

## A Brief Note of Nosocomial Infection and Its Causes

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### Commentary

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### ABOUT THE STUDY

A nosocomial infection, often known as a hospital-acquired infection (from the Greek nosokomeion, which means "hospital"), is an illness obtained in a hospital or other health-care setting. It is frequently referred to as a healthcare-associated infection to emphasize both hospital and nonhospital environments. A hospital, nursing home, rehabilitation centre, outpatient clinic, diagnostic laboratory, or other therapeutic environment can all be sources of infection. In the clinical context, infection is transferred to the vulnerable patient in a variety of ways. Aside from contaminated equipment, bed linens, or air droplets, health care workers can potentially spread illness. The infection might have come from the outside world, another sick patient, infected employees, or in rare circumstances, the source of the illness is unknown.

The microbe may have originated in the patient's own skin microbiota and become opportunistic after surgery or other operations that undermine the protective skin barrier. Despite the fact that the patient caught the illness from their own skin, it is nonetheless classified as nosocomial since it occurs in a health-care setting. The name comes from the absence of evidence that the infection was incubating or present when the patient entered the hospital system, implying that it was acquired after admission.

The Centers for Disease Control and Prevention estimates that 1.7 million Healthcare-Associated Infections, including bacteria and fungi, cause or contribute to 99,000 deaths in the United States each year. Gram-negative infections are thought to account for two-thirds of the 25,000 fatalities that occur each year in Europe, according to

hospital studies. Diseases in the urinary tract, bloodstream, and other regions of the body can result from nosocomial infections. Antimicrobial resistance is common in many kinds, which can make treatment more difficult.

There different types of hospital acquired infection and they are as follows:

- Hospital-acquired pneumonia
- Ventilator-associated pneumonia
- Urinary tract infection
- Gastroenteritis
- Puerperal fever
- Central line-associated blood stream infection

The different types of organisms involved in transmission of hospital acquired infection are as follows, they are:

- *Staphylococcus aureus*
- Methicillin resistant *Staphylococcus aureus*
- *Candida albicans*
- *Pseudomonas aeruginosa*
- *Acinetobacter baumannii*
- *Stenotrophomonas maltophilia*
- *Clostridium difficile*
- *Escherichia coli*
- Tuberculosis
- Vancomycin-resistant *Enterococcus*
- Legionnaires' disease

## Causes

The main causes of infection or disease are mainly through transmission, and the routes of transmission are as follows:

Contact transmission-Direct contact is the most common and effective form of nosocomial illness transmission.

Droplet transmission-Droplets containing microbes from the infected person are propelled a short distance through the air and deposited on the patient's body, causing transmission. Droplets are generated from the source person primarily by coughing, sneezing, and speaking, as well as during the performance of certain procedures such as bronchoscopy.

Airborne transmission-Airborne droplet nuclei (small-particle remains of evaporated droplets carrying germs that remain suspended in the air for lengthy periods of time) or dust particles containing the infectious agent can be used to disseminate the infectious agent. Because microorganisms carried in this manner can be dispersed widely by air currents and inhaled by a susceptible host within the same room or over a longer distance from the source patient, depending on environmental factors, special air-handling and ventilation is required to prevent airborne transmission. Legionella, Mycobacterium tuberculosis, and the rubella and varicella viruses are among the microorganisms spread through aerosol transmission.

Common vehicle transmission-Microorganisms conveyed to the host through contaminated products such as food, water, drugs, gadgets, and equipment comes under this category.

Vector borne transmission-This occurs when bacteria are spread by vectors such as mosquitoes, flies, rats, and other animals.

Direct-contact transmission and indirect-contact transmission are the two types of contact transmission.

Direct-contact transmission-When a person turns a patient, gives a patient a bath, or conducts other patient-care tasks that require direct personal touch, this entails direct body surface-to-body surface contact and physical transmission of pathogens between a vulnerable host and an infected or colonised individual. Direct-contact transmission can also happen between two patients, with one functioning as a source of infectious germs and the other as a vulnerable host.

Indirect-contact transmission-This occurs when a susceptible host comes into contact with a contaminated intermediate object, which is usually inanimate, such as contaminated instruments, needles, or dressings, or contaminated gloves that aren't changed between patients. Furthermore, even when healthcare personnel have access to gloves, disposable needles, intravenous devices, and flushes, incorrect use of saline flush syringes, vials, and bags has been linked to disease transmission.