

Healthcare Acquired Infections

Emerging Trends in Hospital Administration
9th & 10th May 2014



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HICC In charge

What is healthcare acquired infection?

- *An infection occurring in a patient in a hospital or other healthcare facility in whom the infection was not present or incubating at the time of admission.*
- *Includes infections acquired in the hospital but appearing after discharge*
- *Occupational infections among staff of the facility*

HAI

- Surgical Site Infection
- Ventilator Associated Pneumonia
- Infections associated with intravascular lines/ Central line Associated blood stream infections (CLA - BSI)
- Urinary tract infections
- Methicillin-resistant *Staphylococcus aureus* (MRSA) infections
- Vancomycin -resistant enterococci (VRE) infections
- Clostridium difficile (C. difficile)

Incidence of HAI in India

- Surgical site infections - 1.2 to 23.6 per 100 surgeries
- Bloodstream infections- 28%
- Ventilator-associated pneumonia- 21%
- Urinary tract infection (UTI)-15%

- 1.4 million people worldwide suffer from complications of infections acquired in the hospital
- Of every 100 hospitalized patients at any given time, 7 in developed and 10 in developing countries will acquire at least one health care-associated infection (WHO Report)

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Incidence of healthcare associated infection in the surgical ICU of a tertiary care hospital

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Abstract Full Text PDF Images References

Abstract

Background

Healthcare associated infections (HAI) have taken on a new dimension with outbreaks of increasingly resistant organisms becoming common. Protocol-based infection control practices in the intensive care unit (ICU) are extremely important. Moreover, baseline information of the incidence of HAI helps in planning-specific interventions at infection control.

Methods

This hospital-based observational study was carried out from Dec 2009 to May 2010 in the 10-bedded surgical intensive care unit of a tertiary care hospital. CDC HAI definitions were used to diagnose HAI.

Results

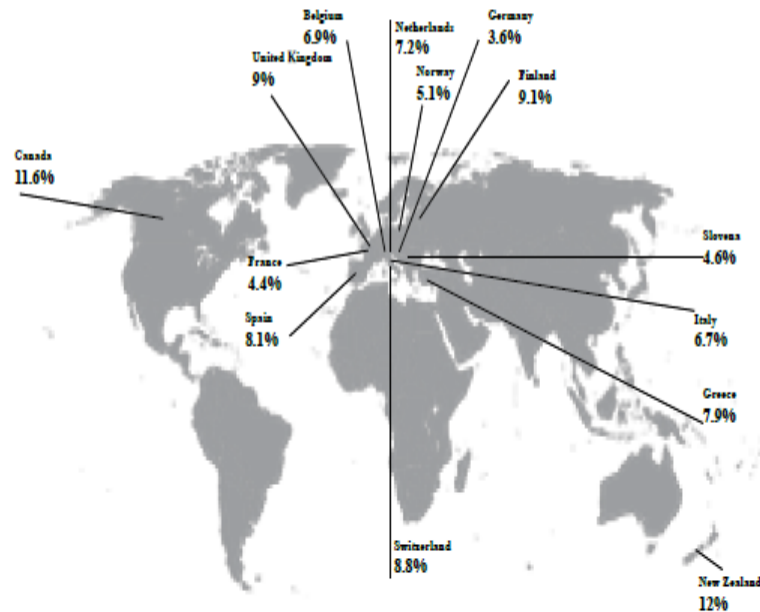
A total of 293 patients were admitted in the ICU. 204 of these were included in the study. 36 of these patients developed HAI with a frequency of 17.6%. The incidence rate (IR) of catheter-related blood stream infections (CRBSI) was 16/1000 Central Venous Catheter (CVC) days [95% C.I. 9–26]. Catheter-associated urinary tract infections (CAUTI) 9/1000 urinary catheter days [95% C.I. 4–18] and ventilator-associated pneumonias (VAP) 32/1000 ventilator days [95% confidence interval 22–45].

Article Tools

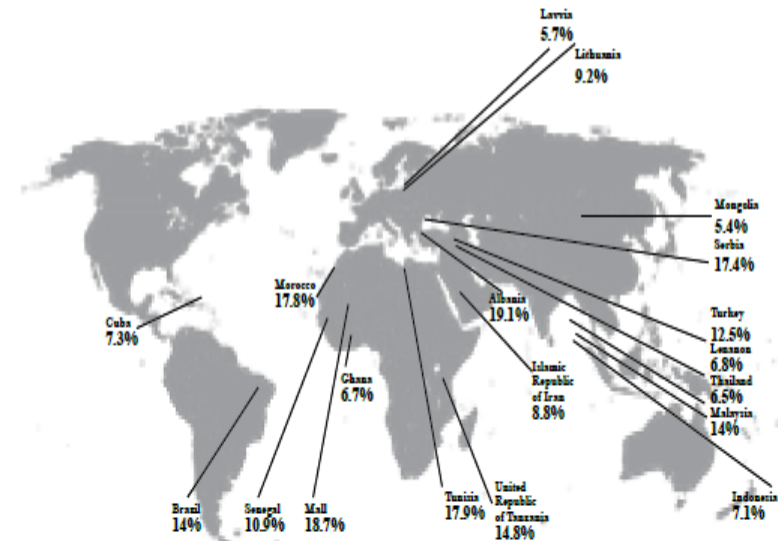
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Prevalence of health care-associated infection in high-income countries, 1995-2010*



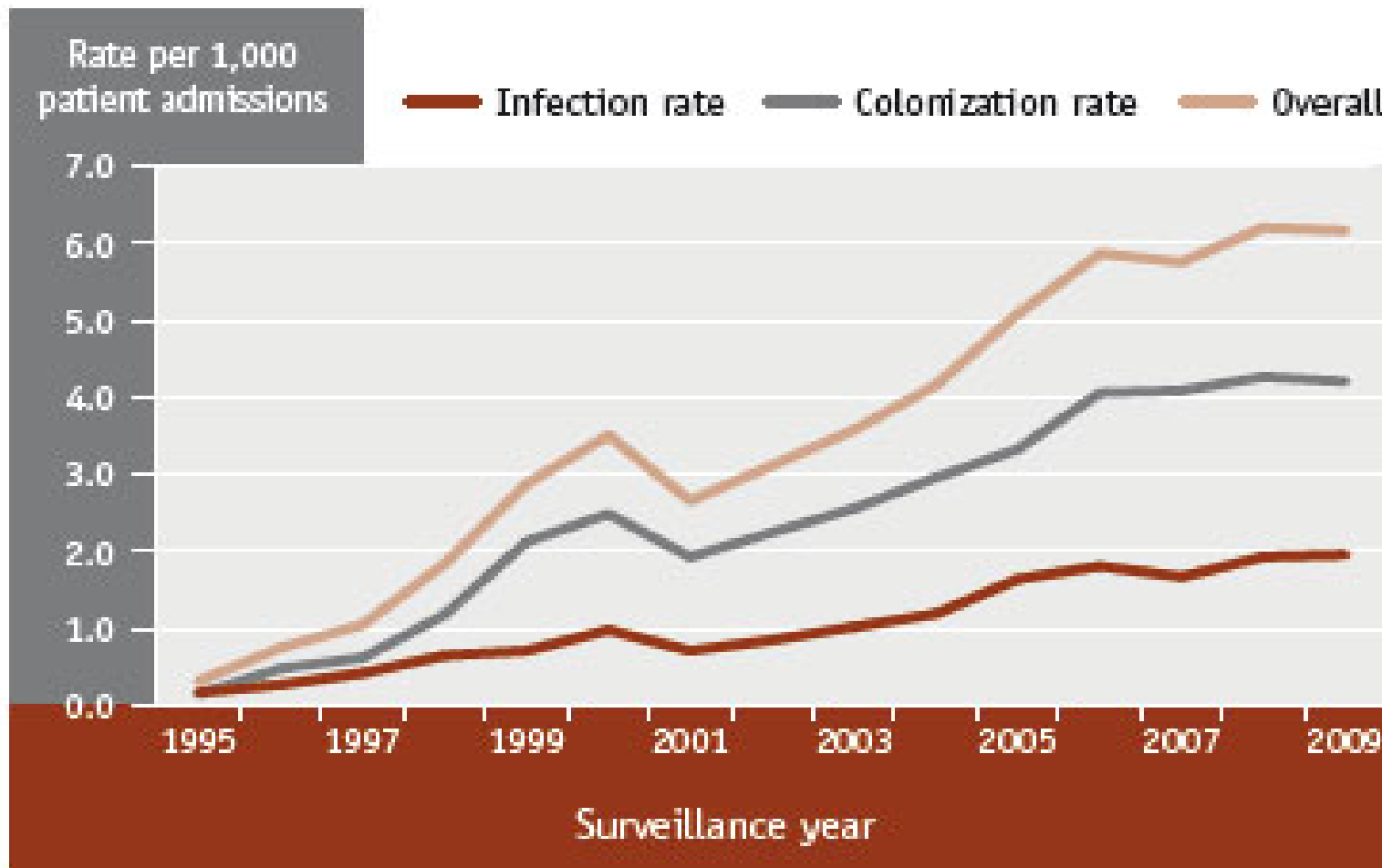
Prevalence of health care-associated infection in low-and middle-income countries, 1995-2010



*For countries with more than one study, the most recent figures are included.

Pooled cumulative incidence density of HCAI and device-associated infection in adult ICU patients in high-, middle- and low-income countries

Healthcare-associated MRSA rates per 1,000 patient admissions from 1995 to 2009



Impact of health care-associated infections

- Inflicts additional suffering for the patient
- Extra financial burden for patients and their families
- Infections prolong hospital stays
- Creates long-term disability
- Increase resistance to antimicrobials
- Massive additional financial burden for health systems
- Causes unnecessary deaths.

What factors put patients at risk of infection in health-care settings?

- Prolonged and inappropriate use of invasive devices and antibiotics
- High-risk and sophisticated procedures
- Immuno -suppression and other severe underlying patient conditions
- Insufficient application of standard and isolation precautions

Other determinants for HAI

- Inadequate environmental hygienic conditions and waste disposal
- Poor infrastructure
- Insufficient equipment
- Understaffing
- Overcrowding, high levels of bed occupancy and increased transfer of patients
- Poor knowledge and application of basic infection control measures
- Lack of protocol
- Lack of knowledge of injection, infusion and blood transfusion safety
- Absence of local and national guidelines and policies

Other determinants for HAI

- Poor / inappropriate institutional surveillance program
- Lack of access to safe water
- Absence of dedicated personnel for Infection control
- Absence of active HICC
- Absence of effective staff training
- No regulatory body to oversee or monitor quality of care

Preventing infection in healthcare settings

1. Effective HICC

- Set up the Infection Control Program with a multidisciplinary committee
- Guide the processes
- Continuously monitor the outcome

Preventing infection in healthcare settings

2 . Educating/ Training everyone about how infections occur and how to prevent them

- Accountability

Preventing infection in healthcare settings

3 .Implement meticulous hand hygiene

- To be practiced by all HCW , patient relatives, visitors & patients
- Conducting audits on HH compliance and presenting the data to the management
- Making HH facilities available & accessible

Preventing infection in healthcare settings

4. Judicious use of PPE

5. Limiting Visitors

6. Availability of isolation rooms and cohorting protocols

Preventing infection in healthcare settings

7. Using checklists to ensure best practices in infection prevention

- Use of HAI prevention bundles

Preventing infection in healthcare settings

8. Cleaning equipment and environments

- Cleaning and Disinfection protocol
- Unambiguous guidelines on SUD
- Effective and scrupulous house keeping services

Preventing infection in healthcare settings

9. Effective Surveillance System

- Broad, Unit specific or infection targeted surveillance
- Use of automated electronic surveillance systems
- It must have high specificity, positive predictive value, accuracy and time-efficiency
- Monitors each patient as soon as they are admitted
- Generates of monthly rates of infections and help in monitoring these rates
- Scope of surveillance activities incorporates tracking and analyzing of infection risks, rates and trends

Preventing infection in healthcare settings

10. Standards and best practices

Preventing infection in healthcare settings

11. Effective engineering control

- Management of air, pressure, humidity & water

Preventing infection in healthcare settings

12. Antimicrobial stewardship programs

- To preserve antibiotic as a valuable & precious resource and extend their helpful life.
- Ensure cost effective therapy
- To prevent and control antimicrobial resistant infections
- Promote the safe, effective, economic and rational use of antibiotics and, ultimately, to improve patient care.
- Usage of simple generic antibiotics as first line whenever possible and avoidance of broad spectrum antibiotics
- Minimize the emergence of bacterial resistance in the community for the future

Preventing infection in healthcare settings

13. Staff Health

- Pre exposure prophylaxis
- Post exposure prophylaxis
- Provision of adequate resources

NABH Standards for HIC

1. Well designed, Comprehensive & coordinated HIC Program
2. Implementation of policies and procedures laid down in the HIC Manual
- 3 . Organization performs surveillance activities periodically and regularly to capture and monitor HAI

NABH Standards for HIC

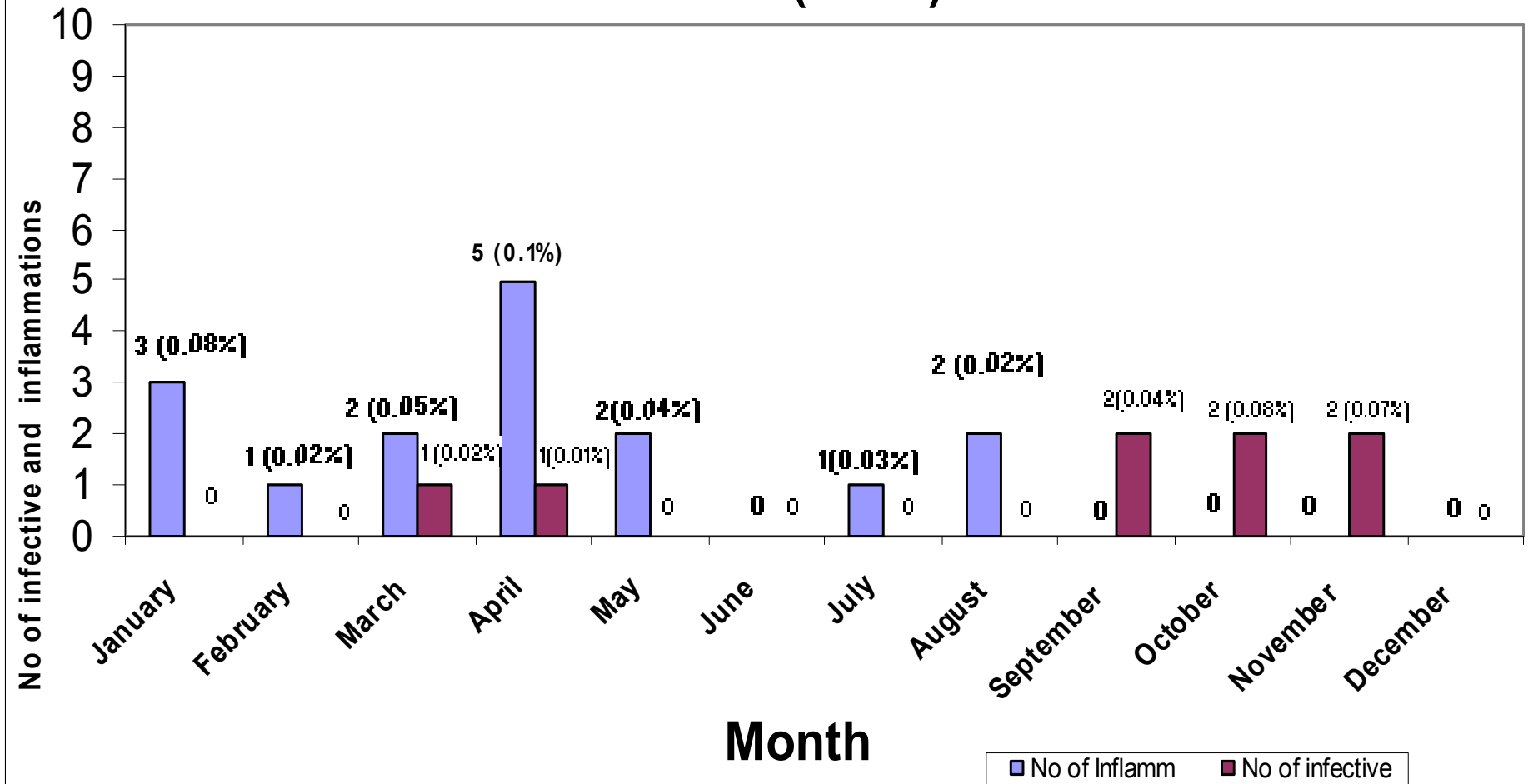
4. The organization takes action to prevent and control HAI
- 5 . The organization provides adequate and appropriate resources for prevention and control of HAI
- 6 . The organization identifies and takes appropriate actions to control outbreaks of infection

NABH Standards for HIC

7. There are documented policies & procedures for sterilization activities in the Organization
8. Bio medical waste is handled in an appropriate & safe manner
- 9 . The infection control training conducted to all staff appropriately and staff health is taken care.

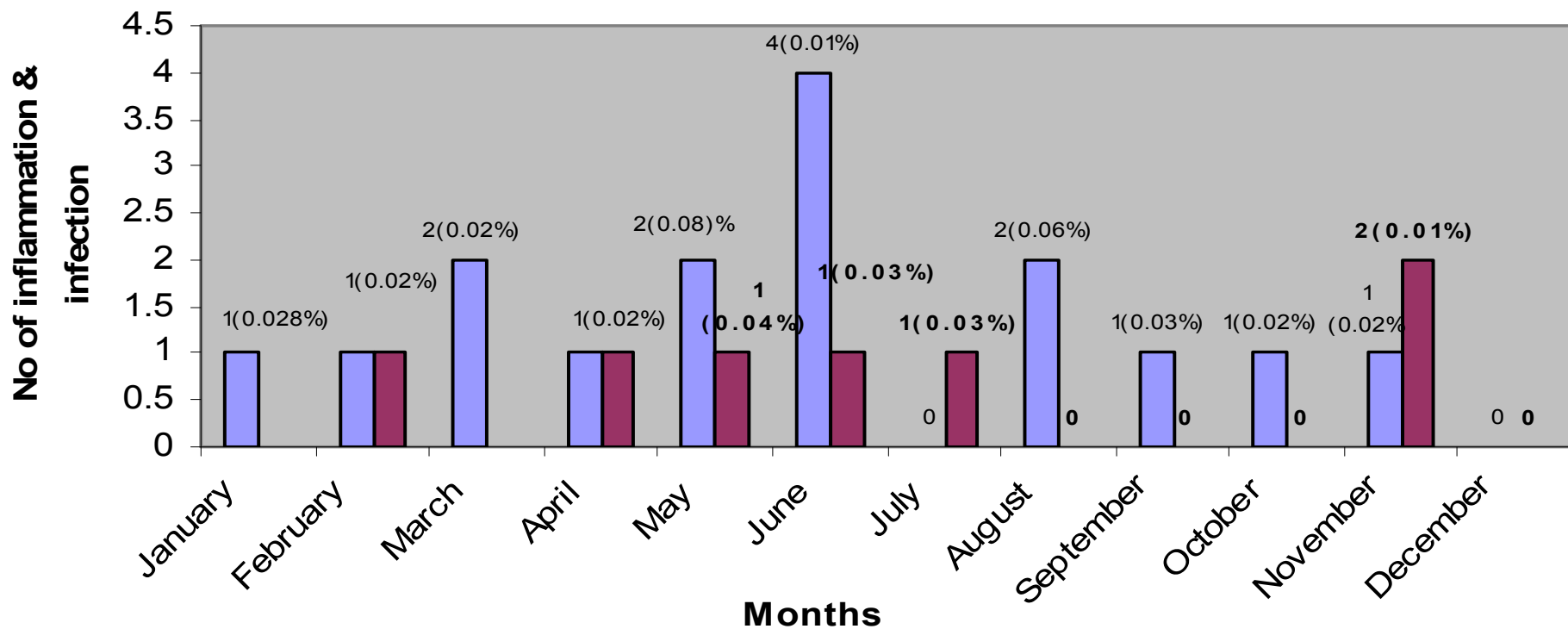
SSI Rate at Sankara Nethralaya (2012)

Post operative infections and inflammations distributed monthwise and microbiological results (n=23)



SSI Rate at Sankara Nethralaya (2013)

Post operative inflammation and infection distributed monthwise and microbiological results (n=21)





Thank
You!