

Advanced Epidemiology Knowledge Base

Epidemiology · Practice Test · 18 Questions

1. Which statistical measure in epidemiology represents the probability that an event will occur in an exposed group compared to an unexposed group, typically used in cohort studies?

- A) Odds Ratio
- B) Relative Risk
- C) Attributable Fraction
- D) Number Needed to Treat

2. In the context of the Bradford Hill criteria for causation, what does the 'Biological Gradient' refer to?

- A) The consistency of findings across different studies
- B) The presence of a dose-response relationship
- C) The biological plausibility of the mechanism
- D) The specificity of the association

3. What is the primary distinction between the 'Point Prevalence' and 'Period Prevalence' of a disease?

- A) Point prevalence excludes incident cases
- B) Period prevalence includes all cases occurring during a specific time interval
- C) Point prevalence measures mortality rates
- D) Period prevalence is restricted to chronic diseases

4. Which form of bias occurs when individuals who are selected for a study differ systematically from the target population, often arising from non-random sampling?

- A) Information bias
- B) Selection bias
- C) Confounding bias
- D) Recall bias

5. In a nested case-control study, what is the primary advantage over a standard retrospective case-control design?

- A) Reduced costs in data collection
- B) Exposure data is collected before disease onset
- C) Ability to calculate absolute risk directly
- D) Elimination of all potential confounders

6. The 'Epidemiologic Transition' theory, proposed by Abdel Omran, primarily describes the shift in patterns of:

- A) Infectious to chronic, degenerative diseases
- B) Birth rates in developing nations
- C) Migratory patterns of human populations
- D) Vaccine efficacy over time

7. What is the mathematical definition of 'Attributable Risk Percent' (AR%)?

- A) $(\text{Incidence in exposed} - \text{Incidence in unexposed}) / \text{Incidence in exposed}$
- B) $\text{Incidence in exposed} / \text{Incidence in unexposed}$
- C) $(\text{Incidence in exposed} - \text{Incidence in unexposed}) / \text{Incidence in population}$
- D) $\text{Incidence in unexposed} - \text{Incidence in exposed}$

8. Which bias is characterized by the systematic error caused by differences in accuracy or completeness of recall of past events by cases versus controls?

- A) Detection bias
- B) Recall bias
- C) Ascertainment bias
- D) Late-look bias

9. In the study of infectious diseases, what is the 'Basic Reproduction Number' (R₀) defined as?

- A) The duration of the infectious period
- B) The rate of recovery in a susceptible population
- C) The expected number of secondary cases produced by a single infection in a completely susceptible population
- D) The proportion of the population that is immune

10. What is the primary function of a 'Washout Period' in a randomized crossover clinical trial?

- A) To increase the sample size
- B) To eliminate the carry-over effect of the first intervention
- C) To allow for the washout of secondary symptoms
- D) To ensure the participants remain blinded

11. Which study design is considered the 'gold standard' for determining the efficacy of a therapeutic intervention?

- A) Cross-sectional study
- B) Ecological study
- C) Randomized Controlled Trial
- D) Case series

12. What does the 'Ecological Fallacy' refer to in epidemiological research?

- A) Drawing inferences about individuals based on group-level data
- B) Ignoring the influence of environment on disease
- C) Using ecological models to predict viral spread
- D) Miscalculating the prevalence of zoonotic diseases

13. The 'Hawthorne Effect' in observational studies refers to:

- A) Changes in behavior resulting from the awareness of being observed
- B) The influence of seasonal variations on health outcomes
- C) Increased mortality rates due to occupational hazards
- D) The effect of genetic markers on disease susceptibility

14. In survival analysis, what is the primary purpose of a Kaplan-Meier curve?

- A) To visualize the rate of recovery over time
- B) To estimate the survival function from lifetime data
- C) To compare the mean ages of cases and controls
- D) To determine the population density of a pathogen

15. Which term describes the phenomenon where a factor is associated with both the exposure and the outcome, distorting the true association?

- A) Effect modification
- B) Confounding
- C) Synergy
- D) Interaction

16. What is 'Lead-time Bias' most commonly associated with?

- A) Screening programs detecting disease earlier but not altering the natural course
- B) The duration between the onset of symptoms and treatment
- C) Misclassification of exposure status
- D) The delay in reporting infectious disease outbreaks

17. In epidemiology, what does 'Sensitivity' measure?

- A) The proportion of true positives correctly identified by a test
- B) The proportion of true negatives correctly identified by a test
- C) The probability that a positive test is a true positive
- D) The total accuracy of a diagnostic tool

18. What is the defining characteristic of a 'Dynamic Population' in epidemiological surveillance?

- A) A population with constant migration in and out of the cohort
- B) A population where the disease rate is rapidly changing
- C) A population that is strictly defined by age and gender
- D) A population where no births or deaths occur during the study