

Key Definitions

Health: Complete physical, mental, social well-being.
Infection: Entry, development and multiplication of an agent in host.
Pathogenesis: Mechanisms of disease development.
Contamination: Presence/multiplication of agents on surfaces, food, water.
Infestation: Arthropods on body surface or worms in gut.
Communicable Disease: Infectious & transmissible.
Non-Communicable Disease: Infectious but not transmissible.
Contagious Disease: Spread through direct contact.
Hosts: Definitive, intermediate, obligate, transport.

Patterns of Disease Occurrence

Epidemic: Occurs above expected levels.
Outbreak: Localized epidemic.
Sporadic: Irregular, infrequent cases.
Endemic: Constant presence in an area.
Pandemic: Worldwide epidemic.

Special Types of Infection

Nosocomial Infection: Hospital-acquired; appears during stay or after discharge.
Opportunistic Infection: Occurs when immunity is weak.
Iatrogenic Disease: Caused by medical procedures or treatments.
Eradication: Complete worldwide elimination (smallpox only).

Cycle of Infection

1. Agent
2. Reservoir
3. Portal of exit
4. Mode of transmission
5. Portal of entry
6. Susceptible host

Disease Agents & Properties

Biological agents: viruses, bacteria, fungi, protozoa.
Infectivity: Ability to invade & multiply.
Pathogenicity: Ability to cause clinical illness.
Virulence: Ability to cause severe disease.

Mechanisms of Disease Production

Invasiveness: Ability to invade tissue.



Toxicity:

- Exotoxins: Heat labile, immunogenic, no fever.
 - Endotoxins: Heat stable, weakly immunogenic, cause fever/shock.
- Hypersensitivity: Allergic response to microbial antigens.

Factors Affecting Infection Outcome

Pathogenicity, virulence, antigenic power, dose, tissue tropism, host specificity, spore formation, viability, chemotherapy sensitivity.

Important Formulas

Case Fatality Rate = $(\text{Deaths} / \text{Cases}) \times 100$

Secondary Attack Rate = $(\text{Secondary cases} / \text{Exposed susceptibles}) \times 100$