Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

2.1

A: **case–control**

B: **cohort**

C: **cross-sectional**

2.2

$$\frac{30/1000}{10/1000}$$

RR = **3**

2.3

$$\text{OR} = \frac{60 \times 70}{40 \times 30}$$

= **3.5**

the odds of exposure are 3.5 times higher in cases, so the exposure is linked to the disease

2.4

strength: good for rare diseases; quick and cheap

weakness: recall bias, or it cannot measure incidence

3.1

(a) exposed: 60/2000 = **3%**; not exposed: 40/4000 = **1%**

(b) RR = 3/1 = **3**

(c) 3% − 1% = 2% = **20 per 1000**

(d) OR = $\frac{60\times3960}{1940\times40} \approx$ **3.06**; close to the RR because the disease is rare

3.2

(a) the disease is rare, so a huge cohort would need to be followed for many years to see enough cases

(b) a **case–control** study

(c) people with a tumour may think harder about past phone use, so they report more use than controls, making a false link

3.3

(a) statin: 60/2000 = **3%**; placebo: 100/2000 = **5%**

(b) RR = 3/5 = **0.6**; RRR = **40%**

(c) ARR = 5% − 3% = 2%; NNT = 1/0.02 = **50**

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(d) 50 people must take the statin for 5 years to prevent one heart attack

(e) it spreads known and unknown confounders evenly between the groups