BIOLOGY YEAR 12 - MODULE 8 - LESSON 12

Epidemiology — Incidence, Prevalence, Mortality and Study Design

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

Every claim about disease — "smoking causes lung cancer," "obesity increases heart disease risk," "this vaccine reduces infection by 95%" — comes from epidemiology. This lesson builds the tools to understand how those claims are generated, what makes them reliable, and how to critically evaluate them.

- The definitions and formulas for incidence, prevalence, and mortality rate
- Why incidence and prevalence give different pictures of disease burden

2. Success Criteria

By the end, you should be able to:

- The definitions and formulas for incidence, prevalence, and mortality rate
- The key features of cohort, case-control, cross-sectional, and randomised controlled trial (RCT) study designs
- What a confounding variable is and why it matters

3. Key Terms

understand how those claims
generated, what makes them reliable, and how to critically evaluate them

Diabetes
Getting Worse"?

What
the difference between the total number of cases of a disease and the rate of disease in a population? Why does this dis

variable that
associated with both the exposure and the outcome, which can create a spurious or distorted apparent association between

confounding variable
and why it matters

standardised rates
needed for valid population comparisons

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "The definitions and formulas for incidence, prevalence, and mortality rate". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The key features of cohort, case-control, cross-sectional, and randomised controlled trial (RCT) study designs". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Epidemiology — Incidence, Prevalence, Mortality and Study Design: "What a confounding variable is and why it matters".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Epidemiology — Incidence, Prevalence, Mortality and Study Design but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Epidemiology — Incidence, Prevalence, Mortality and Study Design?

☐ A. Identify the key concept being tested

☐ B. Write every fact from memory

☐ C. Ignore the command word

☐ D. Skip examples and evidence

2. Which answer would show stronger understanding of Epidemiology — Incidence, Prevalence, Mortality and Study Design?

☐ A. An answer with accurate terms and reasoning

☐ B. A copied definition only

☐ C. A single-word response

☐ D. An answer with no example

3. What should you do if a question asks you to explain?

☐ A. Link the idea to a reason or cause

☐ B. List unrelated facts

☐ C. Only draw a diagram

☐ D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: The definitions and formulas for incidence, prevalence, and mortality rate

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The key features of cohort, case-control, cross-sectional, and randomised controlled trial (RCT) study designs

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: What a confounding variable is and why it matters

BAND 5 4 MARKS

One thing I still need help with: