



Core components of preventive measures and surveillance criteria of nosocomial infections in hospitals for health workers and patients

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Abstract

Nosocomial infections are a major public health problem with a substantial impact on quality of life. Hospital-acquired infection is a cross infection of one patient by another or by doctors, nurses, and other hospital staff while in hospital. When patients receiving medical care may get nosocomial infections or infections related to healthcare both wealthy and poor nations around the world are affected by these illnesses. Nosocomial infections cause 7% of deaths in industrialized countries and 10 % in developing nations. As WHO (World Health Organization) estimates that 15% of people who are hospitalized these infections affect patients. Nosocomial infections may also be considered either prevalent or widespread. So at that time health workers, as well as a hospital, should be taken preventive measures for nosocomial infections. Here there are different criteria mentioned for the investigations of nosocomial infections and which are useful to detect hospital-acquired infections and hereafter mention the preventive measures for the patients as well as health workers. And also give correct preparation of hospital staff for biosafety, proper waste management and healthcare reforms and arranging general public awareness of these widespread infections can also help decrease nosocomial infections.

Keywords: nosocomial infection, preventive measures, investigation criteria

Introduction

In nosocomial "Nosus" meaning disease and Komeion meaning to take care of. Nosocomial infection comes from the Greek words. "Nosocomial" or "hospital-acquired infection" (HAI) are infections acquired during hospital care which are not present or incubating at admission. Infections occurring more than 2 days after admission are usually considered as a nosocomial infection ^[1]. Nosocomial infections may also be considered either prevalent or widespread. Endemic infections are most common it occurs during outbreaks, defined as an unusual increase above the baseline of a specific infection or infecting organism. The nosocomial infection should encompass infections occurring in patients receiving treatment in any health care setting.

Infections acquired by staff or visitors to the hospital or other health care settings may also be considered nosocomial infections.

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Table 1: Investigation of Nosocomial Infections Criteria

Types of nosocomial infection	Basic criteria
Surgical site infection	Any infected discharge, eruption or spreading cellulitis at the surgical site during the month after the operation.
Urinary infection	Positive urine culture with at least 10 ⁵ bacteria/ml, with or without clinical symptoms.
Respiratory infection	Respiratory symptoms with at least two of the signs appearing during hospitalization: cough, purulent sputum, and new infiltrate on chest radiograph consistent with infection.
Infection by Vascular catheter	Inflammation, lymphangitis or infected discharge at the insert site of the catheter.
Septicaemia	Fever of rigours and at least one positive blood culture.

[2]

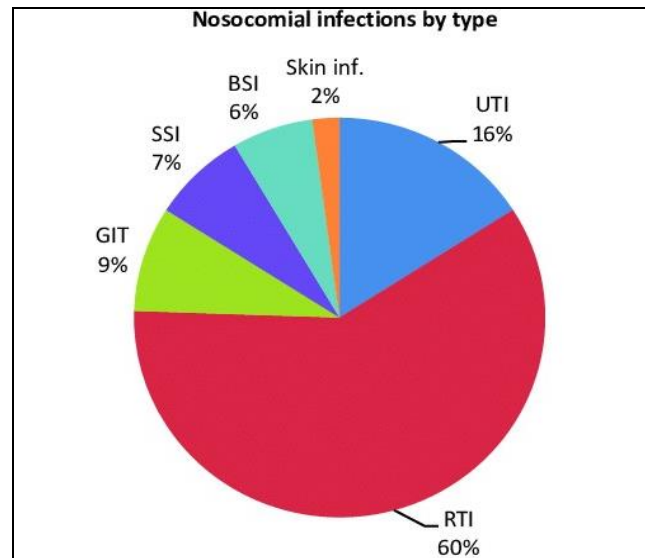


Fig 1: Type Wise Nosocomial Infections [3]

The above figure mention that 9% of infection in the gastrointestinal tract, 7% of infection in the surgical site, 6% of infection in bacteremia, 2% of infection in the skin and

soft tissue, 16% of urinary tract infection and 60% of infection in respiratory tract infection.

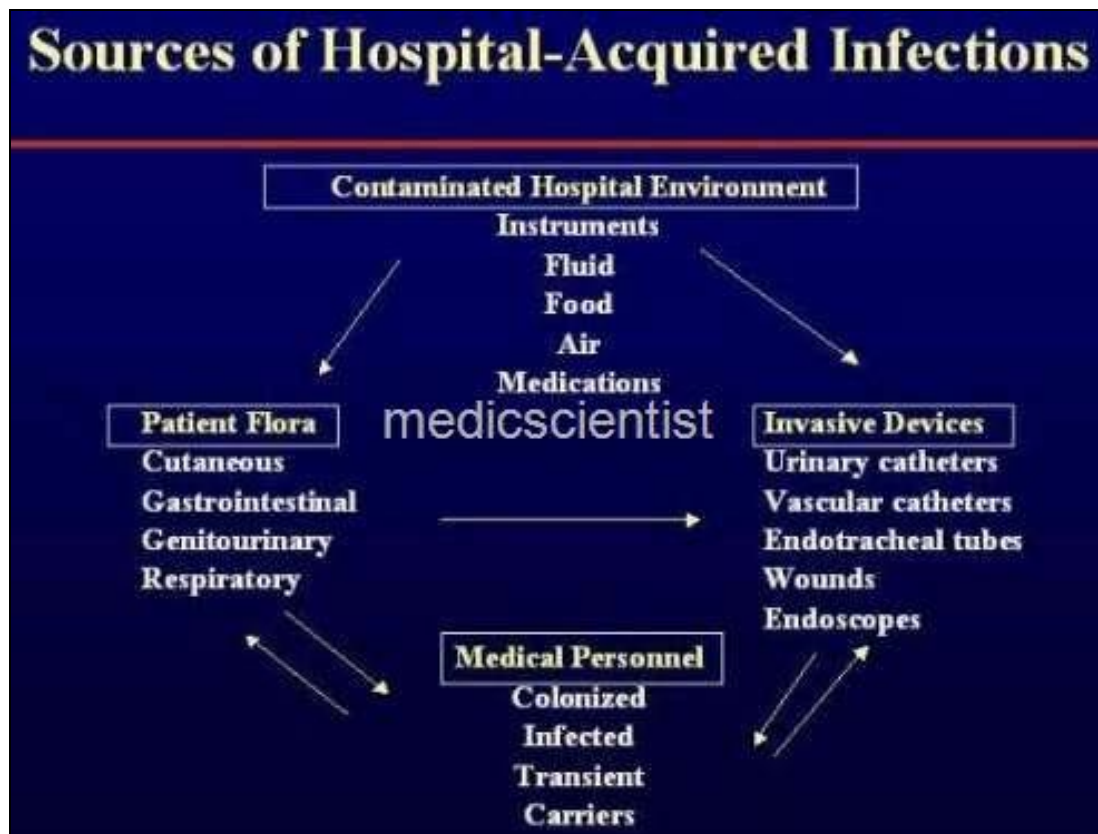


Fig 2: Source of Nosocomial Infection in Hospital^[4]

1. Sources: environment and health workers are the sources in the hospital 1) Patients: patients suffering from infectious diseases are potential sources of infection. These cases may be certain viral infections like measles, German measles, influenza, viral hepatitis; skin infections discharging wounds, infected skin lesions, eczema, bed sores; respiratory infections like sore throat, pulmonary tuberculosis, chest infection; and urinary tract infections like B. coli infection all these infections are very common sources

of hospital-acquired infection. 2) Staff: the hospital staff doctors, nurses ward boys who come in close contact with patients may often be an important source of cross-infection, for example, staphylococcus aureus is generally carried on the skin and in the nose. 3) Environment: hospital environment like hospital dust, linen bedclothes, furniture, sinks, basins, door handles and even the air is laden with microorganisms, and is thus an important source of infection.

- Routes of spread: the common routes of spread of cross infection are 1) Direct contact: the organism may be transferred directly from the hands of a nurse or doctor to a susceptible patient. 2) Droplet infection: droplets are released from the nose and throat through coughing or sneezing. 3) Airborne particles, 4) release of hospital dust into the air, 5) through various hospital procedures,

- infected cat gut, dressings, sputum cups, bed pans, urinals etc.
- Recipients: all patients in hospitals are possible receivers of cross infection. Some patients are more susceptible than others, especially those who are severely ill and intensive care units, urological and geriatric wards and special baby care units [5].

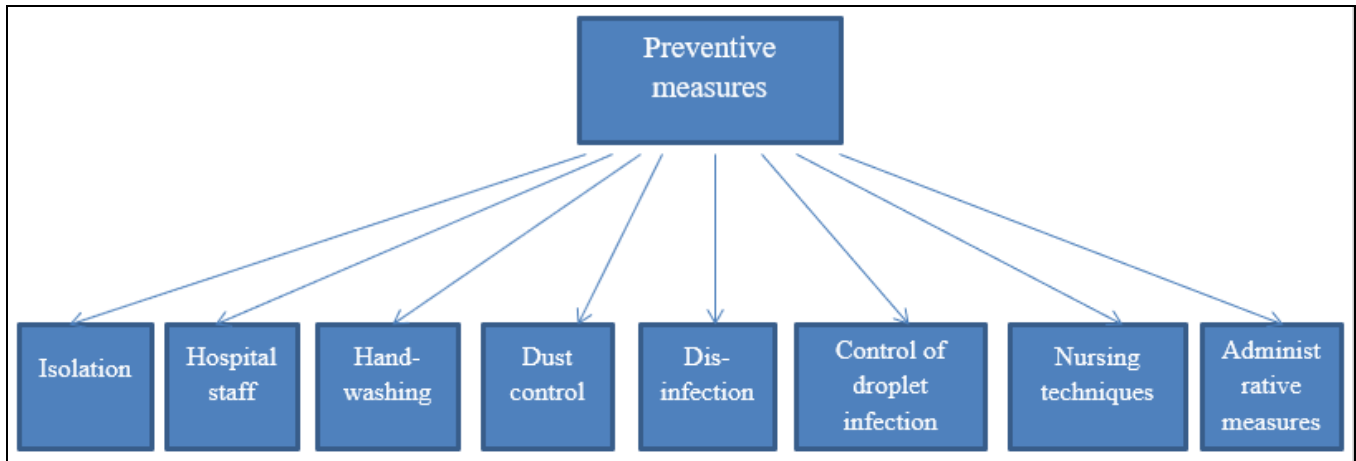


Fig 3: Preventive Measures of Nosocomial Infections^[6]

Infectious patients must be isolated in an isolation ward. Patients who are vulnerable to contamination should not be placed in beds next to patients who are a source of infection. Hospital staff who are suffering from skin diseases, sore throat, common cold, ear infections, diarrhoea, and other infections should be kept away from work until completely cured. Hand washing: the most common route of infection via hands. When dealing with patients hand washing must be through. Hospital dust comprises various bacteria and viruses. The dust is released during sweeping, cleaning, and

bed making. Disinfection: patients as well as patients' urine, faeces, and sputum should be properly disinfected. Proper sterilization of instruments should be enforced. Control of droplet infection mainly the use of face masks, proper bed spacing, prevention of overcrowding, and ensuring adequate lighting, and ventilation are important to control measures. Nursing techniques are also useful in minimising cross-infection. Administrative measures have all control of the infection committee.

Table 2: Measures of Prevention of Infection

Infection	Surely effective	Not surely effective
Urinary tract infections	Limit the duration of catheter aseptic technique at insertion and maintain closed drainage	Antiseptic added to the drainage bag Antimicrobial coated catheter Daily antiseptic perineal cleaning
Surgical site infections	Staff clothing, surgical wound surveillance, clean operating environment, optimal antibiotic prophylaxis	Preoperative shaving and fumigation
Pneumonia	Vaccination for staff, isolation policy follow, sterile water for oxygen and aerosol therapy	Changes of ventilator circuit every 48 or 72 hours, digestive decontamination for all patients.
Vascular device infections	Limitation of frequency of dressing change, catheter coated by antibiotic for short term	Antimicrobial creams for skin preparation.

[7]

These are the four most common nosocomial infections like urinary tract infection, surgical site infection, pneumonia, and vascular device infections. Each of these is associated with a different device and procedure. This table mentioned those different infections may occur in hospitals and at that time surely effective measures should be used and not effective measures should not be used.

Preventive Measures Instructions for Health Workers

Hospital acquires infections all sections are connected with blood, body fluids, skin injuries, and mucous membranes. So healthcare workers must wear gloves for each contact which may lead to contamination and also gown, mask and eye protection where contamination of clothes or the face is

expected. Also, Health workers should wear a personal protective kit like gown, gloves, mask when they contact with patients Because Healthcare workers are at risk of acquiring infection through occupational exposure. Hospital employees can also spread infections to patients and other hospital employees. So hospitals must be in place to prevent and manage infections in hospital staff. Employees should be reviewed at recruitment, including immunization history, previous history of communicable diseases and immune status. Some previous infections may be assessed by serological tests. Vaccinations commended for staff include hepatitis, Yearly influenza, measles, mumps, rubella, tetanus and diphtheria. Specific post-exposure policies must be developed and compliance ensured for AIDS, Tuberculosis,

hepatitis virus, and rabies. Correct preparation of hospital staff for biosafety, proper waste management and healthcare reforms and arranging the general public awareness of these widespread infections can also help decrease nosocomial infections.

Conclusion

Nosocomial infections may also be considered either prevalent or widespread. Endemic infections are most common it occurs during outbreaks, defined as an unusual increase above the baseline of a specific infection or infecting organism. So at that time health workers, as well as a hospital, should be taken preventive measures for nosocomial infections. Here there are different criteria mentioned for the surveillance of nosocomial infections and which are useful to detect hospital-acquired infections and hereafter mention the preventive measures for the patients as well as health workers. And also give correct preparation of hospital staff for biosafety, proper waste management and healthcare reforms and arranging general public awareness of these widespread infections can also help decrease nosocomial infections.

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