INTRODUCTION

Surgical site infections are among the most common complications in patients who undergo invasive procedures.[1] The Center for Disease Control and Prevention has estimated that in the United States, 290,000 surgical site infections occur annually, costing 3-8 billion dollars and causing 13,000 deaths.[2] The CDC further estimates that 26-54% of these infections are preventable.

Sterile technique means using specific practices before and during invasive procedures to help prevent surgical site infections and other infections acquired in hospitals, ambulatory surgery centers, physicians' offices, and all other areas where patients undergo invasive procedures.[3] When practiced correctly, sterile technique helps reduce microbial contamination of the surgical site and decreases the number of microorganisms in operating rooms and other clinical environments.

Creating, maintaining, and monitoring a sterile field can improve patient outcomes. Using sterile technique when preparing, performing, or assisting with surgical operations and other invasive procedures is essential to keeping an environment safe and preventing health care-associated infections in patients and health care workers. Medical and surgical personnel involved in an invasive procedure promote patient and worker safety by practicing correct sterile technique and speaking out if a practice appears unsafe.

MICROBIOLOGY REVIEW (EXCERPT)

Sterile technique aims to prevent microbial contamination and infection, so we begin by reviewing basic aspects of microbiology and some of the most virulent and prevalent microbial pathogens in hospitals and other settings where invasive procedures are performed.

Microorganisms, or microbes, are by definition too small to be visualized with the naked eye. They include bacteria, viruses, fungi, protozoa, and algae. Bacteria, fungi, protozoa, and algae are further classified by genus and species. Bacteria also are categorized by their morphology (shape), motility (ability to move), reaction to various staining tests, and ability to grow under aerobic or anaerobic conditions and in different types of media. These categories help bacteriologists and clinicians distinguish diverse bacterial species and serotypes.

Many microbes are beneficial, and most bacteria are nonpathogenic, meaning they do not cause disease.[4] Pathogenic microbes – particularly bacteria, viruses, and fungi – cause disease by invading and multiplying within other organisms. These pathogens can cause serious and potentially fatal surgical site infections and other serious hospital-acquired infections. Some pathogens colonize the skin, upper respiratory tract, or intestinal tract of asymptomatic carriers. Infected health care workers then can shed these microorganisms, which puts patients at risk, especially those who are immunocompromised or undergoing invasive procedures.

Pathogenic bacteria, viruses, and fungi also can develop numerous mechanisms of partial or complete resistance to antimicrobial drugs. These include spontaneous and induced genetic mutations as well as horizontal gene transfer, or the non-reproductive sharing of genes that confer resistance between organisms of the same or different species.[5] The vast majority of hospital-associated infections are with drug-resistant organisms, and these infections increase morbidity, mortality, and health care costs. Researchers estimate that in the United States, antibiotic-resistant infections cause 8 million additional hospital days and cost at least $21 billion every year.[6]

REFERENCES (EXCERPT)

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