Guidelines on Infection Prevention and Control for Cork Kerry Community Healthcare

02: Basic Principles

This guidance document has been adopted as the policy document by:

Organisation: .................................................................
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SECTION 2
Basic Principles

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1: Introduction

Infection prevention and control is the application of microbiology in clinical practice. Infection can be caused by bacteria, fungi, viruses or prions and can affect almost all body systems. Infection is the process where an infectious agent (microorganism) invades and multiplies in the body tissues of the host resulting in the person developing clinical signs and symptoms of infection (e.g. increased temperature, rigors, rash).

Not all infections are transmissible but some, such as Clostridium difficile, influenza and norovirus have the potential to spread from one person to another. This has significant implications for healthcare organisations, long term care facilities and primary care settings.

Healthcare-associated infections (HCAIs) are infections that a person may develop as a direct result of receiving healthcare in any setting. While the specific risks of acquiring infection may differ across settings, the basic principles of infection prevention and control apply regardless of the setting.

Understanding how infections occur and how different micro-organisms spread are crucial to preventing infection. The process of infection can be represented as a chain, along which micro-organisms are passed from a source to a vulnerable person. All links in the chain must be present and in sequential order for infection to occur. Breaking a link at any point in the chain will control the risk of infection by preventing onward transmission of a microorganism. Understanding the characteristics of each link provides the healthcare worker with methods to prevent the spread of HCAI.

The links are;

1. **Infectious agent** is a micro-organism with the ability to cause disease. The greater the micro-organism’s virulence (ability to grow and multiply) and pathogenicity (ability to cause disease), the greater the possibility that the micro-organism will cause an infection. Infectious agents include bacteria, virus, fungi, and parasites.
There are two sources of infection:

A. Endogenous or self-infection: occurs when organisms which are harmless in one body site cause infection when transferred to another e.g. *E. coli* transferred from the gastrointestinal tract to the urinary tract where it may cause a urinary tract infection.

B. Exogenous or cross infection: occurs when organisms are transferred from another source e.g. eating food contaminated with *Salmonella* species.

2. Reservoir is a place where micro-organisms can thrive and reproduce e.g. micro-organisms thrive in human beings, animals and inanimate objects such as water, on equipment and in the environment.

3. Portal of Exit is the mode in which micro-organisms leave the reservoir e.g. the microorganism (e.g. influenza virus) may leave the reservoir through the nose or mouth when someone sneezes or coughs.

4. Means of Transmission In healthcare, there are three main modes of transmission:
   - Contact (example via the hands of healthcare workers),
   - Droplet (example flu) and
   - Airborne (example TB) these are discussed in detail in Section 6- Transmission Based Precautions.

5. Portal of Entry is the mode allowing the microorganism to enter the host. Portals include body orifices, mucus membranes or breaks in the skin. Portals also result from tubes placed in body cavities such as urinary catheters.

6. Susceptible Host is a person who cannot resist a microorganism invading the body, multiplying and resulting in infection. The host is susceptible to the disease, lacking immunity or physical resistance to overcome the invasion by the pathogenic micro-organism.

The purpose of Standard and Transmission-Based Precautions is to break the chain of infection.

References and Bibliography
