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بسم الله الرحمن الرحيم

شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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لم ترد بالأصـــل

PREVALENCE OF NOSOCOMIAL INFECTION IN INTENSIVE CARE UNITS

Thesis

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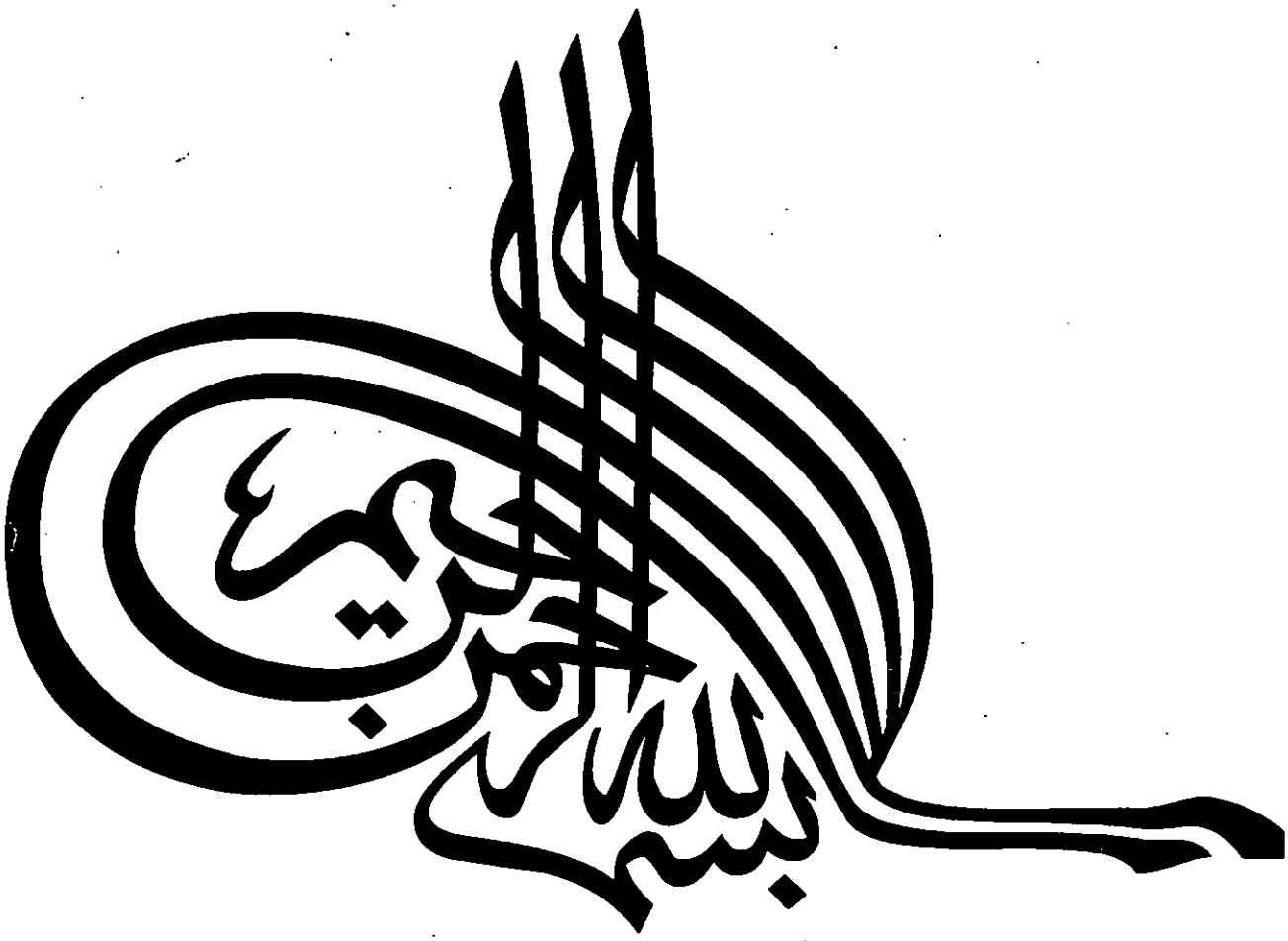
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Introduction

INTRODUCTION

Definition:

Infections are a leading cause of death in ICU, serious infections may be acquired outside the hospital or subsequent to admission for an unrelated illness. Community acquired infection is an infection occurring in the community and manifest on admission to hospital, while the term nosocomial is used to describe hospital acquired infections which generally present at least 48 hours following admission.[1]

Epidemiology of nosocomial infections in ICU:

The most useful and simple definition of epidemiology is "the study of distribution and determinants of disease frequency in human population" by this definition epidemiological study of Nosocomial Infections (NIs) in ICU (including intimate knowledge of rates of infection, risk factors, pathogenesis, and the most prevalent micro organisms) represent fundamental importance not only in infection control and prevention strategies in the ICU but also in diagnosis and treatment.[2]

The nationwide rate of nosocomial infection in the USA was estimated to be 5.7 nosocomial infections /100 admission to acute care hospitals between 1975 and 1976; this is more than the number of hospital admission for either cancer or accidents, and at least four times greater than the number of admissions for acute myocardial infarction. Prevalence surveys have indicated a variation in the prevalence rates of nosocomial infection from 6 to 17%. [3] Infections of the urinary tract, wound and respiratory systems are the commonest types of nosocomial infections. Mortality related to nosocomial infections is significant,[1] and

the cost of excess hospitalization caused by nosocomial infections in the USA was estimated in 1991 at 2.38 billion dollars/year. In countries where the average duration of hospitalization is longer than the USA, as in many European countries, the risk of acquiring infection are increased. In 1982, it was estimated that decreasing the rate of infection by 10 – 24% in Germany would result in saving of DM 63 – 800 million /year.[3]

Prevalence of nosocomial infection in ICU:

Although patients admitted to ICUs represent 5 - 10% of all hospital patients, ICU infections represent 25% of all hospital infection. Also nosocomial infection rates among ICU patients are as much as 5 – 10 times higher than those admitted to other medical and surgical wards, this situation is the result of complex interaction between the patient's underlying disease, severity of illness, type of ICU, and the number, type and duration of invasive devices and procedures. Factors also include the ability of some microorganisms, like acinetobacter, to survive on the inanimate environments of ICU equipment's.[4]

Patients in the ICU not only have high endemic rates of NIs but also are at higher risk for being infected as a part of major outbreak; the ICU itself being the source of the outbreak in nearly 90% of all nosocomial outbreaks. For example, at the hospital clinic of Barcelona (Spain); a wide spread outbreak due to methicillin-resistant Staphylococcus aureus (MRSA) started in the cardiac surgical ICU and spread rapidly to other ICUs and finally to nearly all hospital wards.[3]

Risk factors in intensive care units:

Cross infection:

Almost 150 years ago, Semmelweis observed dramatic decrease in the rate of childbed fever after instituting hand - washing with a chlorinated lime solution, supporting his suspicions of a "contaminated carrier"- the health care worker.[5] ICUs have a large number and wide variety of health care workers. Because these personnel may have a highly variable commitment to hand – washing, gloving, and gowning, there is ample opportunity for pathogens to be carried from patients to patients (exogenous flora) by way of the unwashed hands of health care workers. Other factors that may influence risk for cross - transmission include the agents used for hand-washing, the degree of asepsis used in maintaining devices, and the level of crowding in ICUs.[6]

Host defense:

ICU patients are particularly susceptible to nosocomial infection. The normal skin and mucosal barriers to infection may be compromised (e.g., by vascular catheters or endotracheal tube), devitalized (e.g., by decubitus ulcers), or removed (e.g., by burns or surgical debridement), and normally sterile sites may be invaded (e.g., by intravascular catheters, bladder catheters, extraventricular drains, or surgical drains). It is little wonder that the incidence of nosocomial infection in ICU patients is correlated with the use of these invasive devices.[4] In addition, ICU patients often have severe underlying illness, immuno- suppression or malnutrition, predisposing them to bacterial, viral, or fungal infections.[6]

Distribution and frequency of nosocomial infections in the ICU:

The distribution of nosocomial infection in the ICU differs from the distribution in general medicine and surgical words (Figure 1). The most common nosocomial infections among ICU patients are pneumonia (30%), urinary tract infection (20%), bacteremia (16%) and surgical wound infection (15%). This distribution is related to the wide spread use of mechanical ventilation, urinary bladder catheterization, and intravenous and intra-arterial catheters. More than 70% of ICU patients have an intravenous catheters in place; 3 – 17% of these patients will develop septicemia, of which one-third will be caused by multi-resistant micro-organisms.[2, 3]