## THE BASICS

# Chain of Infection

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Every infectious disease in humans spreads through a 'chain of infection'. This chain has 5 components. We catch an infection when a series of events, happening in sequence, link these components together. We can stop infection if we can break a link in any part of the chain.

RESERVOIR



PORT OF EXIT

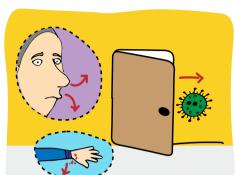


PORT OF ENTRY

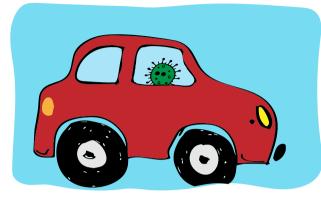
NEW HOST



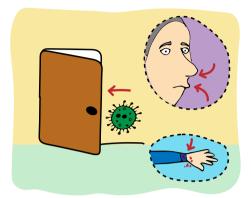
The site where a pathogen lives and multiples. E.g., humans, animals or the environment.



The openings that allow the pathogen to leave the reservoir. E.g., cuts, mouth, nose, anus, etc.



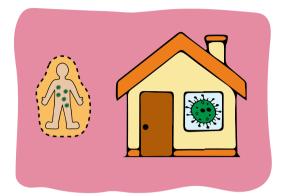
The agents or actions that transport pathogens from the reservoir to a new host, directly or indirectly.



The openings that allow the pathogen to enter a new host. E.g., cuts, mouth, nose, etc.

INDIRECT TRANSMISSION

Transmission of pathogens occurs indirectly, via an intermediate agent of transmission.



The new site (a new human host) where the pathogen starts multiplying upon entry.

## DIRECT TRANSMISSION

Transmission occurs directly from the reservoir to the new host, via direct contact with mucous membranes or skin, animal bites, droplet spread, or via placenta (from a pregnant woman to her foetus).

## i) DIRECT CONTACT WITH MUCOUS MEMBRANES OR SKIN



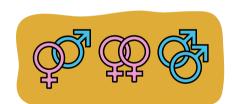
SKIN-TO-SKIN

E.g., *Bacillus anthracis* (anthrax; from hides of cattle), head lice.



**KISSING** 

E.g., Epstein-Barr virus (infectious mononucleosis or "kissing" disease).



**SEX** 

E.g., human papillomavirus (HPV; causing genital warts), HIV (AIDS).



**ENVIRONMENT-TO-SKIN** 

Direct contact with contaminated soil or vegetation E.g., *Clostridium tetani* (tetanus).

## i) AIRBORNE



FOOD, WATER

Vibrio cholera (cholera) and hepatitis

hands after using the toilet. E.g.,

A virus (hepatitis A).

Transmission via consuming contaminated food/ water, or by eating with unwashed

Transmission via aerosols, e.g., rubeola virus (measles), or via dust, e.g., hantavirus (hantavirus pulmonary syndrome).

#### ii) VECTORS



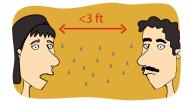
Transmission via insects. E.g., mosquitoes carrying *Plasmodium* (malaria) or flies carrying *Shigella* (shigellosis) on their appendages.

### ii) ANIMAL BITE



E.g., rabies virus (rabies from dogs).

## iii) DROPLET SPREAD



Large-sized droplets released when someone coughs, sneezes, or talks loudly. E.g., Influenza viruses (viral flu), varicella-zoster virus (chickenpox).

#### iv) PLACENTA



E.g., hepatitis C virus (hepatitis C).

## iii) VEHICLES



BLOOD

Transmission via blood transfusion, or sharing needles. E.g., HIV (AIDS), hepatitis B virus (hepatitis B) and hepatitis C virus (hepatitis C).



**FOMITE** 

Transmission via inanimate objects like handkerchiefs, remote controls, door knobs, etc. E.g., hepatitis A virus (hepatitis A).

## e.g., influenza viruses (viral fiu), varicella-zoster virus (chickenpox).



