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## EPIDEMIOLOGY TEST

Question 1: Define epidemiology and explain its main objectives.

Epidemiology is the study of the distribution and determinants of health-related events, diseases, or health-related characteristics among populations. Its main objectives are to:

- Identify the causes of diseases
- Determine the risk factors
- Develop strategies for prevention and control
- Evaluate the effectiveness of interventions

Question 2: Differentiate between descriptive and analytical epidemiology.

- **\*Descriptive epidemiology\***: Describes the distribution of disease or health-related events among populations, often using data on person, place, and time. Example: A study describing the demographic characteristics of patients with COVID-19 in a particular region.
- **\*Analytical epidemiology\***: Investigates the causes and risk factors of diseases, often using statistical analysis to test hypotheses. Example: A case-control study examining the association between smoking and lung cancer.

Question 3: Discuss the components of the epidemiologic triangle.

The epidemiologic triangle consists of:

1. **\*Host\***: The individual or population susceptible to the disease.
2. **\*Agent\***: The cause of the disease (e.g., bacteria, virus).
3. **\*Environment\***: The external factors that facilitate disease transmission (e.g., water, air, vectors).

These components interact to determine the likelihood of disease transmission.

Question 4: Explain the concept of 'determinants' in epidemiology.

Determinants refer to the factors that influence the occurrence of disease or health-related events. Examples:

- \*Biological determinants\*:

- Genetics

- Age

- \*Environmental determinants\*:

- Air pollution

- Access to clean water

Question 5: Describe the three levels of prevention.

1. \*Primary prevention\*: Preventing disease before it occurs (e.g., vaccination).

2. \*Secondary prevention\*: Detecting disease early to prevent complications (e.g., screening tests).

3. \*Tertiary prevention\*: Managing disease to prevent further complications (e.g., rehabilitation).

Examples:

- Primary: Vaccination against measles.

- Secondary: Mammography screening for breast cancer.

- Tertiary: Physical therapy for patients with stroke.

Question 6: John Snow's contribution to epidemiology.

John Snow identified the source of a cholera outbreak in London (1854) by mapping cases and tracing them to a contaminated water pump. His work laid the foundation for modern epidemiology.

Question 7: Compare and contrast incidence and prevalence.

- **\*Incidence\***: The number of new cases of a disease within a specified time period.
- **\*Prevalence\***: The total number of cases of a disease at a given time.

Understanding both is crucial for studying diseases like diabetes, as incidence helps identify risk factors, while prevalence informs healthcare resource allocation.

Question 8: Epidemiological study designs.

Common types:

1. **\*Cohort studies\***: Follow individuals over time to examine exposure-outcome relationships.
2. **\*Case-control studies\***: Compare individuals with a specific outcome to those without.

Cohort studies differ from case-control studies in their prospective design and ability to establish temporality.

Question 9: Relative risk (RR) and odds ratio (OR).

- **\*RR\***: Measures the risk of disease in exposed vs. unexposed groups.
- **\*OR\***: Estimates the odds of disease in exposed vs. unexposed groups, often used in case-control studies.

RR is typically used in cohort studies, while OR is used in case-control studies.

Question 10: Epidemiological surveillance.

Epidemiological surveillance involves systematic collection, analysis, and interpretation of health data to:

1. Monitor disease trends
2. Detect outbreaks
3. Inform public health policy

During an emerging epidemic, surveillance helps track the spread of disease, identify high-risk groups, and evaluate the effectiveness of interventions.