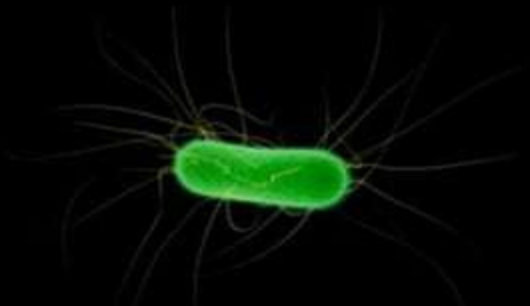
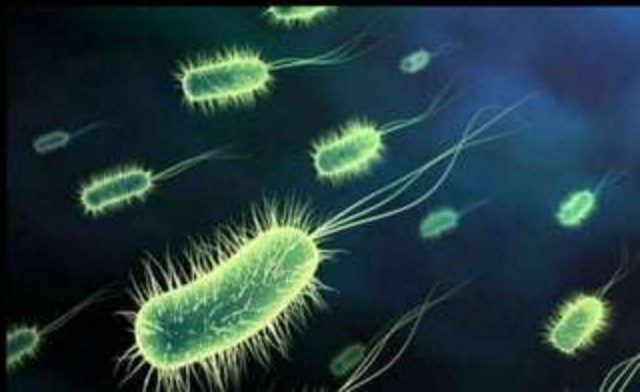
INTRODUCTION

Microorganisms are necessary for normal body functions. Some organisms produce food & maintain normal planet's ecology. The moment harmony is upset, micro organisms are capable of producing diseases.

An infection occurs when a disease-causing organism enters the body and starts to multiply when they come in contact with favorable environment.



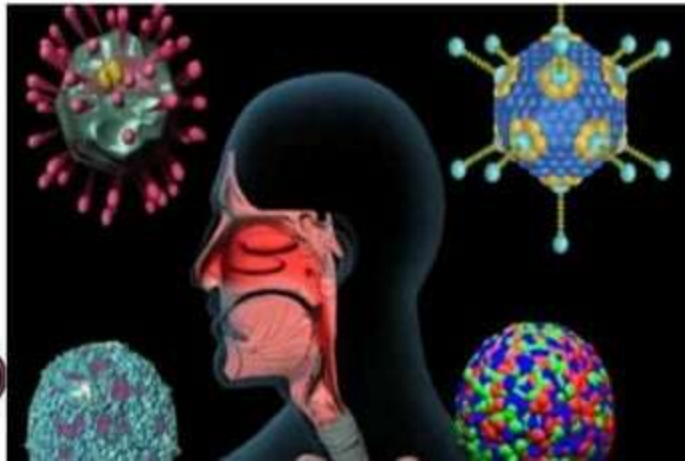


KEY WORDS

Infection

It is lodgment & multiplication of microorganism in the body.





ASEPSIS

It is freedom from infection or prevention of contact with microbes.





CROSS INFECTION

It is transfer of new infection from another host or external environment.



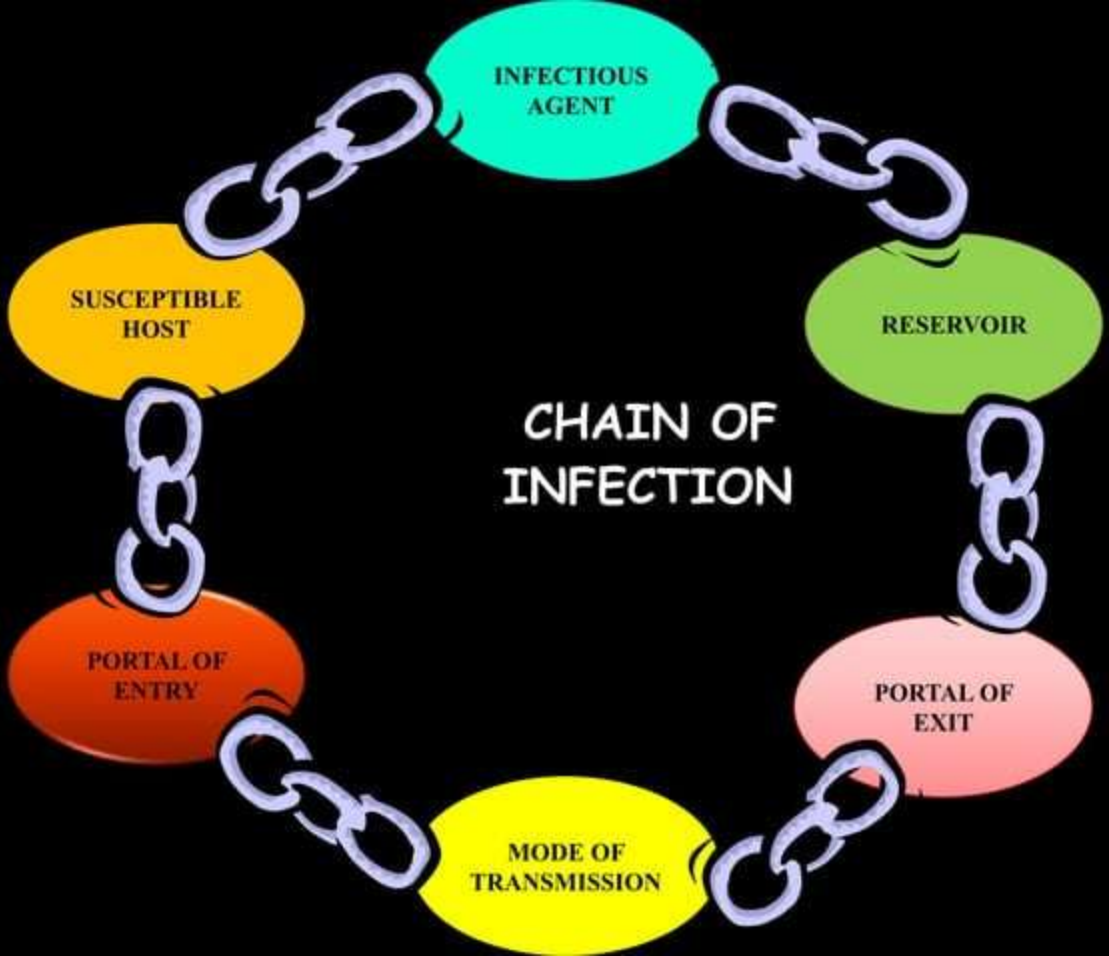
CHAIN OF INFECTION

- Chain of infection is a process of infection that begins when an agent leave its reservoir through portal of exit & is conveyed by mode of transmission then enters through an appropriate portal of entry to infect a susceptible host.

or

- Chain of infection is a process in which a favorable condition is required for microorganism to spread or transfer from reservoir to a susceptible host.

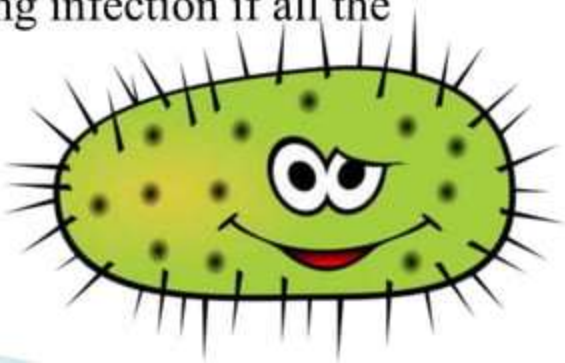
CHAIN OF INFECTION CYCLE


INFECTIOUS AGENT
RESERVOIR
PORTAL OF EXIT
MODE OF TRANSMISSION
PORTAL OF ENTRY
SUSCEPTIBLE HOST
CHAIN OF INFECTION

INFECTIOUS AGENT OR CAUSATIVE AGENT

- These are any microorganism that can cause a disease such as a bacteria, virus, parasite, or fungus. Reasons that the organism will cause an infection are virulence (ability to multiply and grow), invasiveness (ability to enter tissue), and pathogenicity (ability to cause disease).

- Any organism is capable of causing infection if all the links/components are present.



- Bacteria are present inside us, on us and around us in our environment.
- **Resident Flora-** Bacteria present inside us. Helps in digestion of food. (Unharmful)
- **Transient Flora-** Bacteria which we get from environment.

Air, Drinking Water, food, Dust, clothes etc.

Harmful

Get Activated when meet favorable environment.

VIRUSES

- Respiratory infections- influenza, cold etc.
- GI infections- norovirus.
- Others- HIV, Hepatitis etc.

PARASITES

- Present in environment.
- Affects people with weak immune system.
- Example- Malaria, Tape worm infection etc.

RESERVOIR

It is the place where the microorganism resides, thrives, and reproduces, i.e., food, water, toilet seat, elevator buttons, human feces, respiratory secretions etc.







PORTAL OF EXIT

It is the place where the microorganism leaves the reservoir, such as the respiratory tract (nose, mouth), intestinal tract (rectum via stool), urinary tract, or blood and other body fluids.

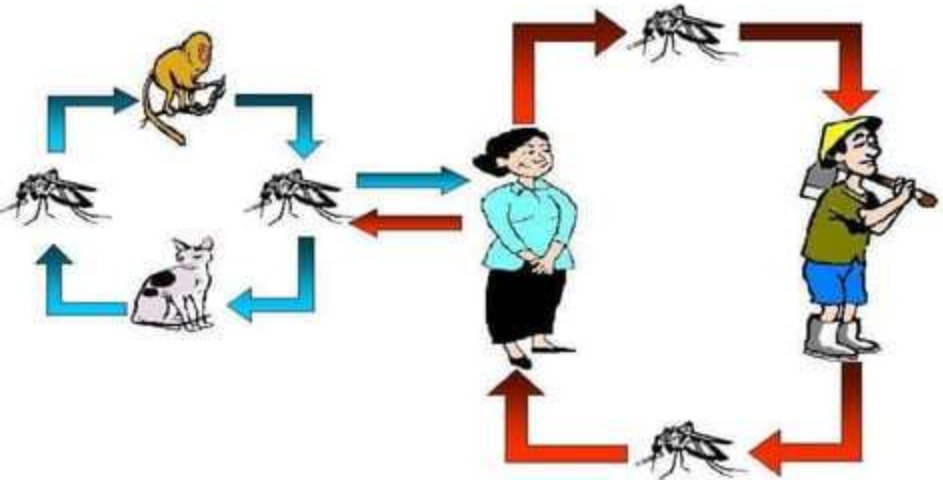






MODE OF TRANSMISSION

- Mode of transmission is the means by which an organism transfers from one carrier to another by either direct transmission or indirect transmission.



CONTACT TRANSMISSION- DIRECT & INDIRECT

Contact transmission is the most common route of transmission of organisms in health care settings.

DIRECT TRANSMISSION



INDIRECT TRANSMISSION
CONTAMINATED ARTICLES



DROPLET TRANSMISSION

Droplets should come in contact with mucus membrane directly or indirectly through sneezing,coughing ,talking etc.Examples of droplet transmission include influenza, meningitis etc.





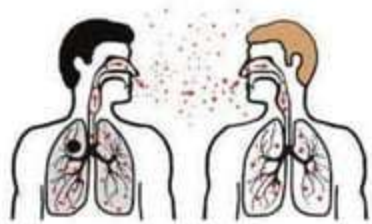




AIRBORNE TRANSMISSION

There are three common diseases that are transmitted through the airborne route; chicken pox (varicella), tuberculosis, and measles.

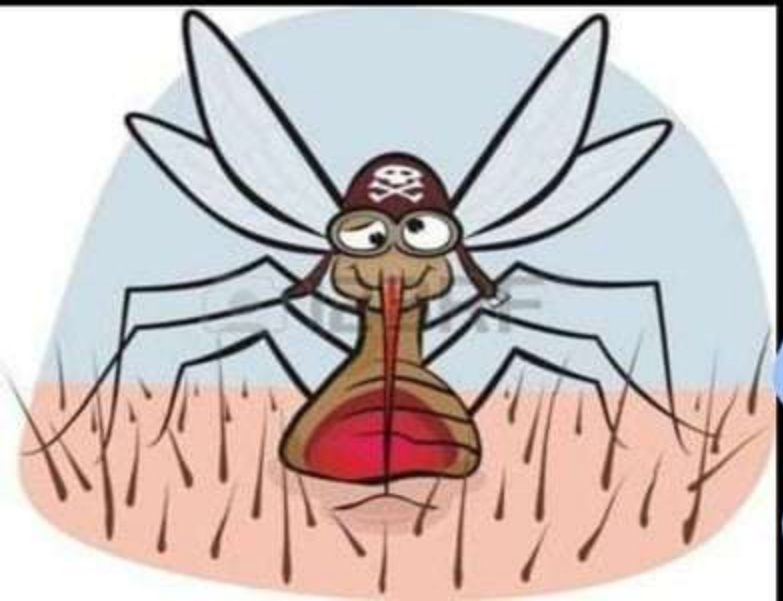






VECTOR TRANSMISSION

Vector transmission occurs when an insect or animal transmits disease to humans. e.g. Malaria and Dengue fever etc.





PORTAL OF ENTRY

The opening where an infectious disease enters the host's body such as mucus membranes, open wounds, or tubes inserted in body cavities like urinary catheters or feeding tubes.





- **Susceptible host**

It is a person who is at risk for developing an infection from the disease. Factors include young people and elderly people, chronic diseases such as diabetes or asthma, conditions that weaken the immune system like HIV, certain types of medications, invasive devices like feeding tubes, and malnutrition.

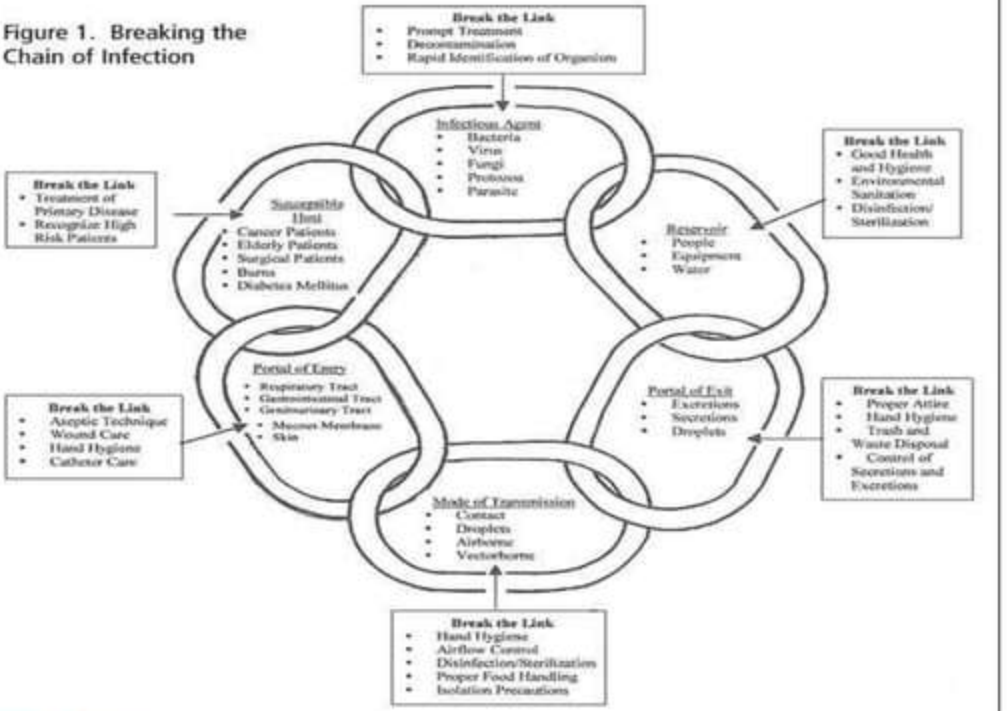






BREAKING OF INFECTIOUS CYCLE

Figure 1. Breaking the Chain of Infection



1. **Control or elimination of infectious agent**

- Cleaning, disinfection & sterilization of contaminated objects significantly reduce & often eliminate microorganism. It includes 4 steps-
- Cleaning- It is removal of all soil from object & surface.
- Asepsis- It is absence of pathogenic microorganism. It is of 2 types medical & surgical asepsis.
- Disinfection- It is process of killing microorganisms, spores are not involved.
- Sterilization- It is process of killing microorganisms & their spores.

- Clean contaminated objects (reduces the number of organisms).
- Perform disinfection and sterilization (kills or inactivates organisms).
- Use antiseptics to inhibit growth.
- Use antiseptic agents/ antimicrobial agents.





Control or elimination of reservoir

It includes following measures-

- Eliminate sources of body fluids and drainage.
- Bathe with soap and water.
- Change soiled dressings.
- Remove standing water on bedside tables.
- Cover bottles of used solutions.
- Maintain patency of surgical wound drains.
- Empty and rinse suction bottles.
- Empty drainage bags every shift.
- Place syringes and uncapped needles in moisture-resistant, puncture-proof containers.
- Limit contact with persons with infection or exposed to infection.

Control of portal of exit









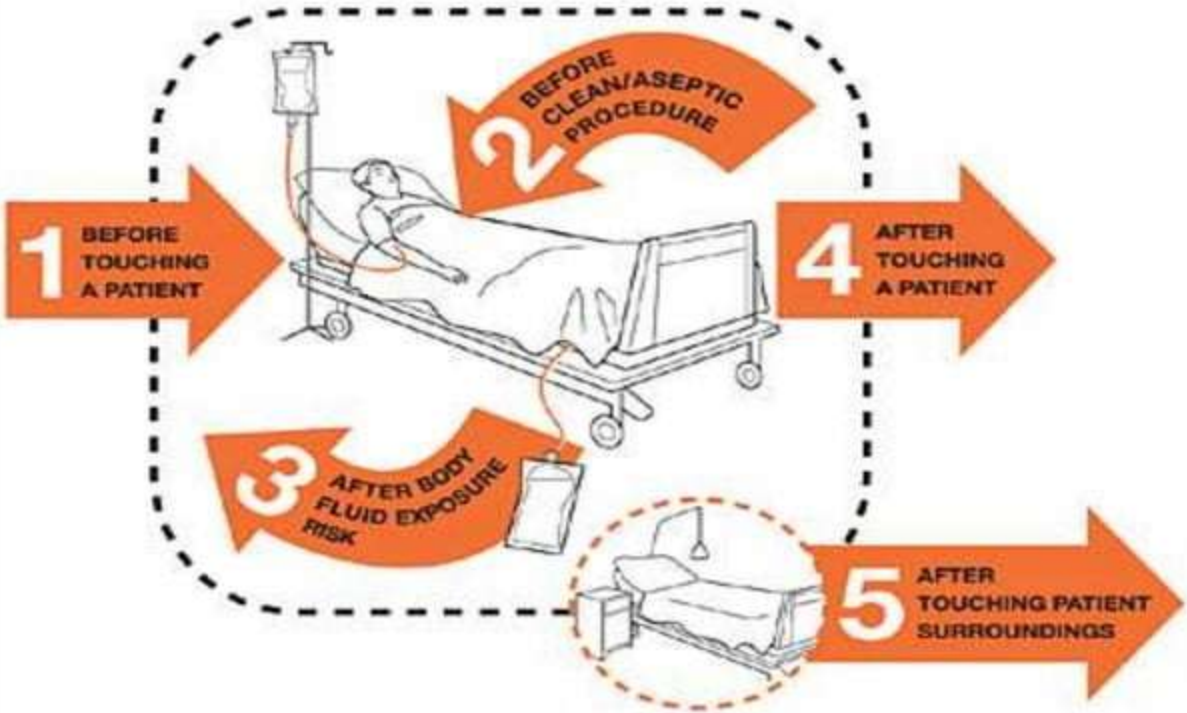
Control Of Transmission

- Reduce microorganisms spread.
- Wash hands.
- Use personal set of care items for each client.
- Avoid shaking bed linens or clothes.
- Discard any item that touches the floor.





HAND HYGIENE MOMENTS



7 STEPS TO HANDWASHING



1 Rub palms together



2 Rub the back of both hands



3 Interlace fingers and rub hands together



4 Interlock fingers and rub the back of fingers of both hands



5 Rub thumb in a rotating manner followed by the area between index finger and thumb for both hands



6 Rub fingertips on palm for both hands



7 Rub both wrists in a rotating manner.

Control of Portal of entry

- Skin and mucous membranes - Maintain skin and mucous membrane integrity. Use proper hygiene measures.
- Clean wound sites thoroughly. Dispose of used needles in proper receptacles.
- Urinary - Keep all drainage systems closed and intact.
- Discard facial tissues, wound dressings, and other body excreta without touching.

Protection of susceptible host

- Provide adequate nutrition.
- Ensure adequate rest.
- Promote body defenses against infection.
- Provide immunizations.
- Maintenance of hygiene.
- Use of personal protective equipments like gloves, gown, Shoe cover, masks & cap.









ROLE OF NURSE

RELATED RESEARCH

1. Risk of transfer of infection from inanimate object in hospital (2007)

- Sample size- 57 toys of 57 infant
- Setting – NIW (Belgium)
- Result – 13 out of 57 toys were positive for potential pathogens (8 for staphylococcus aureus,3 enterococcus,
- 1klebsiella pneumonia 41 P. aerueginosa)

2. Efficacy of handrubbing with alcohol based solution versus standard handwashing with antiseptic soap: randomised clinical trial.

- Objective: To compare the efficacy of handrubbing with an alcohol based solution versus conventional handwashing with antiseptic soap in reducing hand contamination during routine patient care.
- Design: Randomised controlled trial during daily nursing sessions of 2 to 3 hours
- Result: During routine patient care handrubbing with an alcohol based solution is significantly more efficient in reducing hand contamination than handwashing with antiseptic soap.

THEORY APPLICATION

Florence Nightingale's Environmental theory

- Nightingale stated that nursing "ought to signify the proper use of fresh air, light, warmth, cleanliness, quiet, and the proper selection and administration of diet – all at the least expense of vital power to the patient."

- **Human Beings**

  They are defined in relationship to their environment and the impact of the environment upon them.

- **Environment**

  Nightingale's writings reflect a community health model in which all that surrounds human beings is considered in relation to their state of health.

- **Health**

  Nightingale said the goal of all nursing activities should be client health. She believed that nursing should provide care to the healthy as well as the ill and discussed health promotion as an activity in which nurses should engage.

- **Health of Houses**

"Badly constructed houses do for the healthy what badly constructed hospitals do for the sick. Once insure that the air is stagnant and sickness is certain to follow."

- **Ventilation and Warming**

She was very concerned about "noxious air" or "effluvia" and foul odors that came from excrement. She also criticized "fumigations," for she believed that the offensive source, not the smell, must be removed.

- **Light**

She noted that direct sunlight was what patients wanted.

- **Noise**

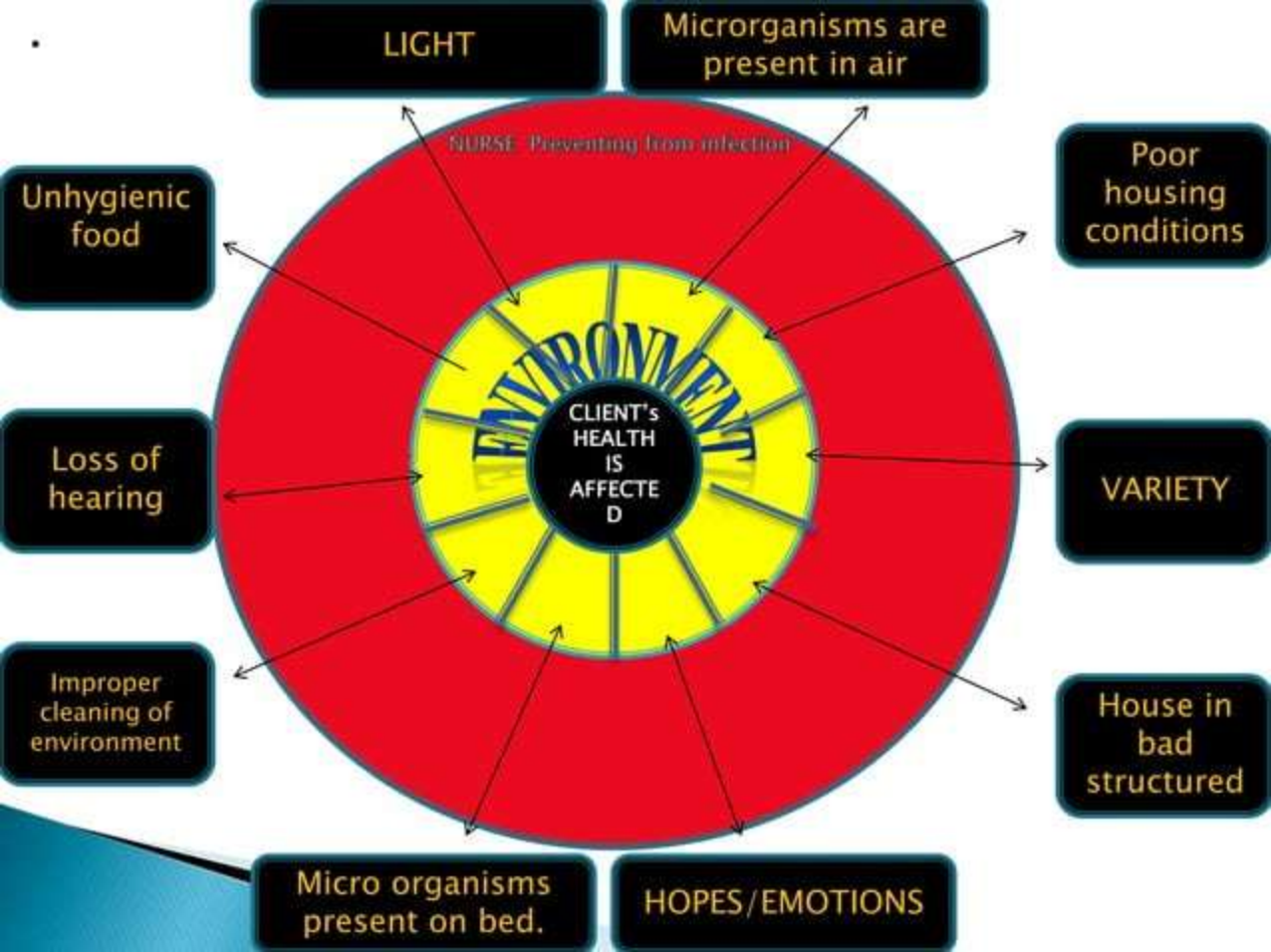
She stated that patients should never be waked intentionally or accidentally during the first part of sleep.

- **Variety**
- She discussed the need for changes in color and form, including bringing the patient brightly colored flowers or plants

- **Bed and Bedding-** Should be good.

Personal Cleanliness- Hygiene of patient should be maintained.

- **Nutrition and Taking Food –** Should be adequate.


LIGHT
Microrganisms are present in air
NURSE Preventing from infection
Unhygienic food
Poor housing conditions
ENVIRONMENT
CLIENT's HEALTH IS AFFECTED
Loss of hearing
VARIETY
Improper cleaning of environment
House in bad structured
Micro organisms present on bed.
HOPES/EMOTIONS

POINT TO BE DISCUSSED

1. How antibiotic resistance/super bug can be prevented?
2. How to prevent infection in hospital settings & community settings?

- **PRESENTER'S VIEW ON TOPIC**

- Human body & its surrounding is better environment for growth & multiplication of microbes. After getting suitable environment, it starts incubation & multiplication leading to various diseases. If these microorganisms are stopped from developing /incubating & multiplication, we can break chain of infection cycle. Good Health depends on safe environment. Practice or technique that control or prevent transmission of infection and help to protect client and health care worker from disease.

SUMMARY

Chain of infection is a process in which favorable condition is required for its growth &transfer. The presence of pathogen doesn't mean that an infection will occur. There are 6 steps in chain of infection cycle if we are taking certain steps to break the cycle, infection can be prevented. Use of aseptic techniques, hand washing , proper nutrition, immunization, maintaining hygiene, waste management, Sterilization, use of personal protective equipments like gloves, gowns, masks, shoe cover, cap can prevent infectious process & break the cycle of infection.


thank
you