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# *HOSPITAL ACQUIRED INFECTION: A STUDY TO MEASURE ITS IMPACT ON INCREASE AVERAGE LENGTH OF STAY AND COST OF CARE IN MULTI-SPECIALTY HOSPITALS*

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## INTRODUCTION

Hospital-acquired infections constitute a significant cause of morbidity and mortality among hospitalized patients. Numerous studies indicate that 5 to 10% of individuals admitted to hospitals experience one or more infections during their stay. This percentage tends to be higher in immunocompromised patients, those with underlying health conditions, individuals undergoing invasive procedures, those admitted to the intensive care unit (ICU), and elderly patients. According to the World Health Organization (WHO) definition, a hospital-acquired infection is one that occurs in a patient within a healthcare facility and was not present or in the incubation stage at the time of admission. This definition encompasses infections acquired in the hospital, even if they manifest after discharge, as well as occupational infections among the facility's staff [1].

The primary contributors to morbidity and mortality in hospitalized patients are hospital-acquired infections. Several studies have reported that 5 to 10% of admitted individuals experience one or more infections during their hospitalization. This percentage is higher in patients who are immunosuppressed, have underlying health conditions, undergo invasive procedures, are admitted to the intensive care unit (ICU), or are elderly. In developed countries, about 7 out of 100 hospitalized patients develop at least one healthcare-associated infection, compared to 10 in developing nations. Findings from a study revealed that hospital-acquired infections result in an additional 14 days of hospitalization, a 10% likelihood of death, an extra £3153 in medical expenses, and six additional days of work. The economic burden of hospital-acquired infections was estimated at approximately £1.1 billion annually, affecting 1 in 10 patients. The total bed days consumed by hospital-acquired infections were estimated at around 3.6 million per year, equivalent to approximately 27 days for 400-bed hospitals operating at 90% capacity [2].

## AIM

This study aimed to establish baseline data on the incidence rate of Hospital-Acquired Infections (HAI) and provide insights to hospital

administrations about the associated financial burden on both healthcare facilities and patients. The intention was to assist in prioritizing the development of effective strategies and policies..

## RESEARCH OBJECTIVES

1. To evaluate the extra expenses borne by patients resulting from Hospital-Acquired Infections (HAI).
2. To assess the overall financial impact on hospitals attributed to Hospital-Acquired Infections (HAI).
3. To determine the incidence rate of HAI among hospitalized patients.

## RESEARCH METHODOLOGY

The study was a mixed-methods approach, employing both retrospective analytical and prospective observational methods to measure the cost of Hospital-Acquired Infections (HAI). The study focuses on comparing two groups: patients affected by a specific type of microorganism due to HAI and a control group of patients unaffected by HAI. The study area included both wards and intensive care units, providing a comprehensive assessment of HAI cases in diverse hospital settings.

The sample size comprises 90 cases of hospital-acquired infections identified in the year 2022. Inclusion criteria involved patients above 16 years of age in intensive care units and wards who develop clinical evidence of infection distinct from their original diagnosis at the time of admission. Exclusion criteria consider patients admitted within the first 48 hours.

## RESULT & DISCUSSION

The study, conducted with data from the Infection Control Committee in 2022, identified 90 cases of Hospital-Acquired Infections (HAI), including 31 cases of CAUTI, 17 cases of CLABSI, 28 cases of SSI, and multiple infection cases. CAUTI, most prevalent among females and individuals over 60, showed Klebsiella and E. Coli as major causative

agents. CLABSI, predominantly affecting females and those over 60, exhibited E. Coli and Klebsiella as the primary pathogens. SSI cases, primarily in orthopaedics, revealed Pseudomonas, Klebsiella, and Staphylococcus as major contributors. VAP cases, affecting all age groups, displayed Pseudomonas, Klebsiella, and Staphylococcus as prominent pathogens. Approximately 42% of HAI patients were immunocompromised. The study highlighted a mortality rate of 7.77% and an economic impact, with CAUTI costing 50,272.71 INR, CLABSI 76,213.22 INR, VAP 1,47,350.75 INR, and multiple infections 2,58,037.3 INR. The economic burden was particularly notable in terms of increased hospital resource utilization for patients with HAI, impacting both patient outcomes and hospital finances.

## CONCLUSION

Due to the higher ALOS for the hospital and patient, the financial burden was multiplied by two to four times. Additionally, the social strain of having one attendant remain with the patient results in a theoretical loss of revenue. HAI caused functional handicap and emotional stress in the patient, both of which lower quality of life due to India's low per capita income and significant out-of-pocket expenses. Hospital-Acquired Infections (HAI) exacerbate the imbalance in resource distribution between primary and secondary healthcare, as limited resources were directed towards addressing potentially manageable conditions.

## *REFERENCES*

1. *World Health Organization. (2015). Health Care Associated Infections FactSheet. World Health Organization, 4.*
2. *Singh, S., Chaturvedi, R., Garg, S. M., Datta, R., & Kumar, A. (2013). Incidence of healthcare associated infection in the surgical ICU of a tertiary care hospital. Medical journal armed forces India, 69(2), 124-129.*