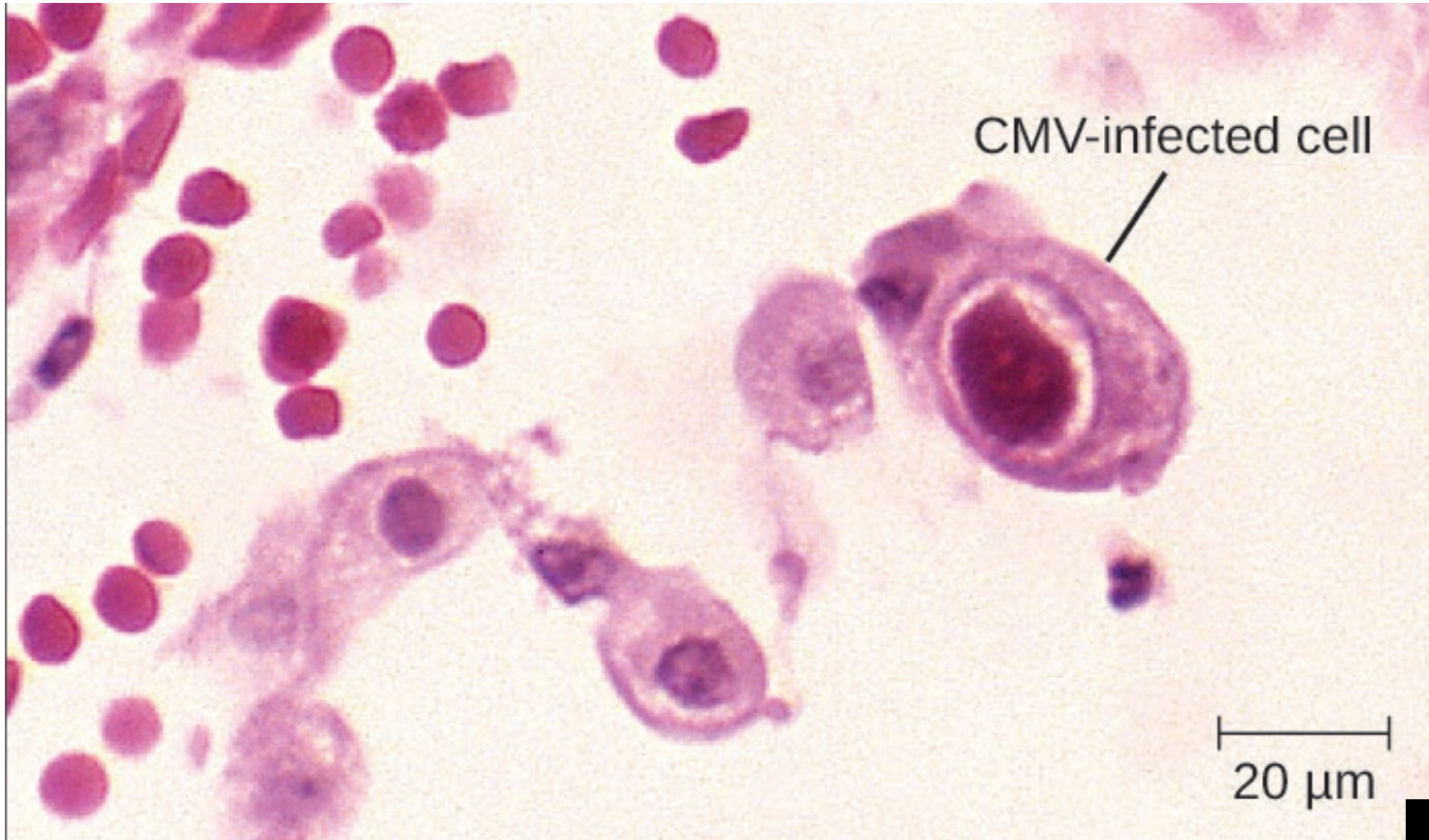




Infection Control In OT & Wards

Dr. Mahesh Bhatt



What Is Infection?

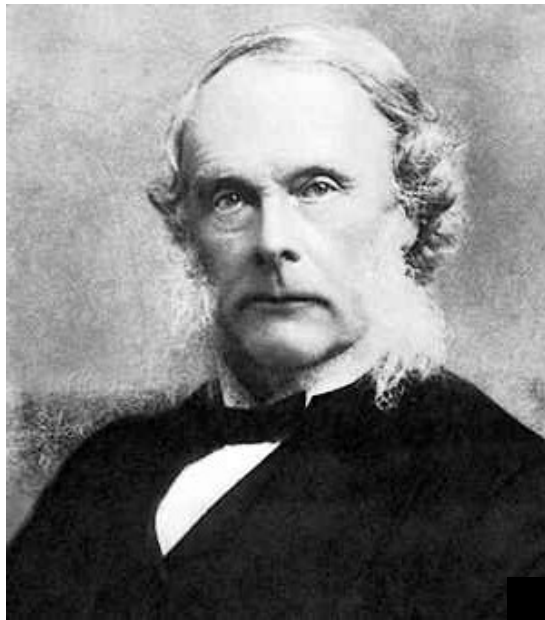
- Invasion
- By a disease causing agent
- Their multiplication
- In a Host organism
- Leading to production of toxins and
- Reaction of host tissue
- Physiological Disturbances
- Causing Disease.

Hospital Infection -

- **Patients, Visitors, Medical Staff, Workers**
- **The unique situation make situation conducive for getting infection**



History -



- Joseph Lister – First use Carbolic Acid as an antiseptic agent in 1865
- Florence Nightingale – about zymotic (Infectious) disease.
- WHO Study – HAI 3% to 21% (mean 8.4%)
- Various studies have shown its effect on treatment cost, economy and productivity.



Two Broad
Groups -

- **1st Hospital Associated Infections** – Infections those are present at the time of admission, during admission, acquired during hospitalization. Means all infections pre hospitalization, hospitalization and post hospitalization.
- Naturally it includes the patients, the care givers, visitors etc.
- **2nd Hospital Acquired Infections** or Nosocomial Infections.

Hospital Acquired Infections (HAI)

- Infections those are acquired in hospital.
- It may be patient, staff, visitors.
- It may manifest during hospitalization or after discharge.



Types Of HAI -

- Urinary Tract Infection
- Respiratory Tract Infections
- Post Operative Infections
- Systemic Infections



Wards – Wards are the areas of hospital which have beds and other arrangements to accommodate patients for treatment.

- General wards, Semiprivate, and Private wards.
- Specialty wards – Preop, postop, children, maternity, neurology etc.
- High Dependency wards like ICUs, CCUs
- Emergency and Routine wards.

Operation Theater -



- Routine Elective and Emergency OTs.
- Specialized OTs – Depending on specialties.
- Depending on type of surgeries or procedures – Minor and Major OTs.

Why OTs and Wards Are Important In Whole Exercise Of Infection Control In Hospital

- Wards are the area where maximum Human Movement Occurs.
- Wards are meant to accommodate every kind of patient, with infection, without infection, preoperative and postoperative patients, terminally ill patients, Immunocompromised patients etc.
- Movement of visitors in ward areas.
- In OT all the procedures including operations are invasive procedures, which are highly susceptible to infections.

Functions Of A Ward -

- Providing Comfortable Stay – Away From Home
- Disease Management – Diagnosis, Treatment, Patient Care
- Preparing patient for discharge, to normal life, rehabilitation
- Providing training opportunities
- Providing Research Opportunities



Operation Theater -

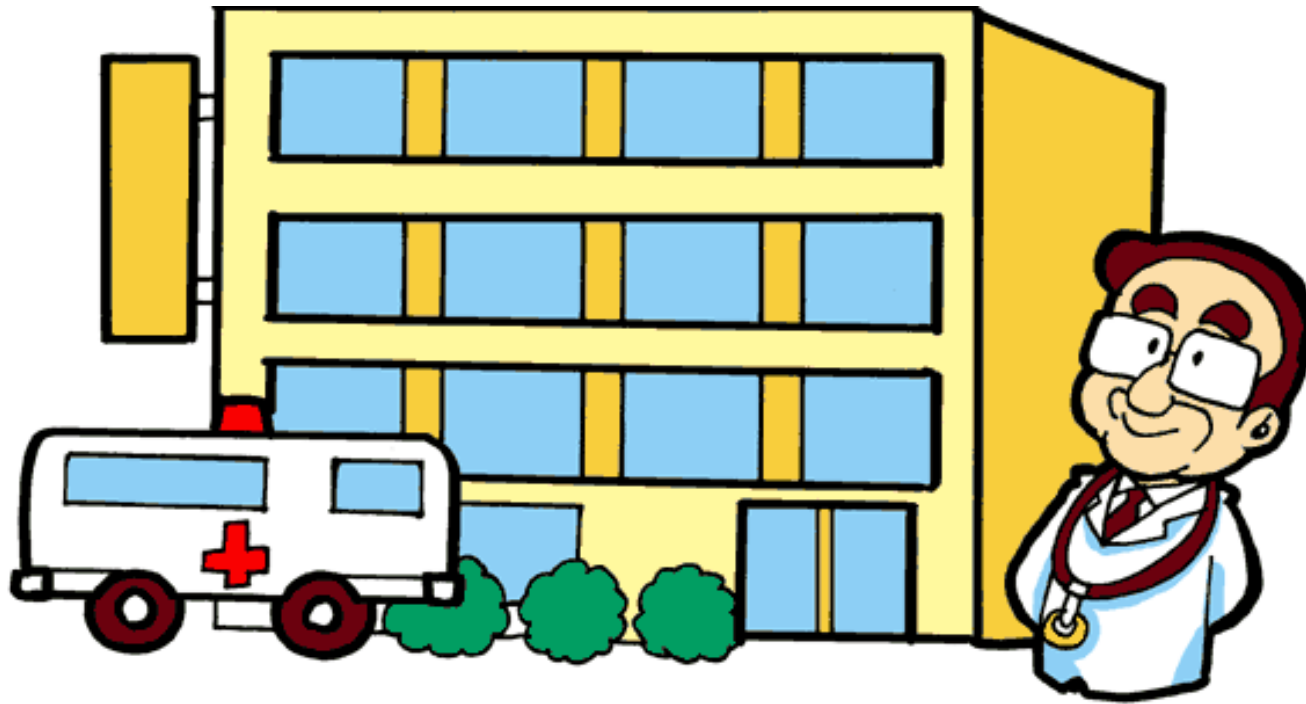


- It is area where operative procedure performed.
- It is highly restricted and protected area.
- Most aseptic and sterile environment.
- Teaching
- Research



High Risk procedures

- Injections – IV lines
- Surgical Procedures
- Wound Management
- Delivery
- Investigative Procedures
- Lab Investigations
- Dialysis



hospital

Why Infection Control Is
Important -

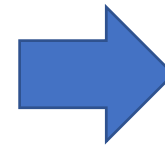
- It is one of few most important factors which affects the reputation of a hospital and very badly affects the functioning and competence of a hospital.

A Bad Infection Control System -

- More complications
- Increase Mortality
- Increase Morbidity
- Longer stay of patients
- Increased Bed Occupancy
- Poor quality



Puts undue pressure on the scarce resources of patients, hospital, community, and country.



Bad Reputation to Hospital

Source of HAI

- From Self
- Cross Infection
- Environmental

Normally non problematic organisms can become pathogenic in certain situations during a disease process, treatment, procedures etc.

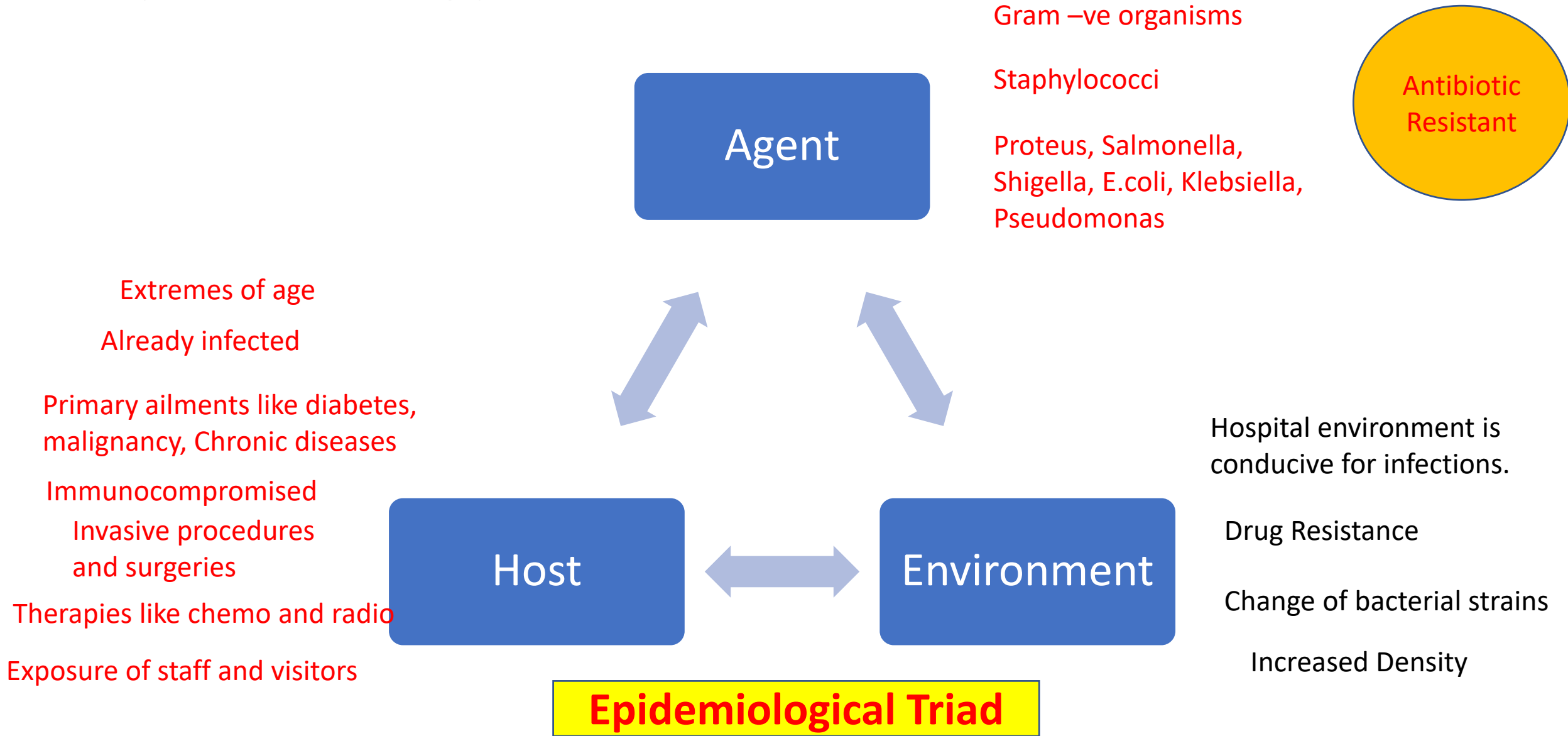
Micro-organisms transmitted by 1) Direct Contact, 2) By Air, Water, Food, 3) By Medical Staff

Hospital air have more microorganisms, Contamination
Increased movement and contact of people.

- Sound Epidemiological knowledge is necessary for an effective Infection Control Program in a hospital.

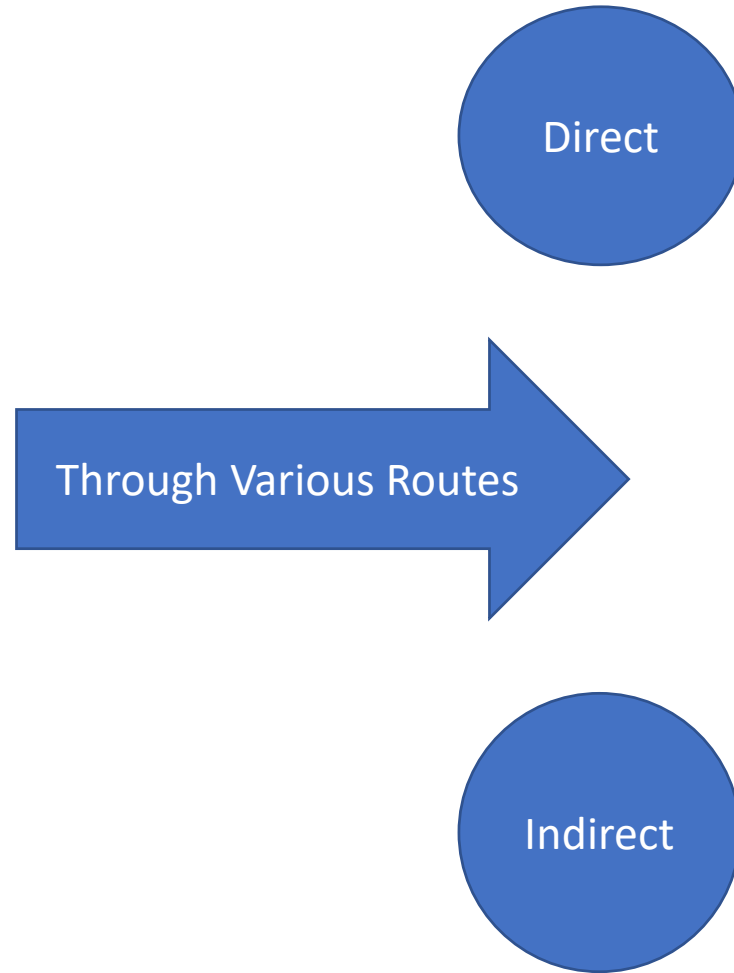
Epidemiology –
Study of the
'Distribution' and
'Determinants' of
health related states
or events (including
disease) and
application of this
study in disease
control and Health
Improvement.

Epidemiology Of HAI



So, Humans are -

- The source
- Disseminator
- Recipient

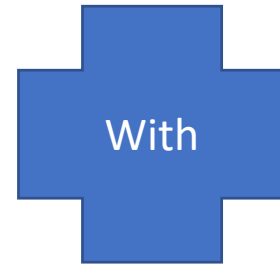


Person to person
Generally airborne

Through Contaminated
Material, Food, Water,
Linen, etc.

Infection Control Involves Almost All Departments Of A Hospital

- Engineering
- Maintenance
- Housekeeping
- CSSD
- Security
- Waste Disposal
- Human Resource
- Lower, Middle and Top Management



Medical,
Paramedical and
Nursing care
teams

For example A General Ward

1 - Spacious, Well Ventilated,
Proper Floor and walls, Good
Drainage system

Engineering Dept

2 - Cleanliness, clean linen,
clean toilets, clean furniture

Housekeeping

3 - Control of entry of people,
Crowd Management

Security



4 - Proper supply of
sterilized goods,
consumables and medicines

CSSD & Supply

5 – Trained Nursing and
Medical people

Human Resource

6 – Willing Management

Hospital Management

Similarly it is true for OT, ICU, etc.

Important Considerations



Exposure



Ventilation



Isolation



Over Crowding



Undiagnosed
Infections



Close contact

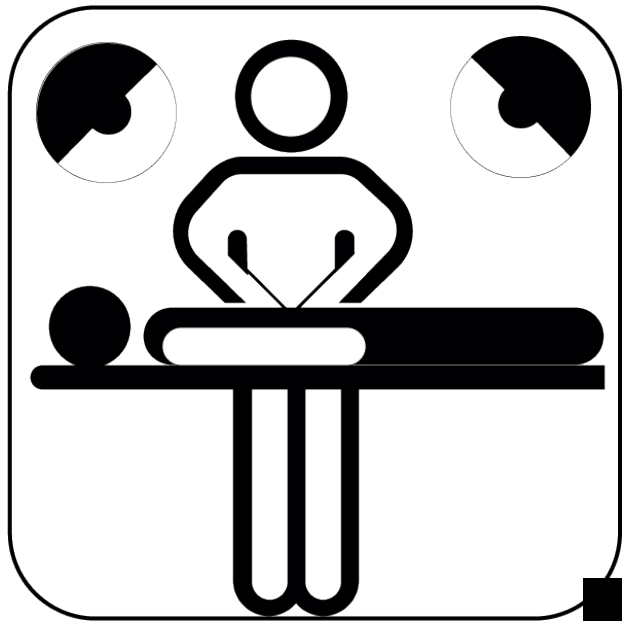


Carelessness in
Asepsis



Housekeeping.

Special considerations for OT



- Proper zoning
- Positive pressure ventilation
- Use of Air Handling Units Air Filter 5 micron size.
- Highly restricted area
- High standards of asepsis
- The cleanest place of hospital



Administrative And Organizational Aspect Of Infection Control Program In A Hospital -

- At Top Management – Leadership and Motivation
- Since it is very important for Hospital Functioning, It should be initiated with authority.
- Involvement of Policy Makers (To Design), Staff (To Implement), and Management (Management).
- It is a continuous procedure of a hospital.

Hospital Infection Control Committee -

- A committee to provide leadership and guiding the management of a hospital **invested with authority** to control and prevent all hospital infections by investigating all infections, running and establishing surveillance programs, training, and advising management to take necessary steps for infection prevention and control measures.



Composition of HICC

- Large hospitals – Should be broad based with representatives from all major clinical departments, head of nursing, housekeeping in charge, engineering and other support departments Under chairmanship of CMS/ MS. The microbiologist should be the member secretary/ Hospital Infection Control Officer.
- Small Hospitals – (DH, CHCs) Under chairmanship of pathologist or senior MO/MS with members from all clinical specialties available, matron can work as a Infection Control Officer.
- Smaller Hospitals – This responsibility can be given to a MO.

Aim of ICC is Control And Prevention Of Infections, So, its Functions are -

- Establishing a reporting System for surveillance.
- Periodical reviews and decisions.
- Lay down procedures for asepsis in various departments.
- Infection Control manual, Research.
- Training programs for personnel.
- To locate infections acquired from outside of hospital.
- Decision and leadership in Infection Control Program.
- Investigation.
- Policy formation and implementation.

**Infection Control Team – A team comprised of
ICO, ICN, Microbiologist**

For day to day work – Data collection, Record maintaining,

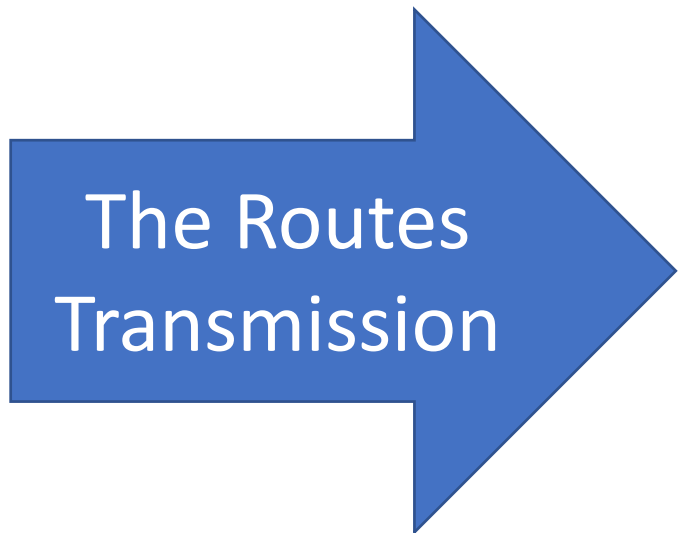
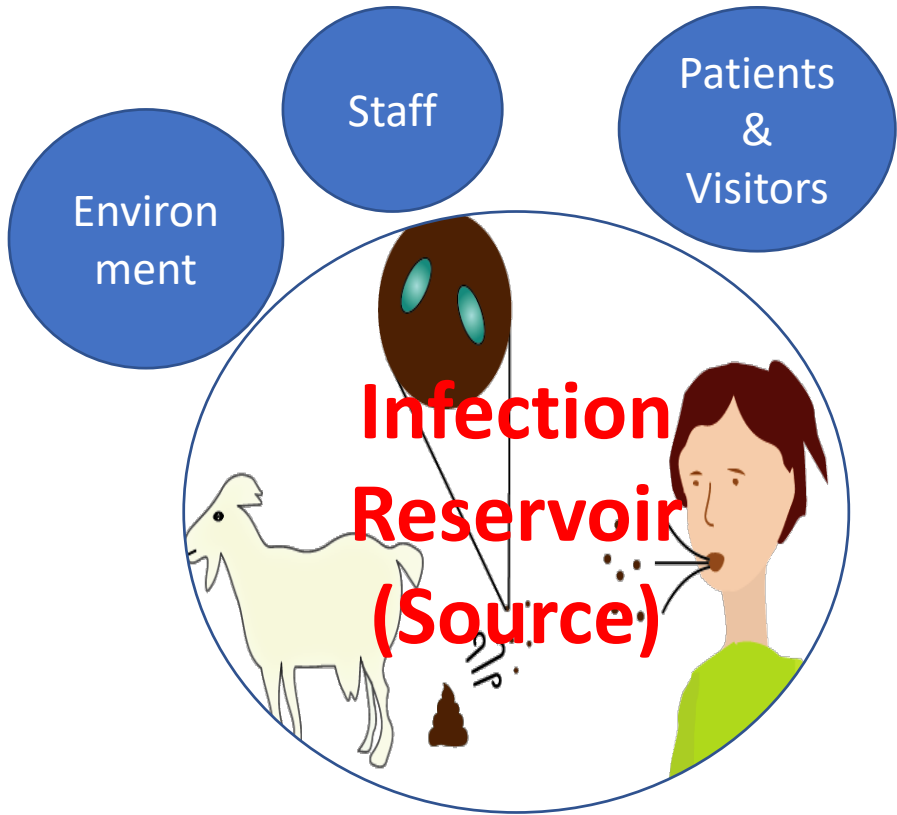
Difference between Prevention & Control

Prevention

- Measures to not allowing a disease to happen in a community.

Control

- Measures to restrict the transmission and spread of disease in a community.



Natural History Of Infection

For Prevention and Control – It is necessary to break this cycle.

Hospital Staff

Patient

Relative

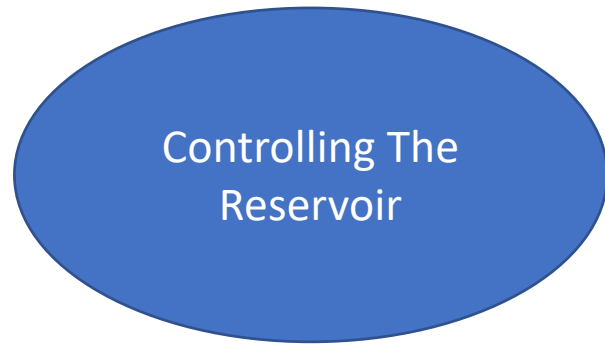
Injection

Direct Contact

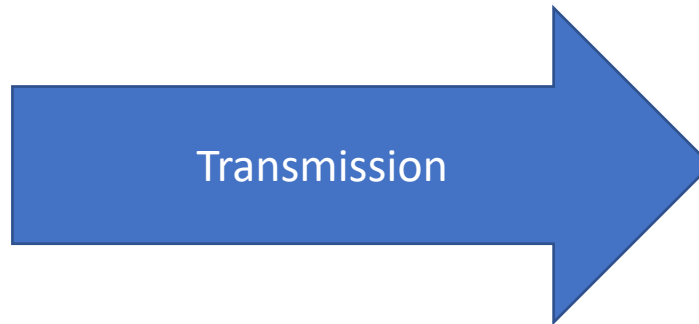
Air



Infection Prevention And Control

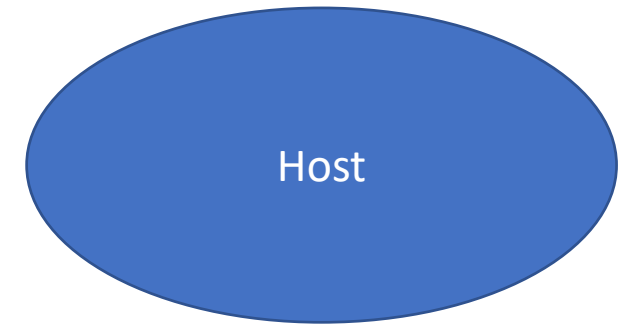


- 1 - Early Diagnosis
- 2 - Notification
- 3 - Epidemiological Investigations
- 4 - Isolation
- 5 - Treatment
- 6 - Quarantine



Changing in Environmental situations to break the chain in transmission or obstructing transmission.

- Cleanliness
- Sanitation
- Asepsis and Hygiene



- 1 - Immunization
- 2 - Chemoprophylaxis
- 3 - Least Contact
- 4 - Health Education

Hospital management at all levels should actively take participation in Controlling and Preventing Infection



It will improve productivity, reputation and economy of hospital by consumer satisfaction, since it will directly enhance the better quality perception of a hospital among its consumers in particular and in community in general.

Universal Precautions For Healthcare Workers

Protect HCW, Prevent Infection, Protect People

Infection
Control

1- Appropriate Barrier Precautions

2- Handwashing

3- Precautions To Prevent Injuries

4- Refrain Workers with Infections From Pt Care

5- Precautions In Special Conditions

6- Minimize Physical Contact

7 – Decontamination Of Spills

8 – Training & Education



1 - House Keeping -

Aim - Prevent Patients and Visitors as well as the staff themselves

1 - Hygiene & Personal Environmental Sanitation

2 – Frequent Mopping and periodical washing -
Cleanliness

3 – Isolation Facilities, Good Equipment,
Protective Provisions for staff, proper waste
disposal mechanism

4 – Efficient Housekeeping Management.



2 - Support Services -

Dietary Services

Ordering,
Procurement,
Preparation,
Distribution
Minimum Handling
Cleanliness
Hygiene

Laundry Services

Proper linen,
Disinfection,
Washing,
Drying,
Pressing,
Proper Handling,
Color coding

CSSD

Equipment,
Sterilization,
Testing,
Timely Supply
Adequate
Supply

Security

Efficient
crowd
Control

Engineering

Ventilation,
Airconditioning
Air filters
AHUs
Water,
Electricity,
Design



Good Work Practices -

- Use Disposables, Autoclaved material.
- Never put needles back to its sheath (Commonest HCW injury)
- Cover Cuts and Wounds of HCW with dressings.
- No eating, drinking, smoking at workplace.
- Don't store eatables in fridge of wards or laboratory
- Avoid touching nose, eyes, mouth while working.
- Don't share patient articles.
- Wash hands prior and after touching patients.

Proper Waste Disposal



Non Infective
(Household Waste)

Discard like
household waste



Infected Sharp
(Hospital Waste)

- 1- Puncture Proof Bags
- 2- Color coding
- 3- Sealed Closed
- 4- Dispose Off according to standards.



Other Infected
Hospital Waste

- 1- Color coding
- 2- Plastic leakproof bags.
- 3- Dispose off according to standard procedures.

Bottom Line - Emphasis should be proper handling of the waste by staff

Infection
Control

Nursing Care -

Most Important Area In Hospital Management

Strict Personal Hygiene

All universal precautions for infection control, like frequent handwashing, use of gloves, masks and aprons etc.

Involvement of Nursing Staff in Infection Control Program by periodic training and sensitization.



Precautions To Safeguard Staff is the first and foremost step in Prevention and Control Of HAI

1 - Handwashing

2 - Protective Clothing

Gloves

Masks

Eye & Face Shield

Aprons & Gowns

3 – Specimen Collection

4 - Laboratory Practices

5 – Decontamination Of Spills

Wear Gloves

Cover with gauge/ paper

Soak in 1% bleach

Leave for 30 minutes

Discard

6 – Disposal Of Sharp

Never recap needles

Discarded immediately in
puncture resistant labelled
containers

6 - Precautions

Procedures

Resuscitation

7 - Housekeeping

8 – Specific Protection

HBV

HIV

Pregnant HCW

Antibiotic Policy – By Hospital Drug Committee



Antibiotic Use Policy of a hospital helps in Infection control as well.

Formulating Prescription Strategies, Audit, Training, Prescribing Pattern Of Clinicians

Categorization – Unrestricted, Restricted, and Excluded categories.



SURVEILLANCE

Surveillance can be defined as 'An important Epidemiological tool in which by continuous Scrutiny of Factors and determinants, Distribution, and Occurrence of a Disease (Infection) and associated ill health effectively Controlled and Prevented by collecting, analyzing, and interpreting of data.



Data

Collection

Analysis

Interpretation

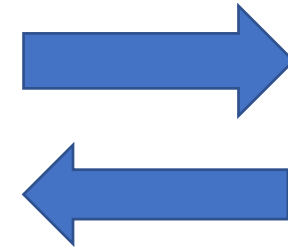


The Aims Of Surveillance

1 – Control At Source Of Infection

2 – Control Of Transmission

3 – Control of Host



Collection
Of Data

Disinfection – Is removing the germs

Skin - Antisepsis

80% Isopropyl Alcohol, Povidone Iodine, Hydrogen Peroxide, Savlon, Cetrимide, Chlorhexidine, Dettol, Silver Nitrates in burns

Environmental Disinfectants

- 1 – Clean Surface with less contamination – Ethyl Alcohol 70%, Carbolic Solution
- 2 – Hypochlorite solution for surfaces with blood or other infected material
- 3 – Dirty surfaces with organic matter – Lysol
- 4 – Disinfection of rooms and OTs – Formalize, UV
- 5 – Heat Sensitive Equipment – Cidex

Sterilization -

Syringe, needles, disposables – Ethylene Oxide
Autoclaving – 15lbs/sq inch (15psi) For 15-20 minutes

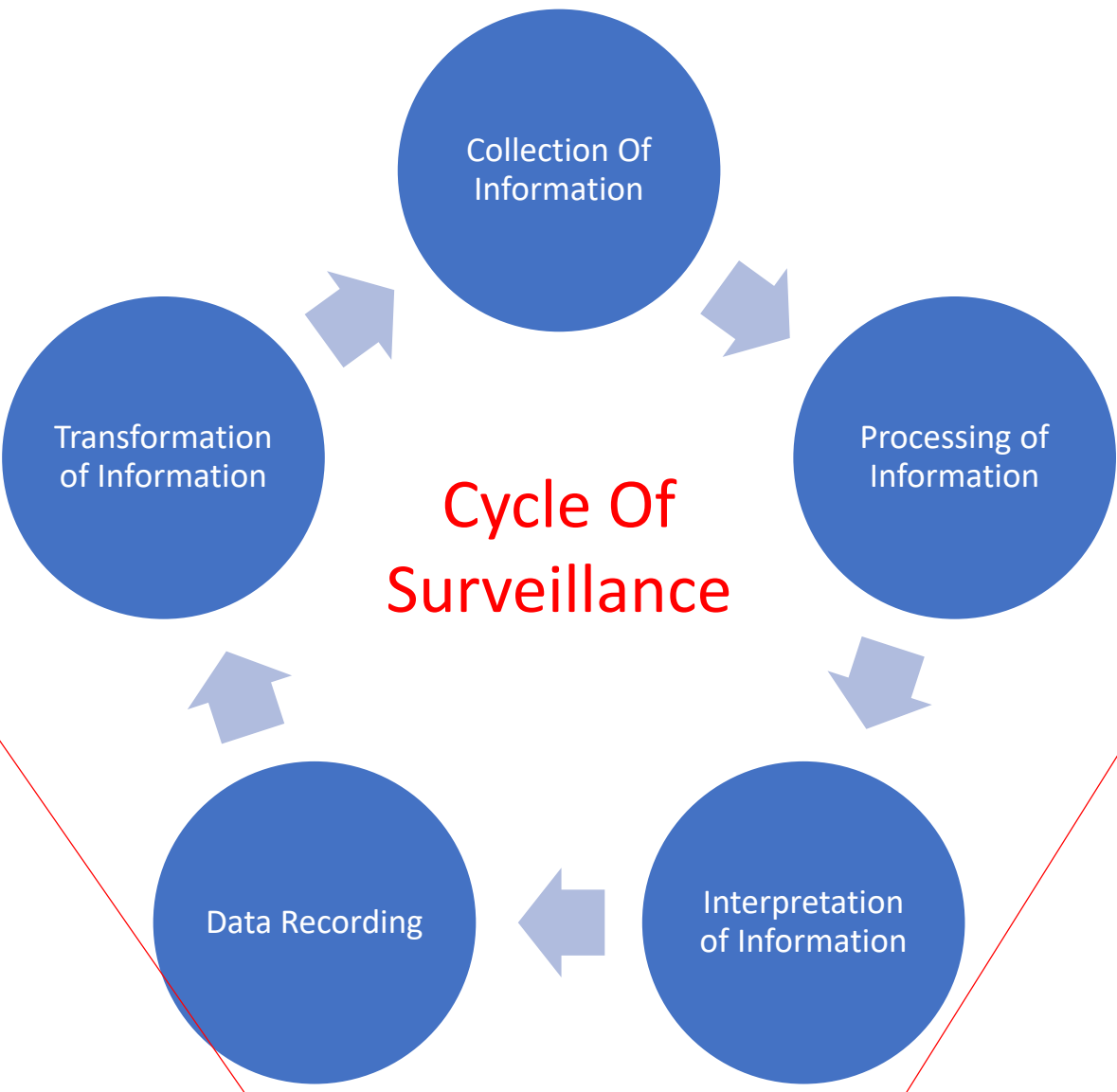
Commonly used chemicals for Disinfection



- Ethanol 70%
- Glutaraldehyde 2% (Cidex)
- Household Bleach 1%
- Formaldehyde 5% (50gm/liter)
- Sodium Hypochlorite 10%
- Hydrogen Peroxide 3%
- Isopropyl Alcohol 35%
- Lysol 0.5%

**Agent
(Source)**

Host



Environment

Calculations – Data Representation

$$\text{Incidence Of Infection} = \frac{\text{Total No. of Infections}}{\text{Total No. Of Discharge Or Operations}}$$

Training and Education



- A regular, round the year scheduled exercise
- Full involvement of management with ICC
- For all ranks of staff
- Emphasizing safety, hygiene, universal measures for infection control, techniques and measures.

Infection Control Program Is A Continuous Exercise





Thankyou