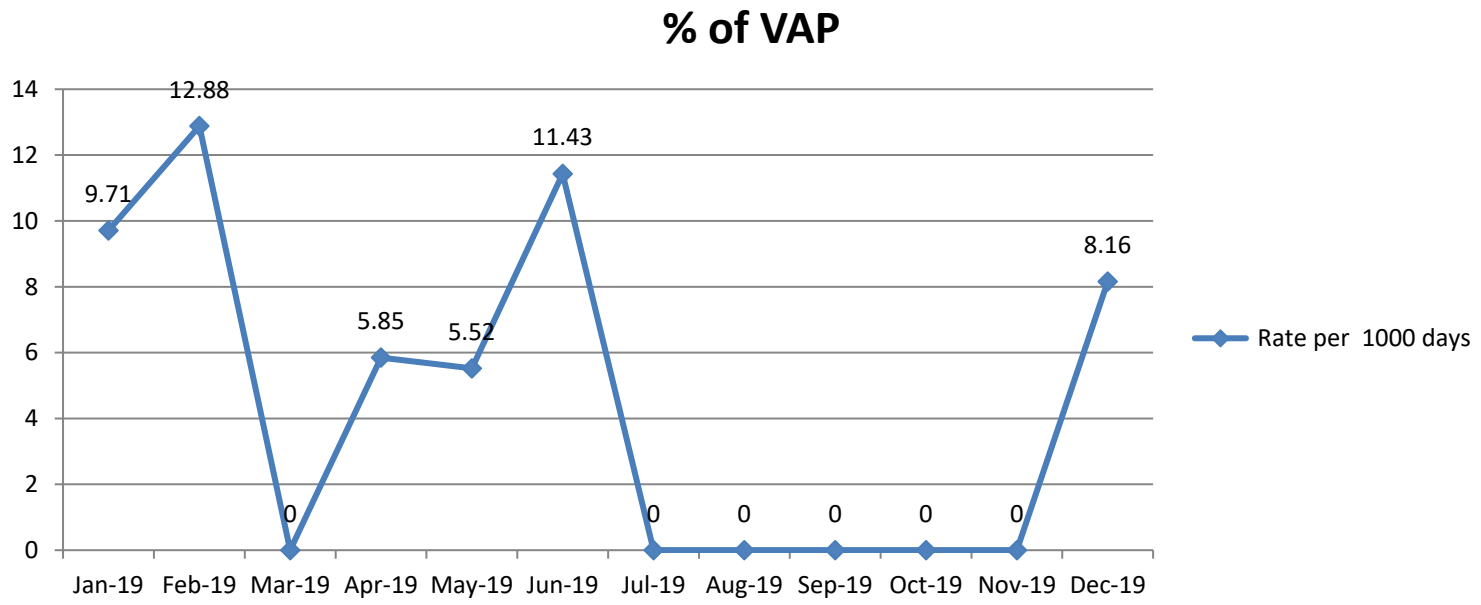
Internal benchmark : zero

Interpretation- Above fig. shows that there are total 3 incidences in the month September and October in the IPD. Rationale for the CAUTI were poor catheter care and prolonged length of stay of the patient. according to hospital internal benchmark it is observed that staff are aware about the Infection caused by catheter to the patients as the maximum rate shows 0% infection rate.

2. Ventilator Associated Pneumonia (VAP)

Ventilator associated pneumonia (VAP) rate.			
Months	**Total number of VAP cases in a month**	**Total number of ventilator days in that month**	**Rate per 1000 days**
Jan-19	2	206	**9.71**
Feb-19	3	233	**12.88**
Mar-19	0	168	0.00
Apr-19	1	171	**5.85**
May-19	1	181	**5.52**
Jun-19	2	175	**11.43**
Jul-19	0	140	0.00
Aug-19	0	202	0.00
Sep-19	0	140	0.00
Oct-19	0	135	0.00
Nov-19	0	145	0.00
Dec- 19	2	245	**8.16**

Ventilator associated pneumonia (VAP)



Benchmark as per International Nosocomial Infection Control Consortium – 14.7 per 1000 ventilator days

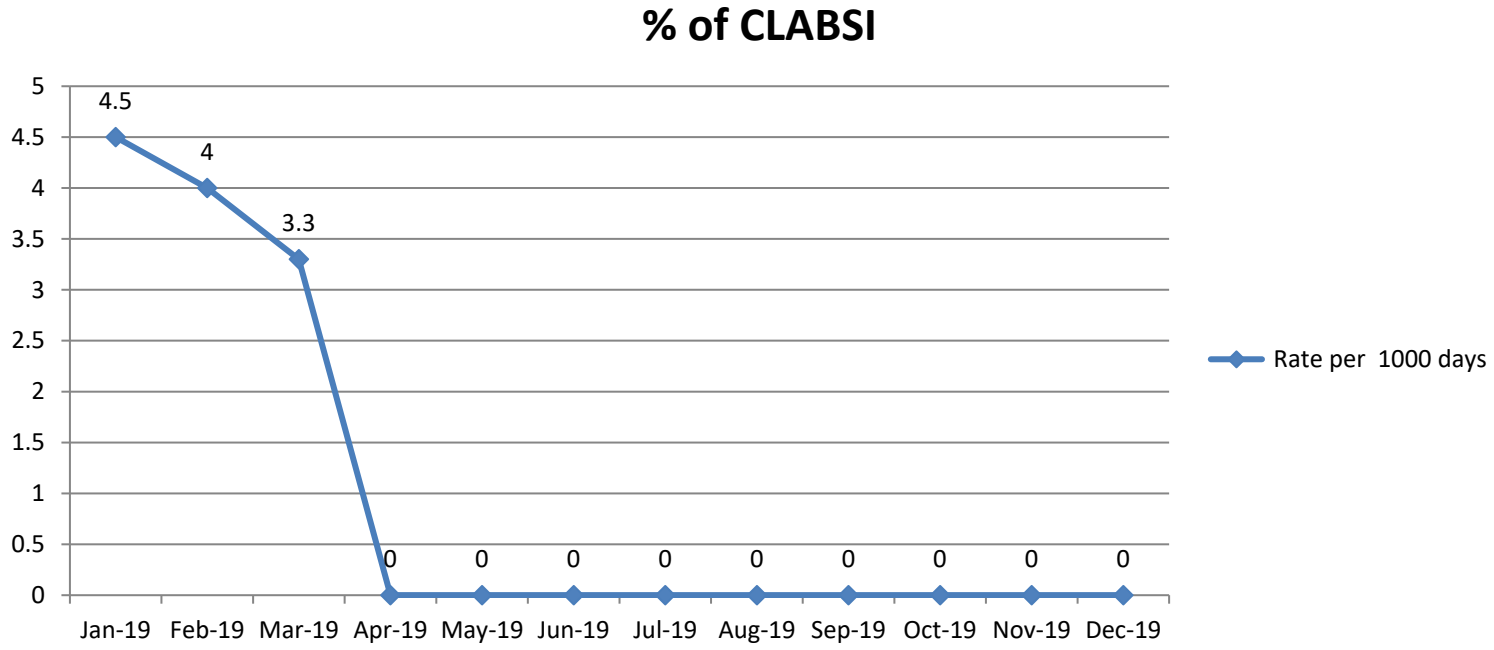
Internal benchmark : zero

Interpretation- There is increased rate of VAP in the month of January, February, April, May, June, and December, whereas February and June has highest rate of VAP. After highest occurrence of infection in the June strict audit was conducted and training is given assessing the knowledge gap to curb the spread of infection. Other causes for VAP were poor tracheostomy care and non compliance of hand hygiene.

3. Central line associated bloodstream infection (CLABSI)

Central line associated bloodstream infection (CLABSI) rate			
Months	**Total number of CLABSI cases in a month**	**Total number of central line days**	**Rate per 1000 days**
Jan-19	2	440	**4.5**
Feb-19	2	500	**4.0**
Mar-19	1	300	**3.3**
Apr-19	0	320	0.0
May-19	0	400	0.0
Jun-19	0	340	0.0
Jul-19	0	300	0.0
Aug-19	0	345	0.0
Sep-19	0	321	0.0
Oct-19	0	300	0.0
Nov-19	0	330	0.0
Dec-19	0	380	0.0

Central line associated bloodstream infection (CLABSI)

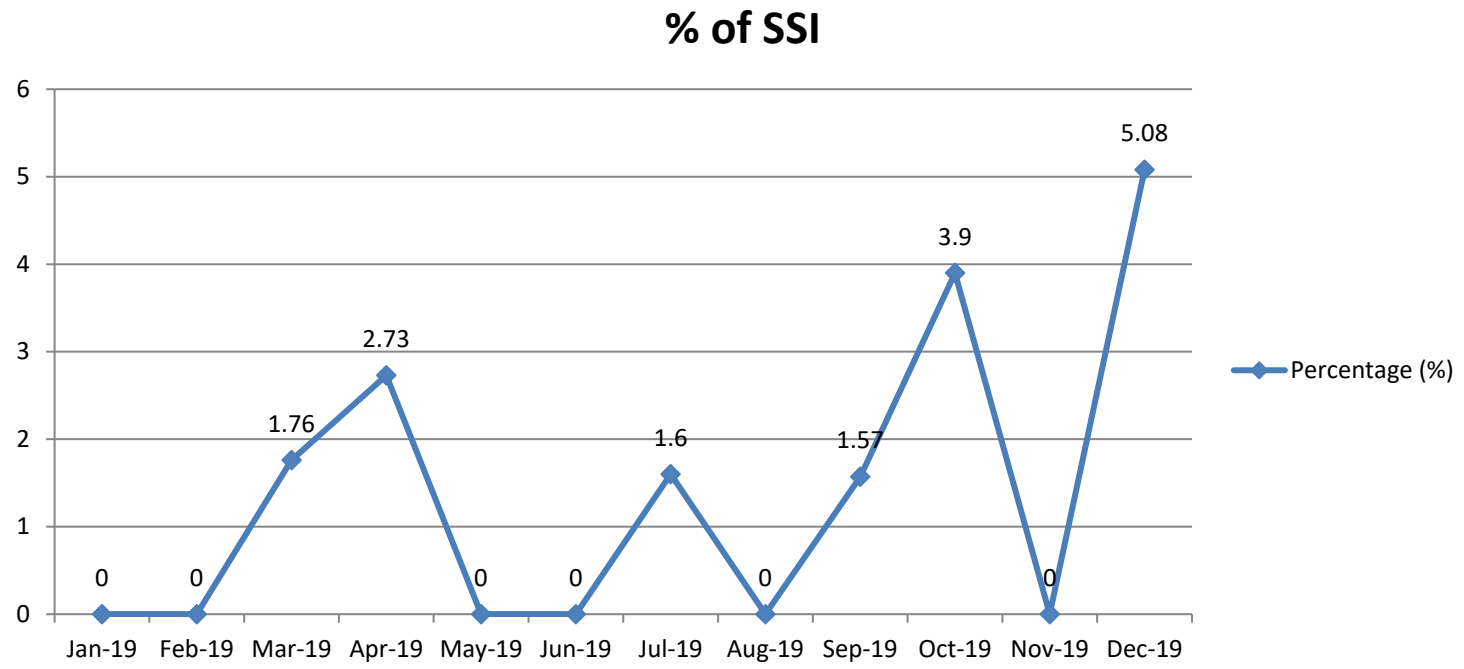


Interpretation- There are 5 incidences reported of CLABSI in initial 3 consecutive months of 2019. Henceforth the departments were informed about the infection rate, CAPA was done and henceforth the NCs were closed. Causes of CLABSI were poor central line care, improper sample collection practices from cvc, poor patient hygiene, poor compliance with dressing change.

4. Surgical Site Infection (SSI)

Surgical site infection (SSI) rate			
Months	**Total number of surgical site infections**	**Total no. of surgeries performed in a month**	**Percentage (%)**
Jan-19	0	85	0
Feb-19	0	82	0
Mar-19	1	76	**1.76**
Apr-19	2	73	**2.73**
May-19	0	79	0
Jun-19	0	70	0
Jul-19	1	60	**1.60**
Aug-19	0	71	0
Sep-19	1	57	**1.57**
Oct-19	2	54	**3.90**
Nov-19	0	71	0
Dec-19	3	59	**5.08**

Surgical Site Infection (SSI)



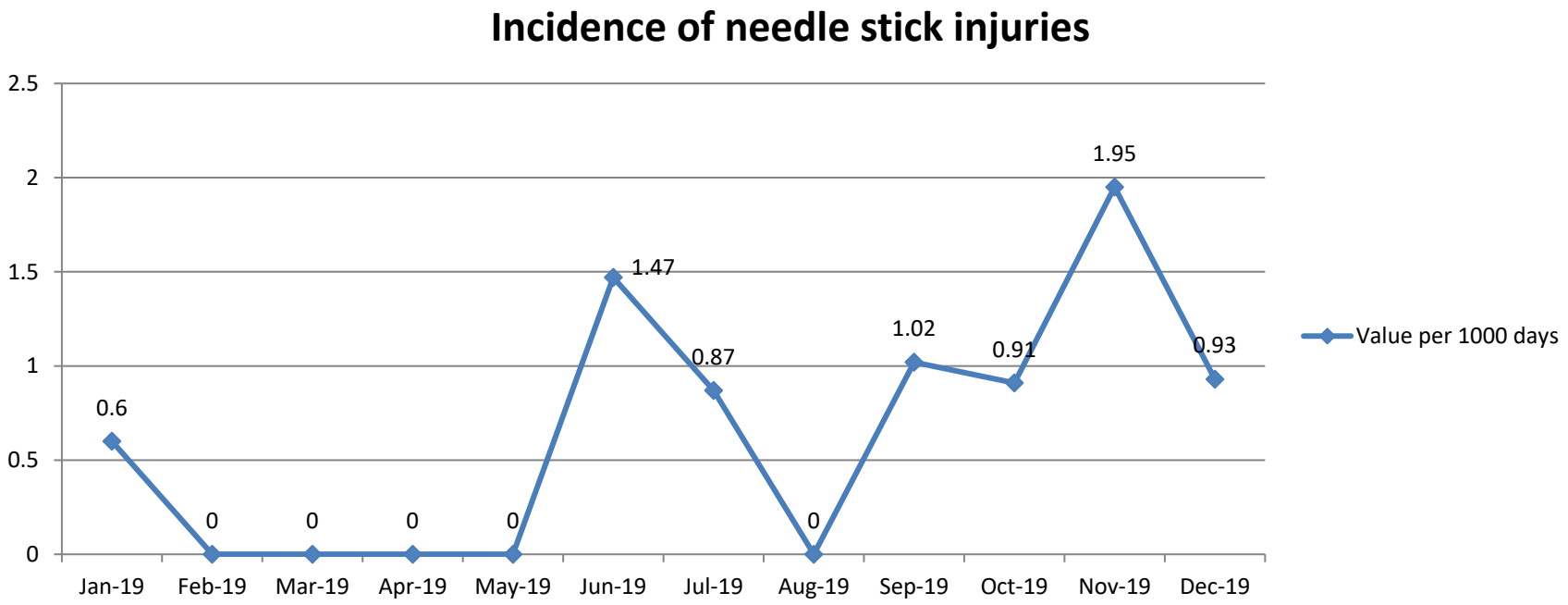
Benchmark as per International Nosocomial Infection Control Consortium - 3%
Internal Benchmark - Zero

Interpretation- The above data shows a greater number of SSI, as mostly patients who are admitted in the hospital are the postoperative cases. The multiple rationale for SSI could be because of poor hand hygiene, poor surgical site and postoperative care.

5. Needle Stick Injuries (NSI)

Incidence of needle stick injuries			
Months	**No of blood body fluid exposures in IPD areas**	**No. of in-patient days**	**Value per 1000 days**
Jan-19	1	1663	**0.60**
Feb-19	0	1786	0
Mar-19	0	1319	0
Apr-19	0	1556	0
May-19	0	1122	0
Jun-19	2	1353	**1.47**
Jul-19	1	1142	**0.87**
Aug-19	0	1282	0
Sep-19	1	975	**1.02**
Oct-19	1	1088	**0.91**
Nov-19	2	1028	**1.95**
Dec-19	1	1066	**0.93**

Needle Stick Injuries (NSI)



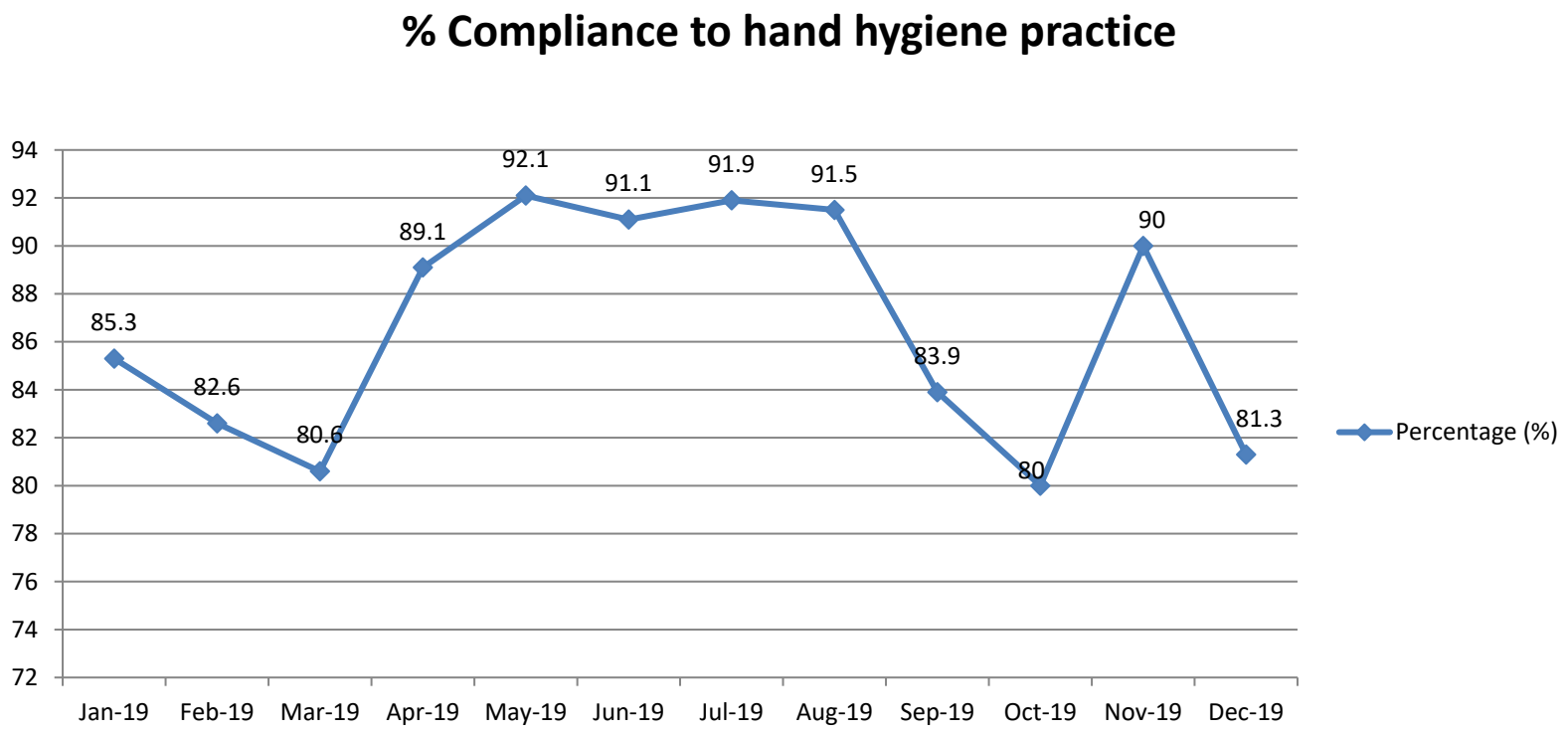
Internal Benchmark- 0%

Interpretation- The data shows there are total 9 incidents of needle stick injury which is seen in the month of January, June, July, and consecutively in September, October, November, December. Although the hospital's internal benchmarking suggest there should be zero percent rate of infection.

6. Compliance to hand hygiene practice

Compliance to hand hygiene practice			
Months	**Observed hand hygiene episodes**	**No. Of hand hygiene opportunities**	**Percentage (%)**
Jan-19	1995	2340	**85.3**
Feb-19	1785	2160	**82.6**
Mar-19	1885	2340	**80.6**
Apr-19	1925	2160	89.1
May-19	1160	1260	92.1
Jun-19	2050	2250	91.1
Jul-19	2150	2340	91.9
Aug-19	2140	2340	91.5
Sep-19	1885	2248	**83.9**
Oct-19	1800	2250	**80.0**
Nov-19	2015	2240	90.0
Dec-19	1830	2250	**81.3**

Compliance to hand hygiene practice



Interpretation- The data shows there are total 9 incidents of needle stick injury which is seen in the month of January, June, July, and consecutively in September, October, November, December. Although the hospital's internal benchmarking suggest there should be zero percent rate of infection.

Result

- Total six quality indicators were studied (i.e. CAUTI, VAP, CLABSI, SSI, NSI, Hand hygiene) which showed correlation with each other. Variation in one indicator was influencing performance of another indicator. Non-Compliance of Hand Hygiene and lack of training of clinical staff are causative factors for HAI.
- The analysis of data on HAI indicators shows that hospital in this study is performing above industry benchmark set by international standards however the performance is comparatively on lower side based on benchmark set by internal quality department of hospital.

RECOMMENDATIONS

- Five Main Infection Control Manoeuvres to Control Transmission
- Hand hygiene
- Personal protective equipment (gloves, gowns and aprons)
- Isolation where required
- Proper handling and decontamination of patient care equipment
- Proper handling of patient care environment.

- Immunization of Health Care Worker (HCW)
- ✓ Tetanus Immunization
- ✓ Hepatitis B Vaccination
- Staff Education and Involvement in control of Infection and Prevention
- Infection and Microbiologic Surveillance and Audit
- Sterilization or Disinfection and Maintenance of Equipment and Devices

STRATEGY
CONTINUOUS IMPROVEMENT
LEADERSHIP
PROCESS PLANNING

THANK YOU!!