Hospital-acquired infections (Nosocomial infection)

BY: DR. AHMED MODHER KHALAF

Definition

A hospital-acquired infection, also called a nosocomial infection, is an infection that first appears between 48 hours and four days after a .patient is admitted to a hospital or other health-care facility

Causes

All hospitalized patients are at risk of acquiring an infection from their treatment or surgery. Some patients are at greater risk than others, especially young children, the elderly, and persons with compromised immune systems. The CDC shows that the overall infection rate among children in intensive care is 6.1%, with the primary causes being venous catheters and ventilator-associated pneumonia. The risk factors for hospital-acquired infections in children include parenteral nutrition (tube or intravenous feeding), the use of antibiotics for more than 10 days, use of invasive devices, poor postoperative status, and immune .system dysfunction

Other risk factors that increase the opportunity for hospitalized :adults and children to acquire infections are

A prolonged hospital stay-

Severity of underlying illness-

Compromised nutritional or immune status-

Use of indwelling catheters-

Failure of health care workers to wash their hands between-patients or before procedures

Prevalence of antibiotic-resistant bacteria from the overuse of-antibiotics

Any type of invasive (enters the body) procedure can expose a patient to the possibility of infection. Some common procedures that increase the risk of :hospital-acquired infections include

Urinary bladder catheterization-

Respiratory procedures such as intubation or mechanical ventilation-

Surgery and the dressing or drainage of surgical wounds-

Gastric drainage tubes into the stomach through the nose or mouth-

Intravenous (IV) procedures for delivery of medication, transfusion, or-nutrition

Symptoms

Fever is often the first sign of infection. Other symptoms and signs of infection are rapid breathing, mental confusion, low blood pressure, reduced urine output, and a high white blood cell count. Patients with a UTI may have pain when urinating and blood in the urine. Symptoms of pneumonia may include difficulty breathing and inability to cough. A localized infection begins with swelling, redness, and tenderness on the skin or around a surgical wound or other open wound, which can progress rapidly to the destruction of deeper layers of muscle tissue, .and eventually sepsis

Diagnosis

An infection is suspected any time a hospitalized patient develops a fever that cannot be explained by the underlying illness. Some patients, especially the elderly, may not develop a fever. In these patients, the .first signs of infection may be rapid breathing or mental confusion

:Diagnosis of a hospital-acquired infection is determined by

Evaluation of symptoms and signs of infection-

Examination of wounds and catheter entry sites for redness, swelling, or- the presence of pus or an abscess

A complete physical examination and review of underlying illness-

Laboratory tests, including complete blood count (CBC) especially to look- for an increase in infection fighting white cells; urinalysis , looking for white cells or evidence of blood in the urinary tract; cultures of the infected area, blood, sputum, urine, or other body fluids or tissue to find the causative organism

.Chest x ray may be done when pneumonia is suspected-

Review of all procedures performed that might have led to infection-

Treatment

Cultures of blood, urine, sputum, other body fluids, or tissue are especially important in order to identify the bacteria, fungi, virus, or other microorganism causing the infection. Once the organism has been identified, it will be tested again for sensitivity to a range of antibiotics so that the patient can be treated quickly and effectively with an appropriate medicine to which the causative organism will respond. While waiting for these test results, treatment may begin with common broad-spectrum antibiotics such as penicillin, cephalosporins , tetracyclines , or erythromycin. Fungal infections are treated with antifungal medications. Examples of these are .amphotericin B, nystatin, ketoconazole, itraconazole, and fluconazole

Viruses do not respond to antibiotics. A number of antiviral drugs have been developed that slow the growth or reproduction of viruses, such as acyclovir, .ganciclovir, and amantadine

Prevention

:Hospitals take a variety of steps to prevent nosocomial infections, including

.Employ an infection control practitioner for every 200 beds-

.Identify high-risk procedures and other possible sources of infection-

Strict adherence to hand-washing rules by health care workers and visitors to-
.avoid passing infectious microorganisms to or between hospitalized patients

Strict attention to aseptic (sterile) technique in the performance of procedures,-
.including use of sterile gowns, gloves, masks, and barriers

Sterilization of all reusable equipment such as ventilators, humidifiers, and any-
.devices that come in contact with the respiratory tract

Frequent changing of dressings for wounds and use of antibacterial ointments-
.under dressings

.Remove nasogastric and endotracheal tubes as soon as possible-

Use of an antibacterial-coated venous catheter that destroys bacteria before-
.they can get into the blood stream

- Prevent contact between respiratory secretions and health care-providers by using barriers and masks as needed.
- Use of silver alloy-coated urinary catheters that destroy bacteria-before they can migrate up into the bladder.
- Limitations on the use and duration of high-risk procedures such as-urinary catheterization.
- Isolation of patients with known infections.
- Sterilization of medical instruments and equipment to prevent-contamination.
- Reductions in the general use of antibiotics to encourage better-immune response in the patients.