Introduction to Infection Prevention and Control (IPC)

Session 1

Learning Objectives

At the end of this session, the participants should be able to:

- Define “infection prevention and control (IPC)” and “healthcare-associated infections (HAIs)”
- Describe the historic evolution of IPC
- Describe the chain of infection
- Explain the benefits of adherence to IPC practices
- Describe structures for management and coordination of IPC

Definition of Terms

Infection Prevention and Control (IPC):

- A set of practices, protocols, and procedures that are put in place to prevent transmission of infections that are associated with healthcare settings

Healthcare-Associated Infections (HAIs):

- Infections that patients develop during the course of receiving healthcare treatment for other conditions, and
- Occupational health infections acquired by healthcare workers

Introduction

- The structure of IPC programmes varies from country to country. Many programmes have a central co-ordinating body situated within the national Department of Health or within the provincial healthcare administration. Each facility are then required to implement and adhere to the prescribed national or provincial IPC guidelines and policies. At individual facility level, the IPC programme should involve the facility management, the IPC committee and the IPC practitioner.

History: Ignaz Semmelweis

Noticed a higher risk of puerperal fever in women who:

- delivered babies in the hospital than those who delivered in the street
- were attended at childbirth by physicians or medical students rather than those attended by midwives

- Introduced hand washing with chlorinated lime after autopsies & between exams of pregnant women.

Maternal mortality decreased from 18% to 3%!

History cont: Florence Nightingale, Louis Pasteur and Robert Koch

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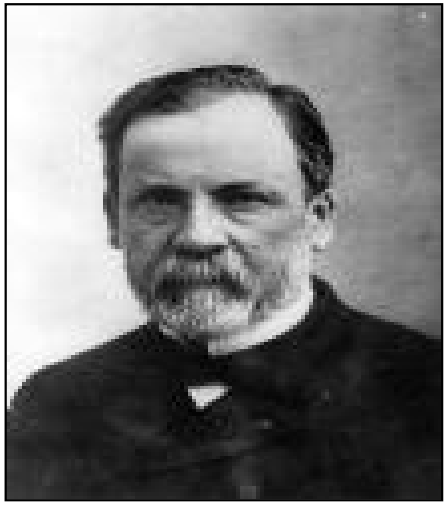
1854: Noted the direct relationship between unsanitary hospital conditions and post operative complications



1850s: Provided convincing evidence of the germ theory of disease

1882: Founder of modern microbiology. Identified causative agent of Tuberculosis

Slide 6

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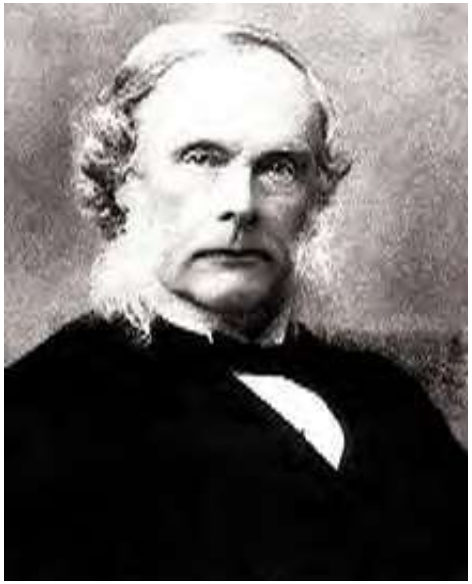
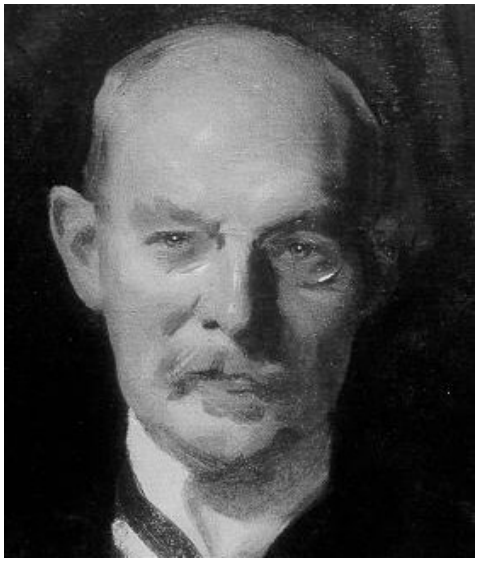
History (cont.)
Advances in Surgical Infection Control

		
Joseph Lister introduced antiseptics in 1867	William Halstead introduced gloves in 1890	Johannes Mikulicz introduced masks in 1897

Infection Control Timeline (cont.)

- 1970s CDC begins training on IPC
- 1972 Association for Professionals in Infection Control and Epidemiology (APIC) established
- 1981 MRSA was discovered
- 1990s Role of IPC expands to non-acute settings
- 2000 Role expands to quality promotion across the healthcare delivery system

In the past few decades, changes in the healthcare industry have placed a high demand on IPC programs.

So Where Are We Now and What Happens Next?

HAIs

- Healthcare Environment
- Standard Precautions
- IPC Programs

Healthcare-Associated Infections

- Burden of HAIs and risk of antimicrobial resistance (AMR) is increasing in sub-Saharan Africa
  - HAIs rates for inpatients is estimated at 20%- 40%

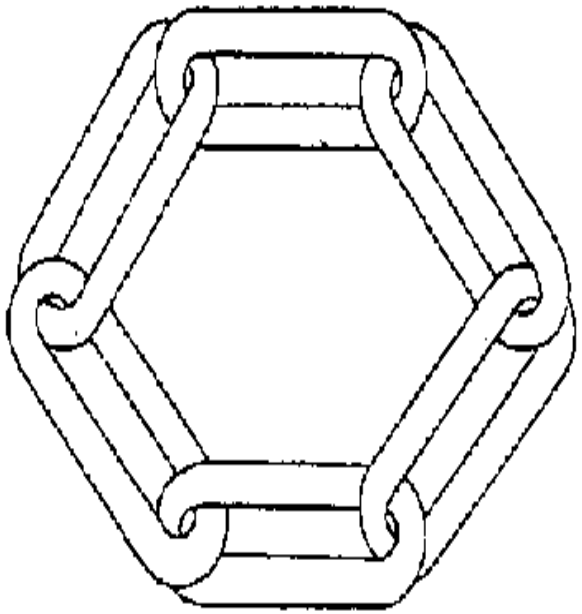
- Based on data from different countries, the HAI is estimated to affect more than hundred millions patients a year around the world.

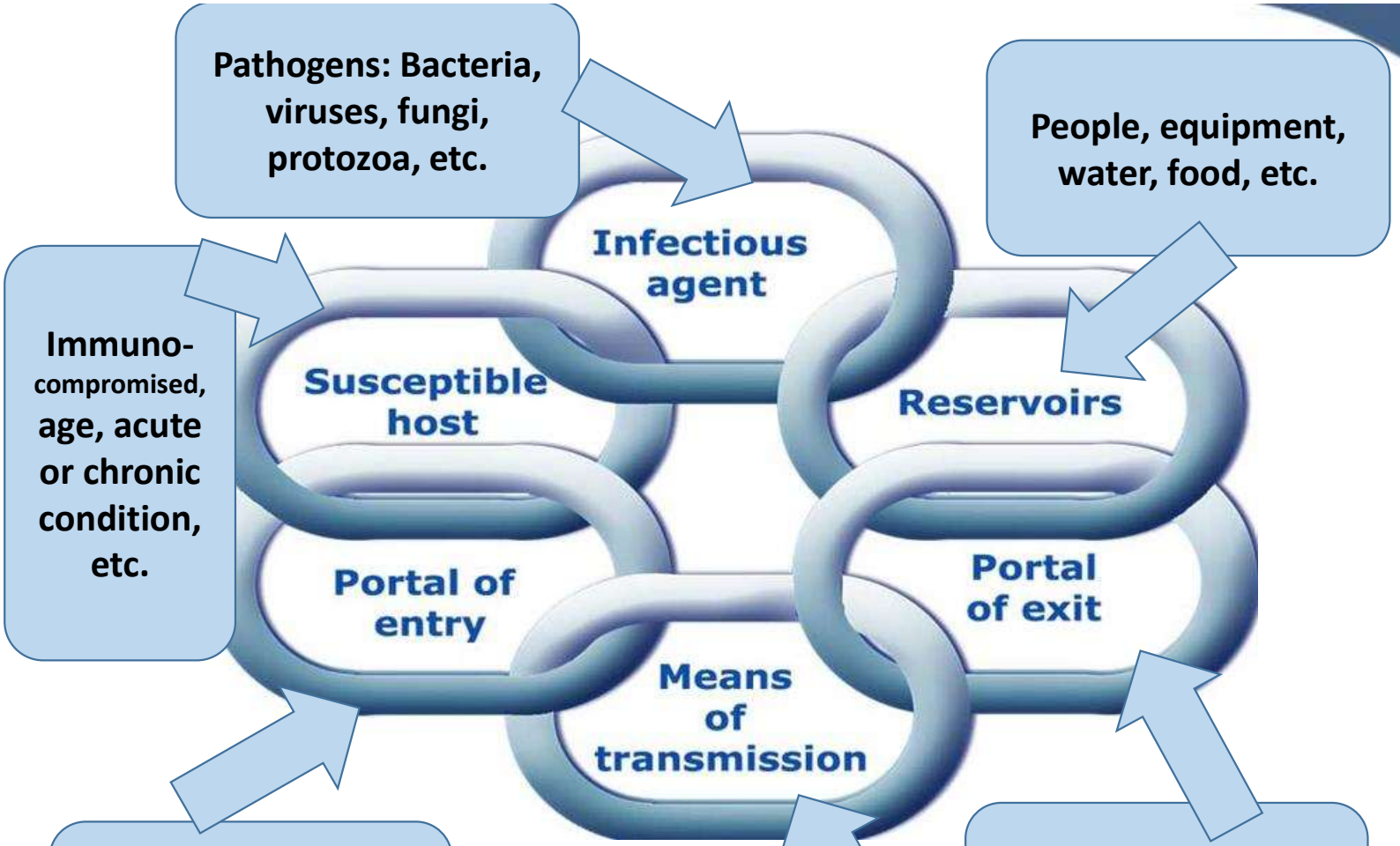
The High Cost of HAIs

- Direct cost to hospitals for :
  - Extended hospital stay, extra resources, extra treatment, extra equipment, extra community care and costs if discharged needing follow-up
- Direct cost to patient and family for:
  - Pain and scarring, extended stay away from family, working days lost, family income loss, financial strain, increased visiting, increased morbidity and mortality

Chain of Infection

- Describes way infections are transmitted from one point to another
- IPC goal is to break a link in the chain to prevent the transfer of the pathogen





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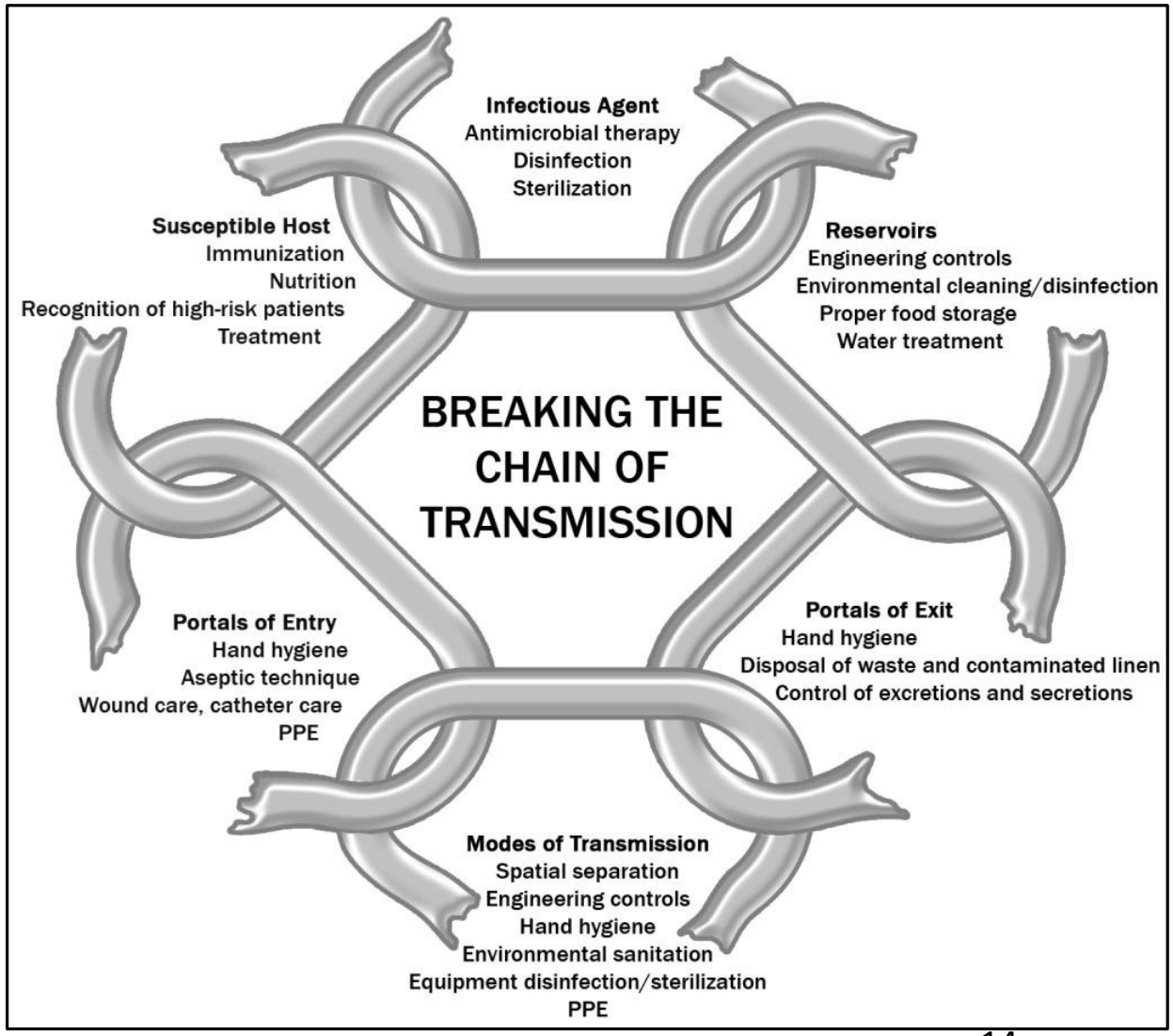
Infectious Agent
Antimicrobial therapy
Disinfection
Sterilization
Susceptible Host
Immunization
Nutrition
Recognition of high-risk patients
Treatment
Reservoirs
Engineering controls
Environmental cleaning/disinfection
Proper food storage
Water treatment
BREAKING THE CHAIN OF TRANSMISSION
Portals of Entry
Hand hygiene
Aseptic technique
Wound care, catheter care
PPE
Portals of Exit
Hand hygiene
Disposal of waste and contaminated linen
Control of excretions and secretions
Modes of Transmission
Spatial separation
Engineering controls
Hand hygiene
Environmental sanitation
Equipment disinfection/sterilization
PPE

Risk Factors for HAIs

- **Age**: infants (≤ 2yrs) and, elderly (≥65 years)
- **Presence of wounds, ulcers, burns or exfoliative skin conditions:** Breaches to the skin provide an access portal for infection.
- **Invasive devices:** The longer the dwell time for an invasive device, the greater the risk of infection acquisition.
- **Co-morbidities**
- **Medications**
- **Nutrition and body mass index (BMI)**
- **Personal hygiene:** Failure to practice hand hygiene may promote contact transmission

IPC Practices

Standard Precautions

Practices used in the care of **all** patients **all** the time.

Additional Precautions

Practices used in the care of patients with confirmed infectious disease or pathogen

Also known as transmission-based precautions

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Standard Precautions

- Hand hygiene
- Proper use of Personal Protective Equipment (PPE)
- Management of healthcare waste & safe handling of sharps
- Cleaning, disinfection and sterilization
  - ✓Reprocessing of medical devices
  - ✓Environmental cleaning
  - ✓Linen and laundry management
- Respiratory hygiene and cough etiquette

M3 Components of standard precautions summarized

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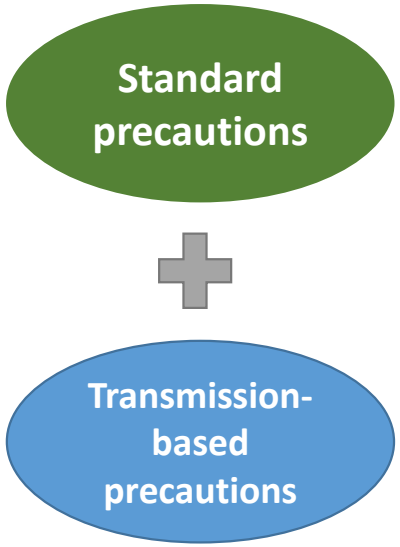
Additional Precautions

- Practices HCWs take to protect themselves, patients, and visitors from spread of pathogens that are not stopped by standard precautions alone

- Supplement standard precautions

- Based on how pathogens are spread



Personal Protective Equipment for Transmission-based Precautions

Standard precautions plus:

- Contact precaution
- Droplet precaution
- Airborne precaution

Always

Implementing IPC Programs in Resource Constrained Settings

IPC Program

- Is a requirement for every healthcare institution
- Includes **surveillance** and practice activities
- Influences practices for safe patient care outcomes
- Engages infection prevention and control professionals
- Is managed by a multi-disciplinary **committee**
- Includes everyday activities coordinated by IPC **focal person**
- Has the following functions: management of critical data, recommending policies and procedures, interruption of transmission of infectious diseases, and **education for healthcare workers.**

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Coordination and Management of IPC

- National Level
  - Ministry of Health (MoH) IPC program
  - National IPC Technical Working Group
- Sub national or Regional Level
  - Subnational IPC Committee
  - Hospital IPC Committee
  - Hospital IPC focal person
  - Primary Health Care Facility IPC focal person

Slide 22

M5 Removed 2nd Edition in the notes
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Challenges for implementing IPC Programs

- IPC is not a priority within the national health agenda
- Gap between policy recommendations and practice
- Lack of reliable data on HAIs due to (poor laboratory capacity and surveillance systems)
- Limited access to qualified and trained IPC professionals
- Limited human resources (understaffing)
- Inadequate budgetary allocations
- WASH and health care facility infrastructure gaps
- Supplies procurement challenges
- Need for adaptation or tailoring of guidelines to the local context, and according to available resources.

Benefits of Adopting IPC Policy

- Quality of health care improves
- Hospitals are less crowded
- Reduces risks of patients and healthcare workers acquiring an infection
- Lowers cost of health care
- Hospitals attain good publicity
- Prevent the spread of Antimicrobial Resistance

Summary

- Compliance to Infection prevention and control practices can prevent or reduce the risk of transmission of microorganisms.
- Healthcare-associated infections have direct and indirect costs for hospitals, people, and communities.

Thank You
Questions ?