

## **Imprimis Knowledge Series VII**

### **Fact Sheet: Hospital-Acquired Infections (HAIs)**

***We at Imprimis work continuously towards developing our information bank to keep you updated with the latest in the life sciences and healthcare sector. These fact sheets are collated from various credible sources to give you a complete picture of the topic under discussion. We endeavour to facilitate you with our resources for your benefit and convenience.***

*"Recent rise in the incidence of reported cases of hospital-acquired infections has once again brought the issue of nosocomial infections to the fore. Though there could be several factors, both external and internal, which may have contributed to these fiascoes, what is obvious is that somewhere along the line patient-care was severely compromised. This white paper helps you understand the seriousness of the hospital-acquired infections better."*

Patients in treatment centers and the health care fraternity are increasingly confronted with the rising numbers of Hospital-Acquired Infections (HAIs), also referred to as Nosocomial infections. The World Health Organization (WHO) called HAIs a major cause of death and disability for patients. A survey on HAIs reveals that at any time, over 1.4 million people worldwide are suffering from infections acquired in treatment centers, where an estimate of 80,000 deaths are claimed to be caused because of this annually. The actual rates vary from 5% to 10% of all patients admitted to modern healthcare centers in the industrialized world to up to 25% in the developing. The risk of health care-associated infection in developing countries is 2 to 20 times higher than in developed countries.

#### **Indian Scenario**

In India, catheters and lung infections are believed to be the primary source of nosocomial infections and gram-negative organisms such as klebsiella, pseudomonas and enterococci are predominant. Nosocomial pneumonia is most common in the surgical intensive units. Candidiasis is also on the rise in intensive care units.

## What is HAI?

According to the World Health organization Hospital-Acquired Infections is, "An infection acquired in hospital by a patient who was admitted for a reason other than that 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. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff of the facility."

HAI is a localized or systemic condition that results from adverse reactions to the presence of an infectious agent(s) that was not present or incubating at the time of admission to the hospital from the center for disease control.

## How does it spread?

An infection is generally caused by a variety of tiny-sized organism — micro-organisms such as the bacteria, viruses, fungi or parasites. Most of these micro-organisms, except for a few parasites, cannot be seen without the help of a microscope. There are mainly three routes of transmission of nosocomial infections.

**1. Contact route:** There are two types of contact routes:

*Direct Contact:* - It requires physical contact between the infectious individual or contaminated object and the susceptible host.

*Indirect contact:* - This requires mechanical transfer of pathogens between patients through a health care worker or a medical kit.

**2. Air borne droplet route:** Droplets are particles of respiration, secretion that can carry pathogens through the air but can only remain in the air for short period of time.

### High-risk situations for acquiring hospital-acquired infections:

- Newborns, infants & elderly
- Diabetics
- Serious underlying illnesses
- Major surgeries
- Invasive procedures
- Immune deficiency states
- Prolonged hospital stay
- Stay in intensive care units (ICU)
- Approximately one-quarter of nosocomial infections occur in ICUs.

**3. Air borne dust route:** Dust particles are particles that carry dust and can remain in the air for long periods of time

## Prevention

Prevention of nosocomial infections requires an integrated, monitored, programme, which includes the following key components:

- Limiting transmission of organisms between patients in direct patient care through adequate hand washing and glove use, and appropriate aseptic practice, isolation strategies, sterilization and disinfection practices, and laundry
- Controlling environmental risks for infection
- Protecting patients with appropriate use of prophylactic antimicrobials, nutrition, and vaccinations
- Limiting the risk of endogenous infections by minimizing invasive procedures and promoting optimal antimicrobial use
- Surveillance of infections, identifying and controlling outbreaks
- Prevention of infection in staff members
- Enhancing staff patient care practices, and continuing staff education. Infection control is the responsibility of all healthcare professionals — doctors, nurses, therapists, pharmacists, engineers and others.

## Conclusion

The nosocomial infection rate in patients in a facility is an indicator of quality and safety of care. The development of a surveillance process to monitor this rate is an essential first step to identify local problems and priorities, and evaluate the effectiveness of infection control activity. Surveillance, by itself, is an effective process to decrease the frequency of hospital-acquired infections.

### The different types of infections acquired in hospitals:

- Bloodstream infections, 28%
- Ventilator-associated pneumonia, 21%
- Urinary tract infection (UTI), 15%
- Lower respiratory infection, 12%
- Gastrointestinal, skin, soft tissue, and cardiovascular infections, 10%
- Surgical-site infections, 7%
- Ear, nose, and throat infections, 7%

An effective surveillance system must identify priorities for preventive interventions and improvement in quality of care. By providing quality indicators, surveillance enables the infection control programme, in collaboration with patient care units, to improve practice, and to define and monitor new prevention policies. The final aim of surveillance is to decrease nosocomial infections and reduce costs. Surveillance is a continuous process, which needs to evaluate the impact of interventions to validate the prevention strategy, and determine if initial objectives are attained.

It is believed that by spreading good practice it should be possible to dramatically improve survival rates, reduce the time spent undergoing counter therapy and length of stay in hospital and bring down healthcare costs.