Nosocomial infection and the importance of its prevention where first recognised by Dr. Ingaz Semmelweis in the 1850s, who discovered the effect of hand washing and disinfectant. Nowadays, nosocomial infections are a common cause of mortality and morbidity affecting 5-10 % of all hospitalised patients. It is further a major economical burden, estimated to cost $ 4,5 billion per year in the USA.

The most common diseases occurring in hospitalised patients are urinary tract infections, pnemonia (VAP and HAP), catheter related bloodstream infections, surgical site infections and gastroenteritis. The most frequent and most important causative agents of these infections are Gram positive (Staphylococci, Enterococci) and Gram negatives (Enterobactericae, Pseudomonas, Actinobacter) bacterie.

There are different types of patient affected, but in general do they have one or more risk factors. These risk factors include immunocompromised host, prolonged hospital stay, severe underlying ilness, need for frequent medical intervention, prolonged treatment with antibiotica or the presence of invasive device, catheter or endotracheal tube. Previous antibiotic treatment is also a risk because it impairs normal symbiotic bacterial flora and allowing colonisation with multiresistant strains (MDR). Thus, ICU patient are frequently affected by nosocomial infections. In this group of patients is early recognition and prompt intervention extremly important to prevent the progression to sepsis and septic shock, but diagnostics is particulatrly challenging as signs and symptoms of nosocomial infection may be masked by underlying disease or pharmacologic sedation.

So, preventive measures are the clue to make a hospital safer and ICU in particular. It is stated that over 25% of nosocomial infections could have been avoided if preventive strategies were adhered to. Preventive strategies can be divided into general (hand-hygiene, disinfectant, barrier precautions, isolation, asepsis, antibiotic prophylaxis) and infection-site-specific strategies. Both groups of precautions are discussed in this thesis, with special emphasis on newer approaches, e.g. antibiotic coated devices, screening of patients suspected to be infected and prevention of multidrug resistant pathogens (MDR).