# AUDIT OF HOSPITAL ACQUIRED INFECTIONS: ASSESSING COMPLIANCE IN CLABSI, CAUTI, VAP AND SSI PREVENTION

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**Hospital and Health Management**

by

**Archita Jain**

Under the Supervision and Guidance of

**Dr. Sanjay Gupta**

**2025**

Date: 11th June, 2025

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Archita Jain D/O Ramesh Chandra Jain, student of IIHMR University, Jaipur, has successfully completed her dissertation in the Operations Department at Mahatma Gandhi Medical College and Hospital, Jaipur.

She has worked as a Floor Administrator in the Operations Department. Also supporting the JCI implementation drive.

The Dissertation Period was from 11th March, 2025 to 11th June, 2025. During this period, Archita Jain demonstrated exceptional dedication and commitment to her work, contributing valuable insights and advancements to our department.

We acknowledge and appreciate her efforts and wish her all the best in her future endeavours.

Best wishes,

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## CERTIFICATE BY FACULTY GUIDE AND DEAN

This is to certify that the dissertation titled "**Audit of Hospital-Acquired Infections: Assessing Compliance in CLABSI, CAUTI, VAP and SSI Prevention"** is a record of the research work undertaken by Archita Jain in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

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## DECLARATION BY STUDENT

I hereby declare that this dissertation titled "**Audit of Hospital-Acquired Infections: Assessing Compliance in CLABSI, CAUTI, VAP and SSI Prevention"** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

**Archita Jain (1686)**

Name of Student

Date: 11-06-2025

## ABSTRACT

### Audit of Hospital-Acquired Infections: Assessing Compliance in CLABSI, CAUTI, VAP and SSI Prevention

**Background:**

Hospital-acquired infections (HAIs) continue to present a serious challenge to patient safety, particularly in Intensive Care Units (ICUs), where the use of invasive devices heightens the risk of infection. These infections, such as bloodstream infections linked to central lines, urinary tract infections from catheters, pneumonia caused by mechanical ventilation, and infections at surgical sites, remain a significant issue in healthcare settings. Not only do they endanger patient health and hinder recovery, but they also contribute to longer hospital stays, rising treatment costs, and increased morbidity and mortality.

Adherence to evidence-based prevention bundles has proven effective in reducing these infections and improving patient outcomes. In light of this, the present study aimed to evaluate the level of compliance with infection prevention protocols for the four major HAIs and to assess the corresponding infection rates at Mahatma Gandhi Medical College and Hospital, Jaipur.

**Objectives:**

This study primarily aims to:

- To assess the compliance rate of healthcare workers with infection prevention practices for CLABSI, CAUTI, VAP, and SSI.
- To analyse the infection rates associated with these HAIs over a defined study period.
- To identify gaps and recommend strategies to enhance compliance and reduce infection incidence.

**Methodology:**

This cross-sectional observational study took place over a span of three months,(March to May 2025) in the ICUs of the hospital in Jaipur. The study population comprised healthcare workers involved in infection control activities, along with ICU patients who

had central venous access, urinary drainage devices, required mechanical ventilation, or had undergone surgical interventions. Data were collected through standardized audit checklists used during routine infection control audits, as well as retrospective review of patient medical records.

Compliance rate was determined as the percentage of checklists where all infection control measures were fully adhered to, relative to the total audits performed. Infection rates were calculated based on the number of reported infections per 1,000 device days or procedures, according to standard surveillance definitions. Both compliance and infection data were tracked monthly and averaged over the three-month study period to assess overall trends.

**Results:**

The three-month average compliance rates were highest for SSI (97.33%) and CAUTI (95.67%), both exceeding the benchmark of 95%. In contrast, compliance for CLABSI (85%) and VAP (89.42%) fell short, with gaps of 10% and 5.25%, respectively. Despite these gaps, infection rates remained within national benchmarks: CAUTI averaged 1.08 per 1,000 catheter days (target ≤1.5), CLABSI was 2.9 (target ≤3.5), VAP stood at 2.07 (target ≤3.0), and SSI was lowest at 0.71 per 1,000 procedures (target ≤1.28). This suggests that short-term infection control resilience may exist despite suboptimal compliance in certain areas, though the long-term sustainability remains uncertain.

**Conclusion:**

High compliance was associated with low infection rates in CAUTI and SSI, validating the effectiveness of prevention protocols. However, CLABSI and VAP exhibited concerning compliance gaps, underscoring the need for targeted interventions. Strategies such as regular staff training, periodic compliance audits, and real-time feedback systems are recommended to strengthen adherence and sustain infection control outcomes. Consistent compliance is crucial to safeguarding patient safety and minimising preventable infections.

**Keywords:**

Hospital-acquired infections, CLABSI, CAUTI, Compliance rate, Infection prevention

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I am thankful to all the faculty members and academic staff at IIHMR University, Jaipur, whose teachings, support, and blessings have equipped me with the knowledge and confidence to carry out this work.

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I am also deeply grateful to my family and friends for their unconditional support, understanding, and encouragement throughout this academic journey. Their motivation has given me the strength and perseverance needed to complete my MBA.

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Sincerely,

Archita Jain

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| | |
|---|---|
| HAI | Hospital-acquired infections |
| CLABSI | Central line-associated bloodstream infections |
| CAUTI | Catheter-associated urinary tract infections |
| VAP | Ventilator-associated pneumonia |
| SSI | Surgical site infections |
| ICUs | Intensive care units |
| HCWs | Health Care Workers |
| ICC | Infection Control Committee |
| AMR | Antimicrobial resistance |
| WHO | World Health Organisation |
| MGMCH | Mahatma Gandhi Medical College and Hospital |
| HEPA | High-Efficiency Particulate Air |
| IPC | Infection prevention and control |
| HCW | Healthcare workers |
| PPE | Personal protective equipment |

**Audit of Hospital-Acquired Infections: Assessing Compliance in CLABSI, CAUTI, VAP and SSI Prevention**

# CHAPTER 1

# INTRODUCTION

## 1.1 Background

HAIs remain a significant and ongoing concern in clinical settings, particularly in ICUs, where patients are critically ill and often require invasive procedures such as catheterization, mechanical ventilation, or central line insertion. These necessary interventions, while lifesaving, can also increase the risk of infection. Their occurrence not only hinders recovery and contributes to increased complications and fatal outcomes but also imposes a heavy economic and operational strain on medical systems. Effectively tackling these infections calls for a committed effort toward strict compliance with infection prevention protocols and the promotion of a culture of safety among healthcare providers.

This study was conducted at Mahatma Gandhi Hospital in Jaipur, a prominent tertiary care institution offering extensive medical and teaching services. The study focuses on evaluating the level of compliance with standard infection prevention protocols for CLABSI, CAUTI, VAP, and SSI, and analysing the corresponding infection rates in ICUs over a period of three months.

Through systematic observation and audit-based evaluation, this study aims to identify existing gaps in infection control practices and to highlight the importance of maintaining high compliance to reduce the burden of HAIs. The outcomes are expected to support continuous quality improvement and enhance patient safety within the hospital environment.

## 1.2 Overview of Hospital-Acquired Infections (HAIs)

### 1.2.1 Definition and Significance of HAIs

HAIs often referred to as nosocomial infections, are those that patients develop while receiving medical care for unrelated health issues. These infections arise not from the underlying condition but as an unintended consequence of the healthcare environment itself. These infections usually appear 48 hours or later after hospital admission, within three days of discharge, or within 30 days following surgery, and were not present or developing at the time of admission (1).

This continue to be a major global challenge, as they significantly affect patient outcomes and place a heavy burden on healthcare systems. These infections can result in longer hospital stays, increase the risk of complications and AMR, and add substantial costs to patient care. Beyond the clinical impact, they also contribute to emotional stress for patients and families navigating already difficult health journeys. According to the World Health Organization (WHO), more than 1.4 million people around the globe are affected by HAIs(2).

### 1.2.2 Global and National Burden of HAIs

The global burden of hospital-acquired infections (HAIs) remains alarmingly high. Recent estimates suggest that nearly 136 million cases of hospital-associated resistant infections occur each year, with the highest reported numbers in countries such as China, Pakistan, and India (3). These infections are often caused by antimicrobial-resistant pathogens, making them particularly challenging to manage and control. As a result, they not only complicate patient recovery but also strain healthcare resources and highlight the urgent need for stronger infection prevention strategies worldwide.

In India, the prevalence of HAIs is notably high. Studies indicate that about 10-20% of hospitalised patients in India acquire nosocomial infections. ICUs are particularly affected, contributing to a quarter of all hospital infections. Factors such as poor hygiene practices, increased patient load, and the overuse of antibiotics without prior testing contribute to the high incidence of HAIs and the proliferation of antimicrobial-resistant strains (4).

### 1.2.3 Common Types of HAIs

The most prevalent types of HAIs include:

- **Central Line-Associated Bloodstream Infections:** Develop when harmful microorganisms, such as bacteria or viruses, enter the bloodstream via a central line catheter, which is typically used for administering medication or fluids over a long period. In Indian ICUs, CLABSI rates have been reported to be at least five times higher than those in the United States (5).
- **Catheter-Associated Urinary Tract Infections:** These infections starts as bacteria invade the urinary system, impacting areas such as the urethra, bladder, ureters, or kidneys, commonly seen in patients who have had a urinary catheter inserted for an extended period. The incidence rate of CAUTI in Indian hospitals has been reported as 10.6 per 1,000 catheter-days (6).
- **Ventilator-Associated Pneumonia:** A form of lung infection that can occur in patients receiving mechanical ventilation to assist with their breathing, typically during extended stays in the ICUs. The incidence rate of VAP in Indian ICUs has been reported as 10.4 per 1,000 ventilator-days (6).
- **Surgical Site Infections:** Infections that develop in the area of the body where a surgical procedure was performed, typically occurring during the postoperative period as the incision or internal site begins to heal. They are the third most commonly reported hospital-acquired infections (HAIs) in India. A recent study found a 5.6% prevalence rate among surgical patients, with abdominal procedures being the most affected. Key risk factors included emergency surgeries, diabetes, and prolonged hospital stays (7).

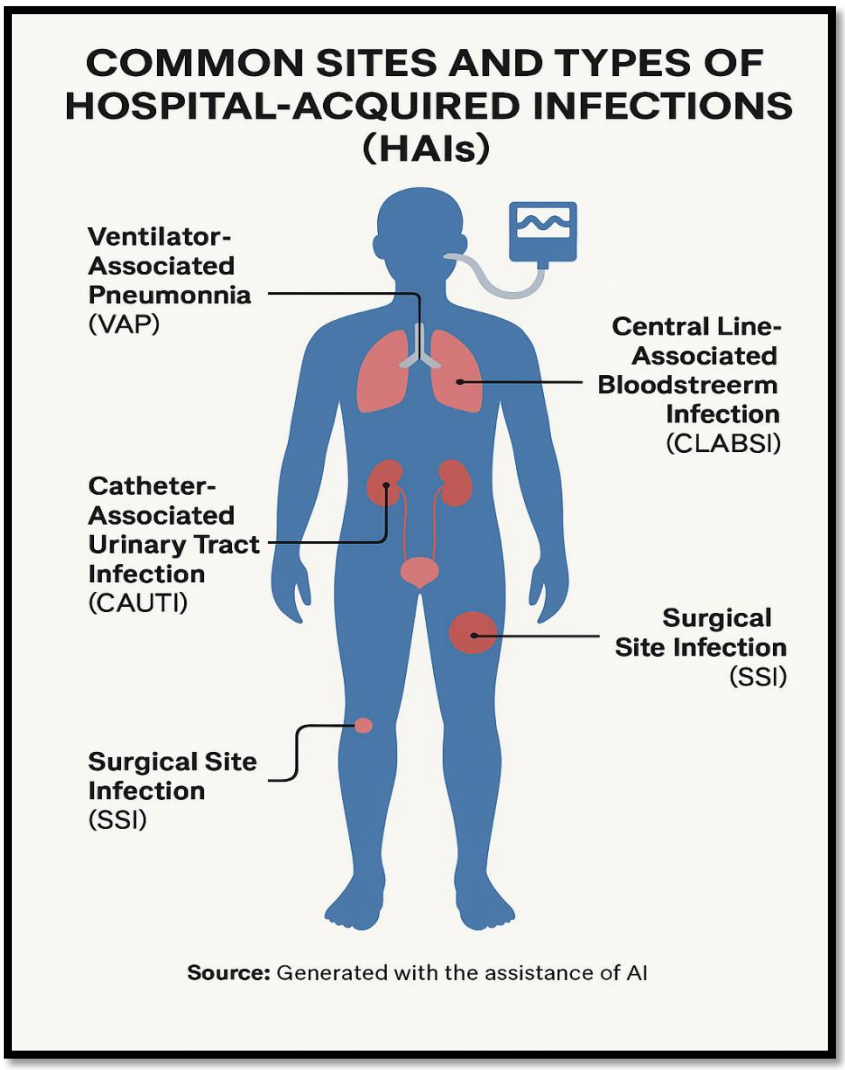



**Figure 1.1: Hospital-Acquired Infections**

## 1.3 Description of the Study Setting

### 1.3.1 About Mahatma Gandhi Medical College and Hospital

This premier tertiary care teaching hospital, situated in Jaipur, Rajasthan, is affiliated with a renowned university focused on medical sciences and technology. It is widely recognized for delivering a broad spectrum of healthcare services while maintaining a strong commitment to high standards in medical education. The institution integrates patient care, education, and research, serving thousands of patients from Rajasthan and neighbouring states. It operates under the principles of affordability, accessibility, and academic excellence.

MGMCH is equipped with modern diagnostic and therapeutic technologies and offers super-speciality services across multiple disciplines, including cardiology, oncology, nephrology, neurology, and critical care. Its emphasis on quality healthcare and

academic rigour makes it a fitting setting for studies related to patient safety and infection control.


**Figure 1.2: Mahatma Gandhi Medical College and Hospital**

(Source: *Mahatma Gandhi Hospital. Overview | About Us - MGMCH, Jaipur [Internet]. Mgmch.org. 2025 [cited 2025 Apr 24]. Available from: https://www.mgmch.org/about-us/overview*)

### 1.3.2 ICU and Surgical Unit Facilities

The hospital has a well-structured critical care infrastructure with dedicated Intensive Care Units (ICUs) for medical, surgical, paediatric, and neonatal patients. Each ICU is equipped with advanced ventilators, central line monitoring systems, and infection control protocols. These units are managed by a collaborative team that includes intensivists, nurses, infection control specialists, and various support staff, all working together to ensure comprehensive patient care.

The surgical units are equally well-established, comprising modular operation theatres with HEPA filtration and laminar air flow systems, sterile zones, and pre- and post-operative care units. In these environments, the frequent use of invasive devices like catheters, central lines, and ventilators heightens the risk of hospital-acquired infections (HAIs), making them critical areas for monitoring and evaluation through surveillance and audit studies.

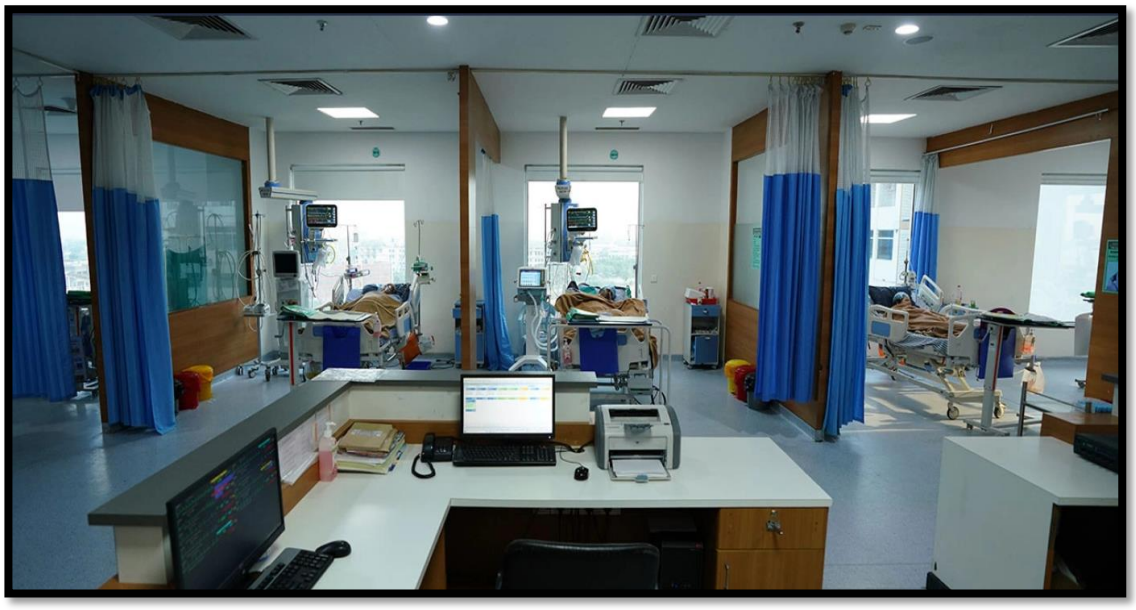


**Figure 1.3: Intensive Care Unit**

(Source: *Mahatma Gandhi Hospital. Intensive Care Unit | Facilities - MGMCH, Jaipur [Internet]. Mgmch.org. 2025 [cited 2025 Apr 24]. Available from: https://www.mgmch.org/facilities/icu*)

### 1.3.3 Services Provided and Relevance to HAIs

MGMCH provides high-volume tertiary care services, including complex surgeries, emergency interventions, organ transplants, and critical care management. These services often require the use of devices and procedures that elevate the risk of HAIs. Consequently, the hospital has regular surveillance protocols, and dedicated infection control nurses who monitor and document cases of CLABSI, CAUTI, VAP, and SSI.

Given the hospital's wide service base and its role as a teaching and research institution, MGMCH becomes an ideal environment to study infection prevention practices. Evaluating compliance with infection control bundles in this context offers valuable insights into operational efficiency and patient safety culture in tertiary care settings.

### 1.4 Infection Rate

#### 1.4.1 Definition and Importance

The infection rate in a healthcare setting refers to how often HAIs occur among patients during their time in the hospital. These healthcare-associated conditions can include bloodstream-related complications linked to intravenous lines, urinary tract issues caused by catheters, lung infections resulting from mechanical ventilation, and wound complications at surgical sites. Monitoring these rates is essential as they serve as key indicators of hospital hygiene, patient safety, and the overall effectiveness of IPC measures (8).

HAIs are a leading cause of increased patient complications, longer hospital stays, higher healthcare expenses, and the spread of antimicrobial resistance. Consistent tracking of infection rates allows healthcare providers to make informed, evidence-based decisions that enhance patient safety and the quality of care.

#### 1.4.2 Standard Method of Calculation

The infection rate is commonly calculated using the formula:

**Infection Rate (%) = (Number of HAIs / Total number of patients or device-days) × 1000**

For device-associated infections, rates are expressed per 1,000 device-days:

- CLABSI Rate = (Number of CLABSIs / Central line days) × 1000
- CAUTI Rate = (Number of CAUTIs / Catheter days) × 1000
- VAP Rate = (Number of VAPs / Ventilator days) × 1000
- SSI Rate = (Number of SSIs / Total surgeries) × 1000

#### 1.4.3 Use in Hospital Quality Monitoring

Infection rates are integral to hospital quality monitoring. They serve as performance indicators in quality assurance programs and accreditation processes. A decline in infection rates often reflects effective infection control practices and high staff compliance with protocols (9). Hospitals also use infection data for root cause analysis, policy revision, and staff education.

### 1.5 Compliance Rate

#### 1.5.1 Definition and Importance

In infection prevention and control (IPC), the compliance rate measures how well healthcare workers (HCWs) follow established protocols. This includes essential practices such as maintaining hygiene, ensuring the correct use of protective gear, and carrying out routine cleaning of the environment. High compliance is critical for reducing healthcare-associated infections (HAIs) and ensuring patient safety.

#### 1.5.2 Standard Method of Calculation

Compliance is typically measured through direct observation or audits. The standard formula is:

**Compliance Rate (%) = (Number of correct practices observed / Total number of opportunities for correct practice) × 100**

For instance, in hand hygiene audits, observers record each opportunity for hand hygiene and whether it was performed correctly, calculating the percentage of compliance accordingly.

#### 1.5.3 Why High Compliance Is Essential

High compliance with IPC measures is essential because lapses can lead to increased HAIs, prolonged hospital stays, and higher healthcare costs. Research has demonstrated that enhancing hand hygiene adherence among hospital staff can significantly lower the incidence of HAIs throughout the facility (10).

### 1.6 Importance of Audit in Infection Control

#### 1.6.1 Definition of Clinical Audit

A clinical audit is a systematic process used to assess healthcare practices against predefined standards or best practices. Its goal is to determine whether the expected actions are being executed in clinical settings, allowing for the identification of areas that require improvement. In infection control, clinical audits help ensure that established protocols are followed correctly to reduce the occurrence of hospital-acquired infections (HAIs) (11,12).

### 1.6.2 Role of Checklists and Observation

Checklists and direct observations are fundamental in infection control audits. Checklists provide a clear and organised framework for evaluating compliance with safety measures like hand hygiene and proper sterilisation practices (13). Observational techniques, on the other hand, allow auditors to directly witness healthcare practices, ensuring that guidelines are effectively integrated into everyday routines. This combination of structured tools and real-time evaluation enhances the accuracy of audits (14).

### 1.6.3 Impact on Improving Practices

Clinical audits are crucial for refining infection control practices. They offer a mechanism to compare actual practices with established standards, pinpointing areas for improvement. By identifying gaps and inconsistencies in infection control protocols, audits enable healthcare teams to develop tailored action plans. This process encourages ongoing improvement, leading to safer environments for both patients and healthcare providers. The feedback from audits fosters continuous development and enhanced adherence to safety standards (15,16).

## 1.7 Context and Importance of the Study

Intensive Care Units (ICUs) and surgical wards are high-risk zones for HAIs due to the frequent use of invasive devices. Even with well-established guidelines and training, compliance with these infection prevention bundles often varies among healthcare providers, leading to inconsistent outcomes. This is a matter of significant concern in tertiary care settings which caters to a large and diverse patient population.

Addressing gaps in compliance is crucial, not only for safeguarding patient health but also for maintaining institutional quality standards and resource efficiency. Regular audits of protocol adherence and infection rates form the backbone of any successful hospital infection control program.

### 1.8 Problem Statement

Despite the presence of standardized infection prevention guidelines, Mahatma Gandhi Medical College and Hospital continues to experience inconsistencies in compliance levels among healthcare professionals. While compliance with SSI and CAUTI bundles is generally high, significant deficiencies remain in adherence to CLABSI and VAP protocols. These gaps, despite continuous training, pose a threat to patient safety and hospital efficiency, especially in light of the increasing antimicrobial resistance and treatment costs.

### 1.9 Purpose of the Study

The primary purpose of this study is to evaluate how well healthcare workers in ICU and surgical units comply with infection prevention protocols for CLABSI, CAUTI, VAP, and SSI. By correlating these compliance rates with actual infection rates, the study aims to uncover gaps in practice and offer data-driven recommendations to enhance quality of care and patient safety.

This study also serves as a part of the hospital's broader initiative to maintain accreditation standards and improve its infection control strategies through internal assessment and continual quality improvement.

## 2.0 Aims and Objectives

**Aim:**

To evaluate adherence to HAI prevention protocols and assess infection trends within the ICU and surgical units of the hospital.

**Objectives:**

- To assess the compliance rate of healthcare staff with standard infection prevention protocols.
- To calculate and analyse the infection rates of these HAIs over a 3-month period (March–May 2025).
- To suggest evidence-based strategies for improving adherence and reducing the incidence of HAIs.

## CHAPTER 2

## REVIEW OF LITERATURE

| S. No. | Authors (Year) | Study Location | Sample Size | Sampling Technique | Salient Features |
|---|---|---|---|---|---|
| 1. | Thomas D, Nair SS, Kavyanjana P, Saleed KP, Shahir KP (2023) | Kannur, Kerala | Not specified | Cross-sectional study over 6 months | Prevalence of HAIs was 6.1%; Bloodstream infections (41.8%) were most common, followed by hospital-acquired pneumonia (17.2%) and respiratory tract infections (13.9%) (17). |
| 2. | Gupta R (2023) | Government Medical College, Kannauj, Uttar Pradesh | 179 healthcare workers | Observational cross-sectional study | All faculty members, resident doctors, and nursing staff demonstrated full awareness of proper hand hygiene practices; high compliance attributed to institutional policies and ongoing training (18). |
| 3. | Sharma P, Meena P, Sharma S, et al. (2023) | Jaipur, Rajasthan | 749 patients | Observational prospective study | 12.95% of patients had HAIs; VAP and SSI were most common; high antimicrobial resistance observed (19). |

| | | | | | |
|---|---|---|---|---|---|
| 4. | Maqbool A, Ahmad S, Khan A, et al. (2023) | Northern India | 186 patients | Prospective study | CLABSI incidence was 9.3 per 1000 catheter days; Acinetobacter species were the most common pathogens; high sensitivity to polymyxin B and tigecycline(20). |
| 5. | Singh S, Gupta A, Verma R, et al. (2022) | Trauma Center, Northern India | 105 patients | Cross-sectional study | Point prevalence of HAIs was significantly higher compared to developed countries; Acinetobacter baumannii was the most common pathogen (21). |
| 6. | Patel V, Kumar R, Singh A, et al. (2023) | Central India | 27,657 ICU patients | Retrospective cohort study over 5 years | HAI incidence rate was 6.9%; CLABSI, VAP, and the rates of catheter-associated urinary tract infections (CAUTI) were observed to be 10.6, 13.4, and 2.1 per 1,000 device days, respectively; high antimicrobial resistance noted (22). |
| 7. | Verma N, Singh P, Choudhary A, et al. | AIIMS Bhopal, Madhya Pradesh | 281 patients | Retrospective cohort study over 5 years | 31.67% of patients developed HAIs; Bloodstream infections accounted |

| | | | | | |
|---|---|---|---|---|---|
| | (2023) | | | | for 33% of the cases, closely followed by respiratory tract infections, which made up 30.68% of the total reported infections.were most common; Klebsiella pneumoniae and Acinetobacter baumannii were predominant pathogens (23). |
| 8. | Rajeshwari R, Kumar S, Das S, et al. (2025) | Tertiary Care Hospital, India | 2681 ventilator days, 4871 central line days, 11201 urinary catheter days | Prospective observational study | The occurrence of ventilator-associated pneumonia (VAP) was recorded at a rate of 39.1 cases for every 1,000 days patients spent on ventilators, while the rates for CRBSI and CAUTI were 7.8 and 4.8 per 1,000 device days, respectively. Acinetobacter baumannii and E. coli were common pathogens (24). |

# CHAPTER 3

# METHODOLOGY

## 3.1 Research Methodology and Hypothesis

This study employs a quantitative observational approach to evaluate compliance with infection prevention protocols and analyse HAIs rates in the ICU and surgical units of MGMGH. The hypothesis tested in this study is:

- **Null Hypothesis ($H_0$):** There is no significant association between compliance with infection prevention bundles and infection rates for CLABSI, CAUTI, VAP, and SSI.
- **Alternative Hypothesis ($H_1$):** Higher compliance with infection prevention bundles is associated with lower infection rates for CLABSI, CAUTI, VAP, and SSI.

## 3.2 Key Research Question

- What is the level of compliance with CLABSI, CAUTI, VAP, and SSI prevention guidelines among healthcare workers, and how does it correlate with corresponding infection rates?

## 3.3 Study Design

- **Type of Study:** Cross-sectional, observational, hospital-based study
- **Approach:** Quantitative assessment using structured checklists and patient records

## 3.4 Study Setting

The study was conducted at Mahatma Gandhi Hospital, Jaipur, specifically within the Intensive Care Units (ICUs) and surgical wards**,** where invasive procedures such as catheterization, intubation, and surgical interventions are routine, increasing the risk of HAIs.

### 3.5 Study Population

**Inclusion Criteria**

- Healthcare workers (doctors, nurses, technicians) involved in patient care and infection prevention practices.
- Patients admitted to the ICU or surgical ward

**Exclusion Criteria**

- Healthcare staff not directly involved in infection control practices.
- Patients admitted for less than 24 hours.

### 3.6 Research Procedure and Approach

**Quantitative Assessment**

- Compliance rate calculated as: (Number of checklists fully complied with / Total number of audits conducted) × 100.
- Infection rate calculated as: (Number of infections / Total device days or procedures) × 1000.

### 3.7 Data Analysis Plan

**1. Infection Rate Analysis**

- Monthly infection rates for each infection type (CAUTI, CLABSI, VAP, SSI) over 3 months (Mar - May 2025) were calculated.
- These were compared against established benchmark targets:

✓ CAUTI ≤ 1.5
✓ CLABSI ≤ 3.5
✓ VAP ≤ 3.0
✓ SSI ≤ 1.28

**2. Compliance Rate Analysis**

- 3-month average compliance rates were computed for each infection type.
- Benchmarked against the ideal target of 100% adherence.

**Study Instruments**

- CLABSI Audit Checklist
- CAUTI Audit Checklist
- VAP Audit Checklist
- SSI Audit Checklist
- Patient medical records for infection tracking

### 3.8 Sample Size and Sampling Technique

- **Sample Size:** 3 months of data for each of the 4 infection types = 12 data points (monthly records for CLABSI, CAUTI, VAP, and SSI).
- **Sampling Technique:** Convenience sampling was used for auditing available patient records and compliance checklists during the study period (March to May 2025).

### 3.9 Operational Definitions

- **CLABSI:** Laboratory-confirmed bloodstream infection associated with a central line.
- **CAUTI:** Urinary tract infection in catheterized patients.
- **VAP:** Pneumonia developing in patients on mechanical ventilation, confirmed through clinical and microbiological evidence.
- **SSI:** Infection occurring at the surgical site within 30 days post-surgery or 90 days if an implant is involved.
- **Compliance Rate:** Percentage of fully adhered checklists out of total audits conducted.
- **Infection Rate:** Number of infections per 1,000 device days or surgical procedures.

## 4.0 Ethical Considerations

- **Informed Consent:** Formal written permission was obtained from the hospital administration.
- **Voluntary Participation:** Healthcare staff data were anonymized and observed non-intrusively.

- **Confidentiality:** All patient records and audit data were kept strictly confidential and used solely for academic purposes.

# CHAPTER 4

# ANALYSIS AND FINDINGS

## 4.1 Infection Rate Analysis

- Infection rate calculated as: (Number of infections / Total device days or procedures) × 1000.

| CAUTI Infection Rate | | | |
|---|---|---|---|
| **Month & Year** | **Mar-25** | **Apr-25** | **May-25** |
| No of Urinary Catheter associated UTI's in a month | 4 | 3 | 4 |
| No of Urinary Catheter days in that month | 3708 | 3647 | 2974 |
| Actual | 1.08 | 0.82 | 1.34 |

**Table 4.1:** Monthly CAUTI Infection Rates and Catheter Utilization Data (Mar–May 2025)

| CLABSI Infection Rate | | | |
|---|---|---|---|
| **Month & Year** | **Mar-25** | **Apr-25** | **May-25** |
| No of central line-associated blood stream infections in a month | 4 | 4 | 3 |
| No of central line days in that month | 1381 | 1548 | 932 |
| Actual | 2.9 | 2.6 | 3.2 |

**Table 4.2:** Monthly CLABSI Infection Rates (Mar-May 2025)

| VAP Infection Rate | | | |
|---|---|---|---|
| **Month & Year:** | **Mar-25** | **Apr-25** | **May-25** |
| No of ventilator associated pneumonia in a month | 2 | 3 | 2 |
| No of ventilator days in that month | 1010 | 1414 | 964 |
| Actual | 2.0 | 2.1 | 2.1 |

**Table 4.3:** Monthly VAP Infection Rates (Mar -May 2025)

| SSI Infection Rate | | | |
|---|---|---|---|
| **Month & Year:** | **Mar-25** | **Apr-25** | **May-25** |
| Number of surgical site infections in a given month | 7 | 8 | 9 |
| Total number of surgeries performed in that month | 1252 | 1070 | 1090 |
| Actual | 0.56 | 0.75 | 0.83 |

**Table 4.4:** Monthly SSI Infection Rates (Mar- May 2025)

### 4.1.1 Calculating Average (CLABSI, CAUTI, VAP, and SSI)

| Average HAI Rates vs Target Benchmarks (Mar–May 2025) | | | | | |
|---|---|---|---|---|---|
| **Infection Type** | **Mar-25** | **Apr-25** | **May-25** | **Average** | **Target** |
| CAUTI | 1.08 | 0.82 | 1.34 | 1.08 | 1.5 |
| CLABSI | 2.9 | 2.6 | 3.2 | 2.9 | 3.5 |
| VAP | 2 | 2.1 | 2.1 | 2.07 | 3 |
| SSI | 0.56 | 0.75 | 0.83 | 0.71 | 1.28 |

**Table 4.5:** Average HAI Infection Rates vs Target Benchmarks (Mar–May 2025)

### 4.1.2 Key Findings

During the period from March to May 2025, the hospital demonstrated commendable performance in managing hospital-acquired infections (HAIs). All four tracked infection types CAUTI, CLABSI, VAP, and SSI recorded average rates that were consistently below their respective target benchmarks. Notably, CAUTI had the lowest average rate at 1.08 against a target of 1.5, reflecting strong adherence to catheter care protocols. CLABSI rates, though slightly variable month to month, averaged 2.9, comfortably within the target of 3.5, highlighting effective central line management. Ventilator-associated pneumonia (VAP) showed a steady trend with minimal variation, averaging 2.07, which is well below the target of 3.0, suggesting robust implementation of ventilator care bundles. Meanwhile, surgical site infections (SSI) showed a slight increase each month but remained within safe margins, averaging 0.71 compared to the target of 1.28. The findings highlight the hospital's dedicated efforts towards infection control and ensuring patient safety. They underscore the effectiveness of current preventive measures and clinical practices in place.

### 4.2 Compliance Rate Analysis

- Compliance rate calculated as: (Number of checklists fully complied with / Total number of audits conducted) × 100.

| Compliance Rates of CAUTI Checklist (March 2025 - May 2025) | | | |
|---|---|---|---|
| **MEASURE** | **Mar-25** | **Apr-25** | **May-25** |
| Number of CAUTI checklists compiled | 98 | 105 | 108 |
| Total CAUTI Checklists Audited | 102 | 110 | 112 |
| Rate | 96% | 95% | 96% |

**Table 4.6:** Compliance Rates of CAUTI Checklist (March 2025 - May 2025)

| Compliance Rates of CLABSI Checklist (March 2025 - May 2025) | | | |
|---|---|---|---|
| **MEASURE** | **Mar-25** | **Apr-25** | **May-25** |
| Number of CLABSI checklists complied | 50 | 53 | 61 |
| Total CLABSI Checklists Audited | 60 | 62 | 70 |
| Rate | 83% | 85% | 87% |

**Table 4.7:** Compliance Rates of CLABSI Checklist (March 2025 - May 2025)

| Compliance Rates of SSI Checklist (March 2025 - May 2025) | | | |
|---|---|---|---|
| **MEASURE** | **Mar-25** | **Apr-25** | **May-25** |
| Number of SSI checklist complied | 59 | 80 | 90 |
| Total SSI Checklists Audited | 60 | 83 | 92 |
| Rate | 98% | 96% | 98% |

**Table 4.8:** Compliance Rates of SSI Checklist (March 2025 - May 2025)

| Compliance Rates of VAP Checklist (March 2025 - May 2025) | | | |
|---|---|---|---|
| **MEASURE** | **Mar-25** | **Apr-25** | **May-25** |
| Number of VAP checklist complied | 56 | 58 | 61 |
| Total VAP Checklists Audited | 62 | 65 | 68 |
| Rate | 90.32% | 89.23% | 89.71% |

**Table 4.9:** Compliance Rates of VAP Checklist (March 2025 - May 2025)

### 4.2.1 Calculating Average (CLABSI, CAUTI, VAP, and SSI)

| Average HAI Compliance Rates vs. Target Benchmarks (Mar–May 2025) | | | | |
|---|---|---|---|---|
| **Infection Type** | **Mar-25** | **Apr-25** | **May-25** | **3-Month Average (%)** |
| **CAUTI** | 96% | 95% | 96% | 95.67% |
| **CLABSI** | 83% | 85% | 87% | 85% |
| **SSI** | 98% | 96% | 98% | 97.33% |
| **VAP** | 90.32% | 89.23% | 89.71% | 89.42% |
| **Target** | ≥ 95% | ≥ 95% | ≥ 95% | ≥ 95% |

**Table 5.0:** Average HAI Compliance Rates vs. Target Benchmarks (Mar–May 2025)

### 4.2.2 Key Findings

The assessment of Healthcare-Associated Infection (HAI) compliance rates from March to May 2025, when compared against the ideal target benchmark of 100%, reveals a mixed pattern of progress and persisting gaps. To begin with, Surgical Site Infection (SSI) protocols demonstrated the highest level of compliance, with rates consistently nearing the target and a three-month average of 97.33%. This highlights the successful application of infection control measures in surgical settings. On the other hand, CLABSI showed the lowest average compliance rate, at 85%. However, a gradual improvement from 83% in March to 87% in May suggests that ongoing efforts are beginning to yield positive outcomes, although further targeted interventions are necessary.

Meanwhile, Catheter-Associated Urinary Tract Infections (CAUTI) exhibited relatively stable compliance, with figures ranging between 95% and 96%, resulting in an average of 95.67%. This consistency indicates that standard preventive measures are generally well-followed, though periodic reviews and reinforcement could help close the remaining gap. Similarly, Ventilator-Associated Pneumonia (VAP) compliance

remained moderately steady, averaging 89.42% over the three months. While this reflects a reasonable adherence to respiratory care protocols, it also emphasises the need for additional focus and vigilance in this area.

Taken together, these findings highlight that although notable strides have been made in infection control practices, none of the infection types have yet met the 100% compliance target. Therefore, a continued emphasis on quality improvement initiatives, capacity building, regular audits, and staff engagement is essential. Only through sustained efforts and systemic support can full compliance be achieved, thereby enhancing patient safety and reducing the burden of HAIs.

# CHAPTER 5

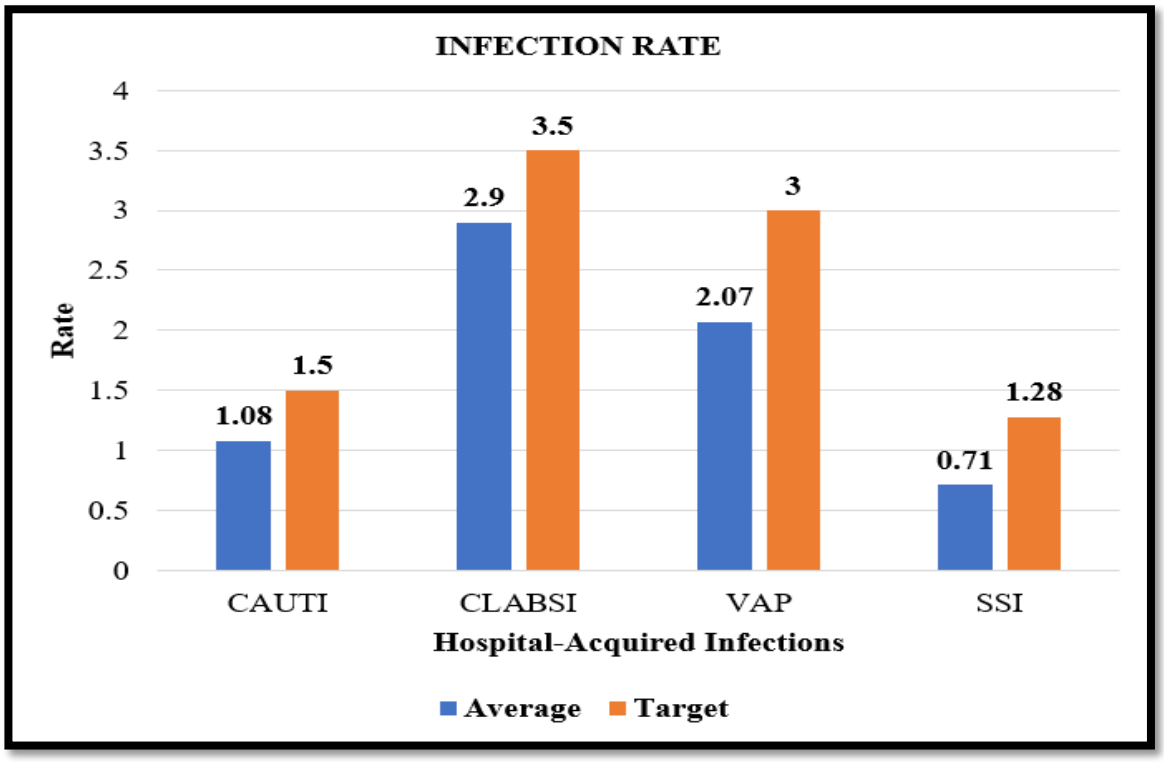
# RESULTS

The analysis of the infection rates over the three-month period (March to May 2025) reveals encouraging trends in hospital-acquired infection (HAI) control. As reflected in both the infection rate table and the corresponding bar graph, all four infection types CAUTI, CLABSI, VAP, and SSI, maintained infection rates well within the predefined targets. To elaborate, CAUTI recorded an average infection rate of 1.08, comfortably below the target threshold of ≤1.5. Similarly, CLABSI showed an average infection rate of 2.90, which, although higher compared to other infection types, remained safely within the acceptable limit of ≤3.5. Ventilator-Associated Pneumonia (VAP) registered an infection rate of 2.07, which also aligns with the target benchmark of ≤3.0, indicating effective respiratory care practices. Finally, Surgical Site Infections (SSI) demonstrated the lowest average infection rate at 0.71, showcasing strong compliance with surgical protocols.

| Gap Analysis of HAI Infection Rates (Mar–May 2025) | | | |
|---|---|---|---|
| **Infection Type** | **Average Infection Rate** | **Target Rate** | **Gap** |
| **CAUTI** | 1.08 | ≤ 1.5 | ☑ Within target |
| **CLABSI** | 2.9 | ≤ 3.5 | ☑ Within target |
| **VAP** | 2.07 | ≤ 3.0 | ☑ Within target |
| **SSI** | 0.71 | ≤ 1.28 | ☑ Within target |

**Table 5.1:** Gap Analysis of HAI Infection Rates (Mar–May 2025)

The infection rate bar graph further complements these findings by providing a visual representation of how all infection rates consistently remained below their respective thresholds. This illustrates that, despite minor fluctuations, the hospital has been largely successful in controlling infections. The combination of data and graphical trends suggests that current infection control measures are effective, providing a solid foundation upon which further improvements can be built.



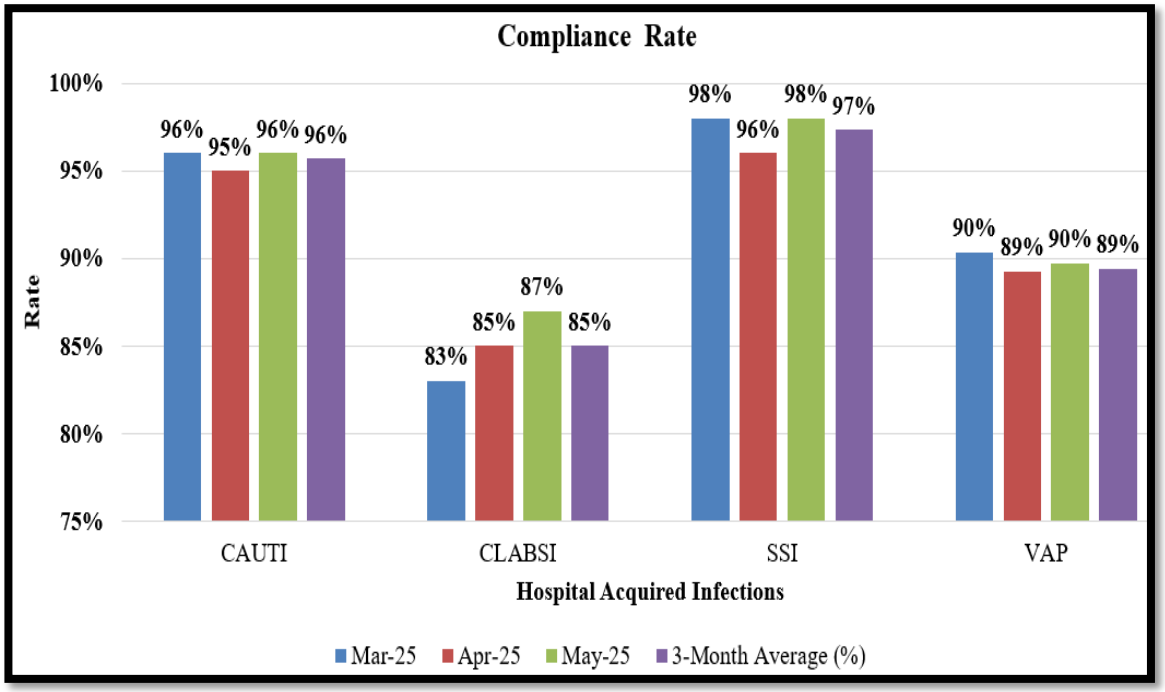

**Graph 5.1:** HAI Infection Rates and Target Benchmarks (Mar–May 2025)

While infection rates remained under control, the compliance rate analysis paints a slightly more nuanced picture. According to the compliance rate table and the accompanying bar graph, two out of four infection types met or exceeded the ideal compliance benchmark, while the remaining two fell short. Surgical Site Infection (SSI) compliance achieved a remarkable three-month average of 97.33%, clearly surpassing the benchmark of ≥95%. Likewise, CAUTI compliance averaged 95.67%, just crossing the minimum target. These trends are further emphasized in the compliance bar graph, where SSI and CAUTI visually stand out for having successfully met the ideal standards. On the other hand, CLABSI and VAP presented notable gaps in compliance. CLABSI recorded the lowest average compliance at 85%, showing a significant 10% gap relative to the target benchmark. Similarly, VAP compliance averaged 89.75%, indicating a 5.25% shortfall.

| Gap Analysis of HAI Compliance Rates (Mar–May 2025) | | | |
|---|---|---|---|
| **Infection Type** | **Avg. Compliance (%)** | **Ideal Compliance Benchmark (%)** | **Gap** |
| **CAUTI** | 95.67% | ≥ 95% | ☑ Met |
| **CLABSI** | 85.00% | ≥ 95% | **Gap: 10%** |
| **VAP** | 89.75% | ≥ 95% | **Gap: 5.25%** |
| **SSI** | 97.33% | ≥ 95% | ☑ Met |

**Table 5.2:** Gap Analysis of HAI Compliance Rates (Mar–May 2025)

The bar graph vividly illustrates these compliance gaps, drawing attention to where focused interventions are most needed. Despite these compliance challenges, it is worth noting that infection rates for CLABSI and VAP still remained within acceptable limits. This suggests that while compliance efforts need to be strengthened, the existing protocols have had a protective effect in preventing infection escalation. Nonetheless, consistent efforts to close these compliance gaps through staff training, regular audits, and stricter adherence to protocols are essential to ensure long-term quality improvement and patient safety.




**Graph 5.2:** HAI Compliance Rates (Mar–May 2025)

# CHAPTER 6

# DISCUSSION

Preventing HAIs is a top priority in ensuring healthcare quality and patient safety, especially in intensive care units where patients are particularly susceptible. This study aimed to audit the compliance with standard prevention protocols for CLABSI, CAUTI, VAP, and SSI, and to assess how these compliance levels correlate with infection rates. The findings from this audit provide insightful, institution-specific, data that align with global evidence on infection control practices.

One of the most salient observations in this study is the inverse relationship between compliance and infection rates. Among the four monitored HAIs, surgical site infection (SSI) showed the highest average compliance (97.33%) and the lowest infection rate, while CLABSI recorded the lowest compliance (85%) and the highest infection rate. These findings echo those of Mermel et al. (2023), who emphasized that CLABSI remains a preventable yet persistent challenge when adherence to central line bundles is suboptimal (25).

Similarly, the reduction in CAUTI and VAP rates alongside high compliance rates supports the growing body of evidence that adherence to evidence-based prevention bundles leads to a measurable decline in infection incidence. For example, a multicentric study by Li et al. (2022) reported a significant reduction in CAUTI and VAP rates across Chinese tertiary care hospitals when compliance exceeded 90% (26). Our data parallel these results, particularly in the case of CAUTI, where compliance was 95.67% and the infection rate remained within safe thresholds.

A takeaway from these findings is that protocols are only as effective as their consistent implementation. Compliance acts as the operational arm of policy, without it, even the most robust guidelines fall short. This notion is reinforced by Gupta et al. (2023), who demonstrated that hands-on training and continuous performance feedback were essential for sustaining high compliance and reducing HAIs in an Indian ICU context (27).

Notably, the strength of our study lies in its simultaneous assessment of compliance and infection rates, allowing for a more nuanced understanding of causality. Most studies examine either bundle adherence or infection metrics in isolation, limiting interpretability. Moreover, the use of real-time observation tools and retrospective validation ensured accuracy and minimized observer bias.

However, the study is not without limitations. First, its single-institutional scope limits generalizability. Infection control practices are heavily influenced by institutional culture, staff-to-patient ratios, and infrastructure. Second, the short duration of three months may not capture seasonal variability in infection rates. Third, while compliance was monitored using structured checklists, the possibility of the Hawthorne effect where staff improve performance because they are being observed, cannot be ruled out.

Another layer of complexity lies in the varying risk profiles of patients across ICUs. For example, VAP may be influenced by factors beyond mechanical ventilation protocols, such as underlying respiratory conditions or prolonged intubation, making compliance only part of the equation. A study by Alotaibi et al. (2021) highlighted similar concerns and suggested that even with high bundle adherence, patient-specific factors must be accounted for to achieve optimal outcomes (28).

In terms of broader implications, these findings contribute to ongoing efforts under national and global infection control frameworks such as India's Kayakalp program and the WHO's Global IPC strategy. The data suggest that enhancing compliance is not merely a procedural requirement but a life-saving endeavour, especially in resource-constrained settings where the burden of HAIs is disproportionately high.

In conclusion, this study reinforces that high compliance with infection prevention protocols is strongly associated with reduced HAI rates, particularly for SSI and CAUTI. However, achieving consistent results across all infection types, especially CLABSI and VAP, demands sustained education, monitoring, and institutional commitment. These insights underscore the need for a culture of continuous quality improvement where compliance is not enforced, but embedded in daily care routines.

# CHAPTER 7

# CONCLUSION AND RECOMMENDATIONS

This research aimed to assess healthcare workers' adherence to infection prevention protocols for four common HAIs, and to evaluate the related infection rates at a prominent medical institution in Jaipur. Conducted over three months in intensive care and surgical environments, this study employed a quantitative observational approach, utilising audit checklists and patient records for data collection.

The results indicated a strong correlation between high compliance with infection prevention bundles and reduced infection rates. Specifically, compliance rates for CAUTI (95.67%) and SSI (97.33%) exceeded the recommended benchmark of 95%, reflecting low infection rates of 1.08 and 0.71 per 1,000 device days/procedures, respectively. These outcomes demonstrate that high adherence to infection prevention protocols is effective in reducing the incidence of these infections.

However, compliance for CLABSI (85%) and VAP (89.42%) fell short of the 95% benchmark, representing gaps of 10% and 5.25%, respectively. Despite these gaps, the infection rates for both remained within the national thresholds CAUTI at 1.08 per 1,000 catheter days (target $\leq$1.5), CLABSI at 2.9 per 1,000-line days (target $\leq$3.5), VAP at 2.07 per 1,000 ventilator days (target $\leq$3.0), and SSI at 0.71 per 1,000 procedures (target $\leq$1.28). These findings suggest that, while short-term infection control resilience exists, the suboptimal compliance in certain areas poses a potential long-term risk, particularly considering the growing concerns of antimicrobial resistance and increased strain on hospital resources.

The study confirms that consistent adherence to infection prevention protocols significantly reduces the incidence of hospital-acquired infections and improves patient safety. While the infection control system at Mahatma Gandhi Medical College and Hospital shows resilience in the short term, the gaps identified in CLABSI and VAP compliance highlight the need for targeted interventions to ensure long-term sustainability. The data clearly demonstrate that improvements in compliance, particularly in high-risk areas like CLABSI and VAP, are essential to further reduce infection rates and enhance overall hospital performance.

**Based on the findings of this study, the following targeted recommendations are proposed to address the identified gaps and improve infection prevention practices:**

1. **Strengthen CLABSI and VAP Bundle Compliance**
    a. Introduce focused, modular training sessions for ICU staff, specifically targeting central line insertion, maintenance, and ventilator care practices.
    b. Implement standardized checklists for central line care and ventilator bundle elements, to be completed during patient rounds.
    c. Introduce real-time monitoring tools (e.g., electronic checklists) to track compliance and provide immediate feedback to staff during shifts.
    d. Establish a peer-monitoring system, where experienced staff guide and supervise high-risk procedures such as central line insertions and ventilator management.
2. **Sustain High Compliance in CAUTI and SSI Prevention**
    a. Recognize and reward departments or units that maintain high compliance with CAUTI and SSI protocols through certificates, events, or leadership recognition.
    b. Promote cross-departmental learning by having high-performing units share best practices with those struggling to meet the compliance benchmarks.
    c. Ensure periodic retraining (every 3–6 months) to maintain staff knowledge and ensure that updated guidelines are followed.
3. **Enhance Infection Surveillance and Data-Driven Decision Making**
    a. Develop a real-time infection and compliance dashboard that integrates data on infection rates, bundle adherence, and antibiotic usage for hospital leadership.
    b. Use monthly infection trend reports at the department level to identify patterns and emerging issues, enabling proactive intervention.
    c. Implement root cause analysis (RCA) for each confirmed HAI to identify breakdowns in protocol adherence or system processes that need addressing.
4. **Improve Audit Mechanisms and Feedback Loops**

a. Utilize compliance heat maps per unit to visually identify underperforming areas and direct supervisory attention to these zones.
b. Schedule quarterly performance reviews with department heads to compare compliance and infection data, setting clear targets for improvement.

5. **Promote a Culture of Safety and Continuous Improvement**
    a. Launch an infection prevention awareness campaign hospital-wide, incorporating posters, videos, and staff testimonials to reinforce the importance of compliance.
    b. Establish a non-punitive reporting system for lapses in protocol adherence, encouraging staff to report breaches without fear of reprimand.
    c. Integrate infection control performance into routine staff evaluations and departmental quality scores to promote accountability.
6. **Strengthen Organisational Infrastructure and Policy Support**
    a. Ensure consistent availability of essential resources, such as sterile supplies, PPE, and disinfectants, especially in high-volume areas.
    b. Advocate for the integration of infection control data into the hospital's electronic medical records (EMR) to reduce manual entry errors and improve accuracy.
    c. Form a dedicated HAI Task Force comprising senior clinicians, infection control officers, microbiologists, and quality improvement personnel to oversee infection prevention efforts and policy updates.
7. **Expand Antimicrobial Stewardship and Multidisciplinary Collaboration**
    a. Integrate antimicrobial stewardship programs with infection control audits to address unnecessary or prolonged antibiotic use that could contribute to resistance.
    b. Organise multidisciplinary rounds involving infection control teams, microbiologists, and clinical pharmacists to ensure comprehensive patient safety.
    c. Launch educational initiatives on antibiotic resistance and its impact on infection prevention to enhance staff understanding and adherence to protocols.

This study underscores the importance of consistent infection prevention protocol adherence in reducing nosocomial infections and improving patient safety. While Mahatma Gandhi Medical College and Hospital has made significant strides in infection control, addressing the compliance gaps for CLABSI and VAP is crucial for sustaining long-term improvements. Through a combination of structured training, real-time monitoring, ongoing feedback, and a culture of accountability, the hospital can achieve further reductions in infection rates and set a benchmark for quality care in healthcare institutions. By implementing these recommendations, the hospital can ensure that infection prevention efforts remain robust, resilient, and adaptive to future challenges.

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## ANNEXURES

### CLABSI Audit Checklist

**Date:_____**

**Ward:_____**

**Patient Name: _____**

**UMR No.: _____**

**Please mark Yes (Y), No (N), or Not Applicable (N/A) for each question below:**

| Audit Criteria | Y/N |
|---|---|
| Has the need for the central line been assessed and documented by the physician? | |
| Is hand hygiene performed before handling the central line? | |
| Is maximal barrier precaution used during insertion? | |
| Is the insertion site cleaned with chlorhexidine/alcohol-based antiseptic? | |
| Is the central line site dressing clean, dry, and intact? | |
| Is aseptic technique maintained during dressing change? | |
| Is the dressing changed as per protocol (every 7 days/when soiled)? | |
| Is the line accessed using aseptic technique and sterile equipment? | |
| Are IV tubing and injection ports changed per hospital protocol? | |
| Is daily review of the need for central line documented? | |
| Is there any sign of redness, discharge, or swelling at the insertion site? | |
| Is the catheter hub disinfected before each use? | |
| Is full compliance achieved? | |

**Signature:_____**

**Employee ID: _____**

**CAUTI Audit Checklist**

**Date:_____**

**Ward:_____**

**Patient Name: _____**

**UMR No.: _____**

**Please mark Yes (Y), No (N), or Not Applicable (N/A) for each question below:**

| Audit Criteria | Y/N/N.A |
|---|---|
| Has the need for the urinary catheter been assessed by the doctor? | |
| Is a closed system continuously maintained? (Urinary catheter and drainage tube continuously connected) | |
| Is the urine bag kept below bladder level at all times? | |
| Is the collection bag emptied at regular intervals using a separate, clean container? | |
| Is hand hygiene followed before and after handling the catheter system? | |
| Are catheter connections not broken unless clinically indicated? | |
| Is the catheter secured properly to prevent movement or traction? | |
| Is the need for the catheter reassessed daily and documented in the patient record? | |
| Is aseptic technique maintained during insertion and handling? | |
| Is there documentation of catheter insertion date and time? | |
| Are healthcare personnel using gloves during any catheter-related procedure? | |
| Is full compliance achieved? | |

**Signature:_____**

**Employee ID: _____**

**VAP Audit Checklist**

**Date:_____**

**Ward:_____**

**Patient Name: _____**

**UMR No.: _____**

**Please mark Yes (Y), No (N), or Not Applicable (N/A) for each question below:**

| Audit Criteria | Y/N/N.A |
|---|---|
| Was the patient assessed for readiness to wean from mechanical ventilation? | |
| Was a sedation-free interval provided (daily sedation vacation)? | |
| Is the head-end elevation maintained between 30°–45°? | |
| Has the patient received oral care with chlorhexidine mouthwash? | |
| Is endotracheal (ET) cuff pressure maintained between 20–25 cm $H_2O$? | |
| Is ventilator circuit changed only when visibly soiled or malfunctioning (as per protocol)? | |
| Are subglottic secretions being suctioned regularly? | |
| Is hand hygiene followed before and after any ventilator-related procedure? | |
| Are closed suction systems being used appropriately and changed as per hospital protocol? | |
| Is the ventilator tubing kept in a position that prevents condensate from draining into the ET tube? | |
| Is full compliance achieved? | |

**Signature:_____**

**Employee ID: _____**

**SSI Audit Checklist**

**Date:_____**

**Ward:_____**

**Patient Name: _____**

**UMR No.: _____**

**Please mark Yes (Y), No (N), or Not Applicable (N/A) for each question below:**

| Audit Criteria | Y/N/N.A |
|---|---|
| Was prophylactic antibiotic administered as per protocol/timing before incision? | |
| Was wound care/dressing done properly post-surgery? | |
| Is the surgical site covered with a clean, dry, and well-adherent dressing? | |
| Was the dressing changed using aseptic technique? | |
| Was the wound assessed for signs of infection (redness, swelling, discharge, pain)? | |
| Was hand hygiene followed before and after handling the surgical site? | |
| Is documentation of wound status and care available in the patient file? | |
| Were standard precautions and sterile techniques used during the surgical procedure? | |
| Is surgical site preparation done using appropriate antiseptic agents before incision? | |
| We're shaving or hair removal (if required) done using clippers and not razors? | |
| Is full compliance achieved? | |

**Signature:_____**

**Employee ID: _____**