Epidemiology of Communicable Diseases

Diseases of man can be classified to
& Communicable

non communicable diseases

:Communicable Disease

- Is an illness due to an infectious agent or its toxic products due to the entry or transmission of that agent or its products(transmissible disease) from an infected person ,animal, or inanimate reservoir to a susceptible host by different methods; the transmission could be direct or indirect through an intermediate plant, animal ,or inanimate environment. They are caused .by variety of biological agents

Infectious Disease

- Is clinically manifested disease of human or animal resulting from infection, for example Tetanus is an infectious disease that is not transmitted from human to animal or human to human

- :Infection
- Means invasion of the body by a pathogenic or potentially pathogenic organism or .parsaite
- Infection is either not manifested (in apparent) & pass un noticed, or causes diseases according to certain agent (causative organism) and host (infected person) factors
- **infection is only in the living elements**

Agent factors

- Are any living microorganism, virus ,bacteria ,helminthes ,rickettsia ,or protozoa that could multiply and survive in the .person or nimal
- :They are related to (number ”dose of infection”)
- **a)*Infectivity:*** the ability of the infectious agent to enter ,survive .,multiply in the host
- **b)*Infectiv*eness:** the relative speed by which an infectious agent can be transmitted to another host. Highly infectious agent has .high infectiveness &vice versa
- ***c)Virulence:*** indicate the speed by which an infectious agent can destroy (kill) its host. Highly virulent microorganisms can kill their .host by a very short period of time
- ***d) Pathogenicity:*** a property of the infectious agent that determine to which extent an infectious agent produces disease in an infected population

HOST

- **is a person or living animal (including birds, arthropods ,etc..)that affords a shelter for the .infectious agent under natural conditions**
- There are three main types of hosts according to :the stage of life cycle
- a)Primary(definitive) host: at which the infectious .agent reach to its mature state (sexual state)
- b)Secondary host: at which the infectious agent .passes to its larval (asexual state)
- c)Transport host: at which the organism remain .alive but does not undergo any development

:Infectious cycle

- Infection is maintained by the infectious process ongoing cycle of three links.
- **Reservoirs of infection.1**
- **Modes of transmission.2.**
- **Exposed host.3.**
- If any of the three links is missing infection will no more exist.
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Reservoirs of infection

- Any person , animal ,plant ,arthropod ,soil ,substance ,or combination in which the disease agent lives & multiplies ,this depends on the disease agent survival &where it produces itself in such a manner that can be transmissible from one person to another. For e.g. human is the reservoir for measles ,dogs are the reservoir for rabies , and ticks are the reservoir for tick fever

A-Human reservoirs

1.Cases(patients).

Apparently healthy ,individuals having foci**.2** •
.of infections in different parts of their body

:There are two forms of infection foci •

Carriers of infection having a foci of.1 •
.pathogenic organisms

Foci of **commensal organisms**, which they.2 •
are inhabitant ,in any individuals

:a.cases

- cases (show manifestation of disease) are infectious for varied period of time ,according to the nature of the disease ,&whether specific therapy is available and given or not. i.e. :
- some days only ;influenza ,common cold.
- few weeks or few months :pertuses, viral hepatitis (all types).
- Long period of infectivity :chronic infectious dis. e.g. Syphilis, AIDs ,TB, Hepatitis B&C.

b.Carriers

- Any person or animal that harbors the infectious agent for a period of time during which it is free of occurrence of disease (free .of the clinical features of that disease)

:Classification

- :**According to the spectrum of infection.1**
- a. **Incubatory** carrier: the infected person excretes the pathogens during the incubation period ,before the onset of symptoms, e.g. .Mumps &Measles
- b. **convalescent** carrier(recovery carrier):It shades(excretes) the microorganism for a short period after recovery ,it may become a .chronic carrier
- c. **Healthy** carrier :it harbors the microorganism with subclinical manifestation, e.g ,meningitis (most dangerous),&staphylococcus .infection (skin, nasopharynx, food poisoning outbreak)
- d. **Contact** carrier :healthy people that have a history of being in contact with cases or carriers , they may develop signs &symptoms later on , they act as source of infection ,e.g. HIV,HBV .
- e**. Post convalescent** carrier (post recovery):it excretes the .microorganism for a long period after recovery

According to the infectivity of the.2 :carrier

a. **Transient infectivity** :all incubatory carriers are transient except of Hepatitis ,the virus is found in blood excreted in feces..in the last week of incubation period B&C hepatitis..infectious in the last week of I.P.(6 weeks-6 months),B&C up to20 months or more. AIDS ,the infected person is infectious during the long .I.P. of latent infection (6 months to 7 years or more)

b. **Temporary infectivity**: for few weeks or some .months

Healthy carriers are infectious for around 2 weeks- .except HBV

.Contact carriers are infectious for around 2 weeks-

- Convalescent carriers : the majority of enteric-carriers ,all poliomyelitis & diphtheria carriers & .almost all shigellosis carriers
- . **c. chronic infectivity** :for years , lifelong
- .Incubatory carriers of AIDS-
- .Healthy carriers of HB-
- convalescent carriers of :minor percentage of-enteric convalescent carriers, Hepatitis B infectious for years or long life 5-10%. ,Eltor cholera

- **3.According to the site** or the habitant of the microorganism inside the body:
- Nasal carrier :e.g. strept. & staph. Infections.
- Urinar ycarrier : schist. heamatobium.
- Fecal carrier :cholera(intestinal).
- Skin carrier :scabies ,staph. aurous.