



Infection Prevention & Management

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Outline

- ❖ **Principles of Infection Prevention**
- ❖ **Definitions**
- ❖ **Standard Precautions**
- ❖ **Types of Isolation (TBP)**
- ❖ **Types of HCAIs**
- ❖ **Hand Hygiene**

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What Is The Infection Control

- **Infection control refers to policies and procedures used to minimize the risk of spreading infections, especially in hospitals.**
- **The purpose of infection control is to reduce the occurrence of infectious diseases.**

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Definitions

- **Infection:-** Invasion & multiplication of microorganism in a susceptible host, with an associated host response (fever, pus, purulent discharge...etc).
- **Endemic:-** Habitual occurrence of disease or usual presence (prevalence) in a certain geographic area.
- **Epidemic:-** Outbreak or in excess of normal expected level of infection by a common agent in a defined population during a defined period.

- **Pandemic:-** refers to a worldwide epidemic.
- **Asepsis:-** Prevention of microbial contamination of living tissues or sterile material by removing or killing microorganism.
- **Disinfection:-** Process to kill or remove pathogenic microorganism but can not kill bacterial spores.
- **Sterilization:-** A process that kill and destroy all types of microorganism including bacterial spores.

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Health Care-Associated Infections (HCAI)

- “An infection occurring in a patient during the process of care in a hospital or other health-care facility which was not present or incubating at the time of admission.
- This includes infections acquired in the health-care facility but appearing after discharge, and also occupational infections among health-care workers of the facility”

Health Care-Associated Infections (HCAI)

- Infections are considered to be hospital acquired if they develop at least 48 Hrs after hospital admission without proven prior incubation.
- 3 days after hospital discharge or within 30 days of an operative procedure.

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MAIN Causes of HAI

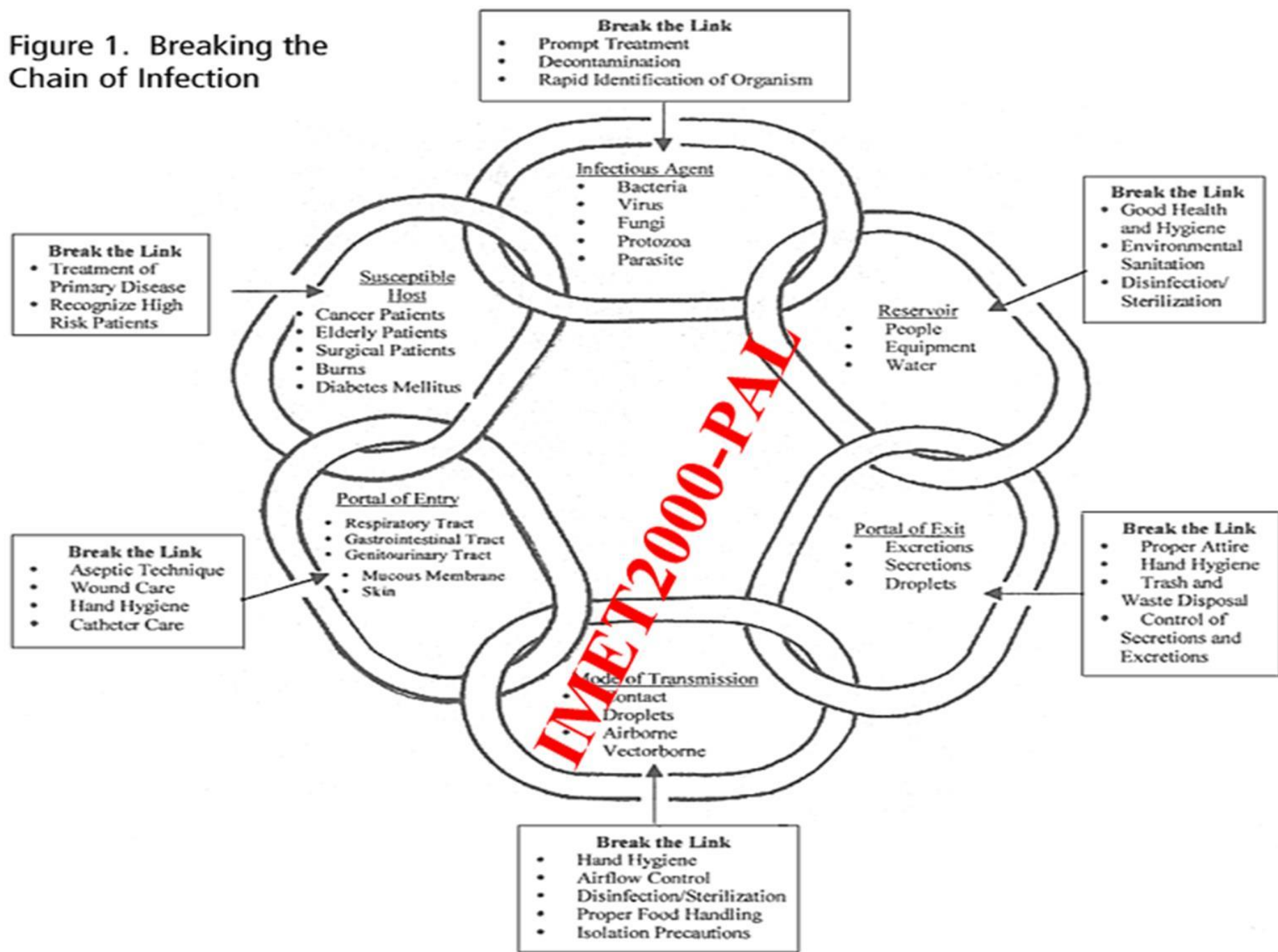
- **Urinary tract (CAUTI)**
- **Surgical site (SSI)**
- **Blood stream (CLABSI)**
- **Lower respiratory (VAP)**

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Chain of Infection



Figure 1. Breaking the Chain of Infection



***Infection Prevention
Is An Eagle has two wings***



Two wings

- Standard Precautions

All blood, body fluids and tissues must be handled as if they are infectious

- Transmission based precautions

Used for patients known or suspected to be infected or colonized with infectious agents that cannot be contained with standard precautions alone.

Two system

Standard Precautions

Transmission-based precautions

- **Contact Isolation**
- **Protective Isolation**
- **Droplet Isolation**
- **Airborne Isolation**

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Standard Precautions

- Applies to all Pts regardless to their diagnosis.
- Applies to all body fluids and secretions.
- Applies to contact with mucus membrane and intact skin.
- Involves:-
 1. **Hand Hygiene**
 2. **Use of PPE**
 3. **Aseptic techniques (Safe injection practice)**
 4. **Environmental cleaning**
 5. **Waste management**
 6. **Cough etiquette & respiratory hygiene.**

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Hand Hygiene

- Why Hand Hygiene?
- Types of Hand Hygiene
- Indications for Hand Hygiene
- Techniques of effective Hand Hygiene
- Hand Hygiene Compliance

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Why Hand Washing

- **Most common modes of transmission of pathogens in the hospitals are via hands of health care workers.**
- **Two categories of micro-organisms: Transient flora (on the skin surface). Resident flora (on the surface and deep in the skin layers).**

Types of Hand Hygiene

1- Routine Hand Hygiene

- Routine HW
- Antiseptic hand wiping

2- Antiseptic Hand Hygiene

- Antiseptic HW
- Antiseptic HR

3- Surgical Hand Hygiene

- Surgical HW
- Surgical HR

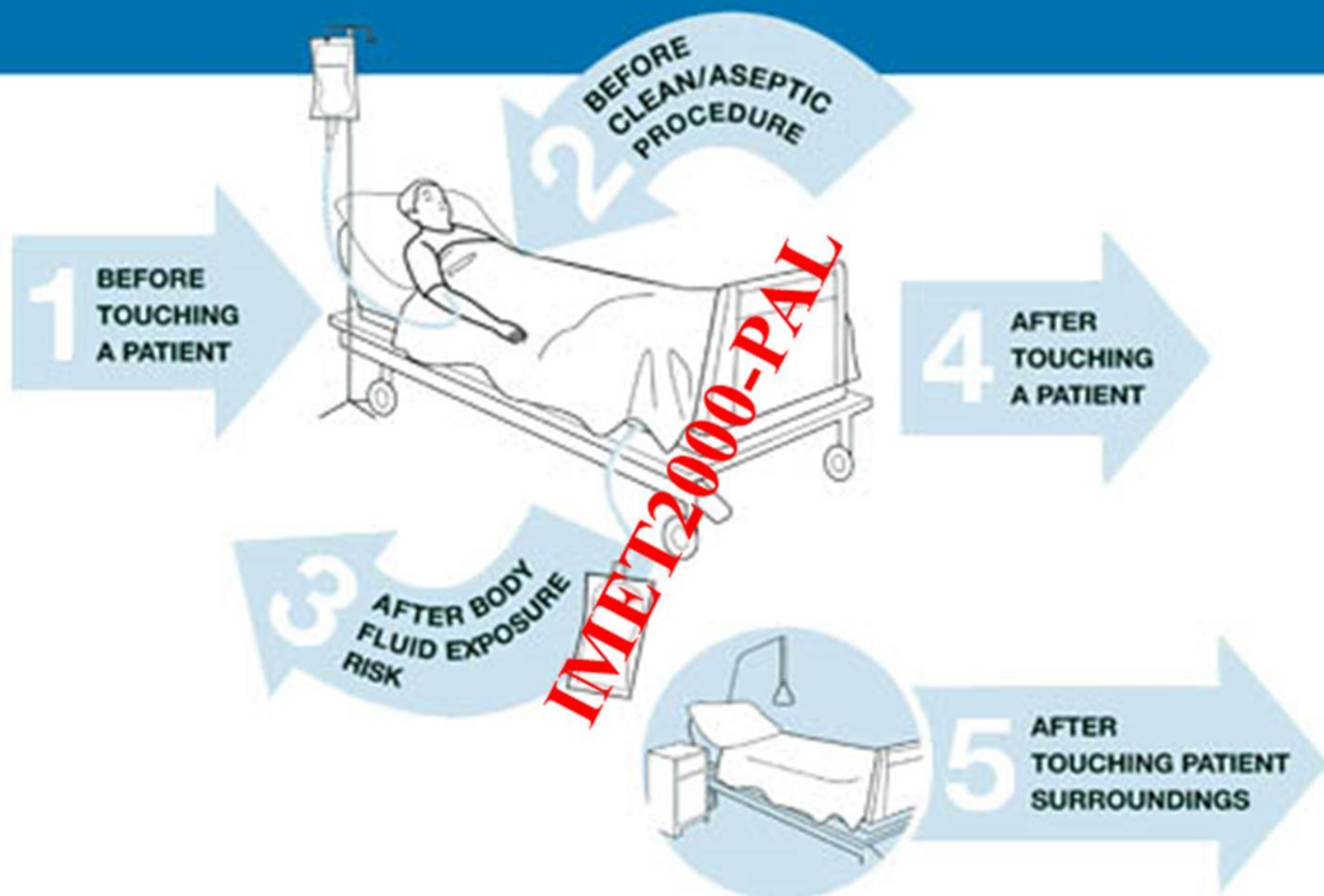
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When to wash hands

1. before touching a patient
2. before clean/aseptic procedures,
3. after touching a patient, and
4. after body fluid exposure/risk,
5. after touching patient surroundings.

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5 Moments for Hand Hygiene





Most frequently missed

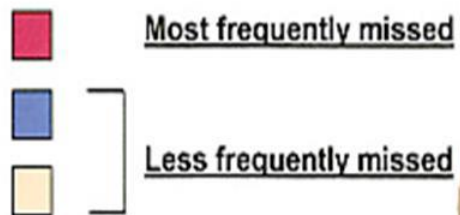


Less frequently missed



Frequently missed

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BACK OF HAND



FRONT OF HAND

Distribution of areas missed during hand washing
 (Ref: Taylor LJ, SRN, SCM. An evaluation of
 handwashing techniques, Nursing Times, Jan 1978).

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How to wash your hands?



Palm to palm



Between fingers



Back of hands



Base of thumbs



Back of fingers



Fingernails



Wrists



Rinse and wipe dry

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Personal Protective Equipment

- Gloves
- Gowns
- Masks
- Eye protection goggle
- Head cap
- Water-proof Apron
- Face Shield
- Over Shoes/Special Boots

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Gloves

Wear gloves when:-

- Handling blood, body fluids & secretions.
- Surfaces, materials & objects are visibly solid.
- Change gloves between procedures.
- Hand washing after removing gloves.
- Important technique when wearing and removing gloves.

Gown

- Wear gowns when clothing may become solid with fluids, blood or any excretions.
- One wear gown for each patient.
- Used in case of Isolation.

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Other PPE

- Mask
- Eye Goggles
- Face Shields
- Boots
- Over Shoes



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Over Shoes

- Hands can be contaminated during wearing and removing.
- Do not protect from sharp injuries.
- Unnecessary additional cost
- Feet sometimes need to be protected from blood and cuts. Shoes and boots offer more protection.

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ISOLATION PRECAUTIONS

- All levels require hand hygiene
- Higher level of precautions
- Applied in addition to standard precautions

- **Types of transmission-based precautions:**
 - Contact precautions
 - Droplet precautions
 - Airborne precautions
 - Protective Precautions

Contact Precautions

- Prevent infection through direct or indirect contact with patients or patient care environment.
- Examples:- MDROs such as (VRE, MRSA, Rotavirus, CTD, Hepatitis A, Major drainage wounds not contained in dressing).

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Contact Precautions

- Single isolation or cohort patients.
- Limit patient movement.
- Gown and gloves for patient/room contact (remove immediately after contact).
- Wash hands immediately after pt contact
- Avoid contaminating environmental surfaces.
- Clean and disinfect pt room daily.
- Use assigned equipments and if not available disinfect between uses.

Contact Precautions

GLOVES:-

- Use Gloves when entering the room.
- Use gloves after contact with infective material.
- Remove gloves before leaving the room.
- Wash hands or use appropriate gel after glove removal.
- Do not touch infective material or surfaces with hands.

• **GOWN:-**

Use protective gown when entering the room if:

- Direct contact with patient or
- Potentially contaminated surfaces or
- Equipment near patient is anticipated or
- If the patient has diarrhea or
- Colostomy or wound drainage that is not dressed.

Droplet Precautions

- Precautions taken to prevent infection via:-
 - ❖ Coughing
 - ❖ Sneezing
 - ❖ Talking
 - ❖ Medical procedures (Intubation)

For Large droplets within one meter transmit.

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Droplet Precautions

- Wear Surgical mask within one meter of patient.
- Place patient in single room or cohort one meter apart.
- Limit pt movement within facility
- Patients should wear mask when outside of room.
- Change mask when become wet.
- Visitors restriction and education.

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Droplet Precautions

- Example of cases are:-
 1. Diphtheria
 2. Pertussis
 3. Corona Virus
 4. Influenza
 5. Rubella
 6. RTI with colonization (productive cough)

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Airborne Precautions

- Example of cases are:-

1. TB
2. Measles
3. Chickenpox
4. Anthrax
5. Smallpox

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Airborne Precautions

Very small particles of evaporated droplets or dust with infectious may:-

- Remain in air for a long time
- Travel farther than droplets
- Negative isolation is necessary.

Airborne Precautions

- Strict single isolation with negative pressure.
- N95 mask (particulate respirator)
- Gloves
- Gown
- Hand Hygiene
- Eye protection in case of spill
- Hair cover is optional
- Visiting restriction & education

Protective Precautions

- For Neutropenic patients.
- Need single isolation.
- Full protection and education.
- HH & PPE.

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Thank You

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