ACVPM EPIDEMIOLOGY AND BIOSTATISTICS PRACTICE EXAM (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. Which statement best contrasts Pearson correlation with the concordance correlation coefficient when assessing agreement?

A. Pearson correlation measures linear association but ignores differences in scale, while concordance correlation accounts for scale and agreement.

B. Pearson correlation measures agreement; Concordance measures association.

C. Both measure identical concept; no difference.

D. Only limits of agreement plots measure concordance.

2. What does randomization achieve in experimental studies?

A. Eliminates all bias

B. Guarantees causality

C. Increases sample size automatically

D. Reduces confounding due to measured/unmeasured variables

3. Which statement correctly describes acquired herd immunity?

A. Acquired herd immunity is resistance due to age or breed

B. Acquired herd immunity is universal and permanent

C. Acquired herd immunity is resistance developed through protective immunity (natural or induced)

D. Acquired herd immunity is the same as innate immunity

4. What is the measure of association used in a case-case study?

A. Relative risk

B. Incidence rate ratio

C. Hazard ratio

D. Odds ratio

5. What are the two broad types of disease agent transmission?

A. Horizontal (direct and indirect) and vertical

B. Horizontal transmission only

C. Vertical transmission only

D. Direct contact and vector-borne transmission

6. What are the two methods of measuring incidence?

A. Cross-sectional survey and case-control study

B. Cohort followed over time and incidence density in a dynamic population

C. Prevalence study and attack rate

D. Point prevalence and period prevalence

7. Secondary attack rate measures what?

A. Incubation period

B. Probability of transmission among susceptible contacts after exposure

C. Mortality rate

D. Length of hospital stay

8. Major biases that threaten internal validity in clinical trials include which of the following?

A. Selection bias

B. Measurement bias

C. Confounding

D. All of the above

9. What are the three time periods of the life cycle of a disease agent?

A. Prepatent (intrinsic incubation period); communicable period; extrinsic incubation period.

B. Latent; Active; Recovered.

C. Prodromal; Acute; Convalescent.

D. Post-infectious; Infectious; Latent.

10. In the pyramid of causal evidence, are non-controlled experimental studies considered higher or lower than observational studies?

A. Higher

B. Lower

C. The same

D. Not part of the pyramid

Answers

1. A
2. D
3. C
4. B
5. A
6. B
7. B
8. D
9. A
10. A

Explanations

1. Which statement best contrasts Pearson correlation with the concordance correlation coefficient when assessing agreement?

A. Pearson correlation measures linear association but ignores differences in scale, while concordance correlation accounts for scale and agreement.

B. Pearson correlation measures agreement; Concordance measures association.

C. Both measure identical concept; no difference.

D. Only limits of agreement plots measure concordance.

Evaluating agreement between two measurements requires more than correlation; Pearson correlation captures whether two variables move together in a linear fashion, but it doesn't tell you whether the actual values match across methods. Two methods can be perfectly correlated yet disagree by a consistent bias or a scaling difference, so they don't agree even though their relationship is linear. The concordance correlation coefficient addresses this by combining two ideas: precision and accuracy. Precision mirrors the association part—how tightly the data cluster around the best-fit line. Accuracy brings in how close that line is to the line of identity (the 45-degree line where x equals y). If there's systematic bias (one method consistently too high or too low) or a difference in scale, the CCC decreases because it penalizes both lack of fit to the identity line and differences in spread between the methods. So it's correct that Pearson measures linear association (not agreement) while the concordance correlation coefficient accounts for both scale/level differences and agreement between the methods.

2. What does randomization achieve in experimental studies?

A. Eliminates all bias

B. Guarantees causality

C. Increases sample size automatically

D. Reduces confounding due to measured/unmeasured variables

Randomization assigns participants to groups by chance, which helps balance both known and unknown factors that could influence the outcome. By distributing these potential confounders evenly across groups, any differences observed in outcome are more likely due to the intervention itself rather than preexisting differences. This reduction in confounding applies to both measured and unmeasured variables, which is why randomization is so powerful in experimental studies. It doesn't guarantee that all bias is gone, and it doesn't by itself establish causality or change the study's sample size.

3. Which statement correctly describes acquired herd immunity?

A. Acquired herd immunity is resistance due to age or breed

B. Acquired herd immunity is universal and permanent

C. Acquired herd immunity is resistance developed through protective immunity (natural or induced)

D. Acquired herd immunity is the same as innate immunity

Acquired herd immunity comes from protective immunity that individuals develop after exposure or vaccination, involving the adaptive immune system with memory. When many people in a population become immune—whether from natural infection or vaccination—the spread of the pathogen slows, reducing transmission to those who are still susceptible. This collective protection depends on the immune system's ability to recognize and remember the pathogen, not on inherent traits like age or breed. It's not resistance from age or breed, which are genetic or non-specific factors. It's not guaranteed to be universal or permanent, since immunity can wane and pathogen dynamics or coverage can change over time. And it's not the same as innate immunity, which is non-specific and lacks immunological memory.

4. What is the measure of association used in a case-case study?

A. Relative risk

B. Incidence rate ratio

C. Hazard ratio

D. Odds ratio

In a case-case study you're not estimating how often a disease occurs in the general population or comparing time-to-event outcomes. Instead, you're comparing two groups of cases to see if a exposure differs between them. Because there's no population denominator or person-time to form risks or rates, the appropriate summary measure is the odds ratio. It reflects how much more (or less) likely exposure is in one case group compared with the other, and can be estimated with simple cross-tabulation or logistic regression. Relative risk and incidence rate ratio require incidence data from at-risk populations, which isn't available in a case-case comparison. Hazard ratio comes from time-to-event analysis and isn't the standard for this design. Example: if exposure X is present in 60 of 100 cases with disease A and in 30 of 100 cases with disease B, the odds ratio is (60/40) ÷ (30/70) ≈ 3.5, indicating exposure X is more common in disease A cases than in disease B cases.

5. What are the two broad types of disease agent transmission?

A. Horizontal (direct and indirect) and vertical

B. Horizontal transmission only

C. Vertical transmission only

D. Direct contact and vector-borne transmission

The main idea is that disease transmission falls into two broad categories: horizontal transmission, which occurs within a generation, and vertical transmission, from parent to offspring. Horizontal transmission can be direct (person-to-person contact) or indirect (through contaminated objects, droplets, aerosols, or vectors). Vertical transmission happens across generations—from mother to child during pregnancy, birth, or breastfeeding. This framing captures all common routes and makes sense of how infections spread over time. The other options only describe specific routes within horizontal or miss one broad type entirely, so they don't cover the full concept.

6. What are the two methods of measuring incidence?

A. Cross-sectional survey and case-control study

B. Cohort followed over time and incidence density in a dynamic population

C. Prevalence study and attack rate

D. Point prevalence and period prevalence

Incidence is about new disease occurrences over time. The two standard ways to measure it are: following a group that starts free of the disease over time and recording who develops the disease, which gives cumulative incidence (risk) over that period; and, in populations where people enter or leave the population, computing incidence density (incidence rate) as the number of new cases divided by the total person-time at risk. The first method provides a straightforward risk over a defined period in a fixed cohort, while the second accounts for changing population membership by using person-time as the denominator. Cross-sectional or case-control designs don't track new cases over time to produce incidence, and prevalence measures (point or period prevalence) capture existing cases, not new ones; attack rate is a special cumulative-incidence measure used in outbreaks but not a general method for measuring incidence in a population.

7. Secondary attack rate measures what?

A. Incubation period

B. Probability of transmission among susceptible contacts after exposure

C. Mortality rate

D. Length of hospital stay

Secondary attack rate captures the probability that a susceptible person who has been exposed to an infectious individual will develop the disease, measured among a defined group of contacts after exposure. It focuses on transmission within close-contact settings, like households or other shared environments, over a period aligned with the disease's incubation window. To calculate it, count the number of susceptible contacts who become cases after exposure and divide by the total number of susceptible contacts, then multiply by 100 to express as a percentage. For example, if 12 susceptible contacts are exposed and 4 become cases, the secondary attack rate is 33%. This is not about the incubation period (time from exposure to onset), mortality, or length of hospital stay.

8. Major biases that threaten internal validity in clinical trials include which of the following?

A. Selection bias

B. Measurement bias

C. Confounding

D. All of the above

Internal validity in a clinical trial depends on the study design ensuring that the observed effect is due to the intervention and not other factors. Selection bias happens when the way participants are assigned or recruited creates groups that differ in important ways from the start, so differences in outcomes may reflect these pre-existing differences rather than the treatment. Measurement bias occurs when outcome data are collected or interpreted inconsistently across groups—such as when those assessing outcomes know which treatment a participant received and rate results differently. Confounding arises when an external variable is related to both the intervention and the outcome, creating a false impression of a treatment effect; even with randomization, imbalances or unmeasured confounders can still influence results. Because each of these biases can distort the true effect, all of the above are major threats to internal validity in clinical trials.

9. What are the three time periods of the life cycle of a disease agent?

A. Prepatent (intrinsic incubation period); communicable period; extrinsic incubation period.

B. Latent; Active; Recovered.

C. Prodromal; Acute; Convalescent.

D. Post-infectious; Infectious; Latent.

Understanding the time segments in the life cycle of a disease agent involves looking at how the pathogen develops in both host and vector and when transmission can occur. The three time periods in this framework are the prepatent period (often aligned with the intrinsic incubation period), the communicable period, and the extrinsic incubation period. The prepatent period is the interval from infection until the pathogen is detectable or until illness becomes evident. The intrinsic incubation period is the time from infection to symptom onset. The communicable period is the span during which the infected host can transmit the pathogen to others. The extrinsic incubation period is the time the pathogen takes to develop inside a vector (such as a mosquito) until the vector becomes capable of transmission. Together, these define the full timeline of transmission potential across host and vector. The other options describe general clinical phases or disease states rather than the distinct time segments of pathogen development and transmission.

10. In the pyramid of causal evidence, are non-controlled experimental studies considered higher or lower than observational studies?

A. Higher

B. Lower

C. The same

D. Not part of the pyramid

In the pyramid of causal evidence, designs that involve an intervention—even without a concurrent control group—are positioned above purely observational studies because they introduce deliberate exposure and a clear temporal sequence. This setup provides a more direct test of cause and effect than simply watching and measuring associations, since the investigator controls the timing and presence of the exposure, which helps distinguish the effect of the intervention from other factors. For example, evaluating outcomes before and after implementing a new protocol within the same population shows whether the change coincides with the intervention, offering stronger causal signals than a cross-sectional or cohort study that observes exposures without manipulation. Of course, the absence of a control group limits the strength of causal inference and leaves room for confounding or secular trends, but the experimental element still places non-controlled experiments higher than observational study designs.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://acvpmepidemiologybiostats.examzify.com

We wish you the very best on your exam journey. You've got this!