Question 1

The table below provides data from a double-blinded randomised controlled trial of a new malaria vaccine.

Trial participants were aged 5 to 17 months of age, and lived in a country where malaria transmission is high during a few months of the year.

Participants were randomised to receive seasonal malaria chemoprevention, vaccine, or both.

The vaccine was given as a 3-dose course before the start of the malaria season, followed by annual boosters each year.

The primary outcome was clinical malaria in children who presented to a health facility, over the 3-year study period.

All the participating children were given an insecticide-treated bed net at the time of enrolment.

Group	**Person-yr at risk**	**Clinical malaria events** *no.*	**Incidence (95% CI)** *no. of events/1000 person-yr at risk*	**Hazard ratio, vaccine alone or combination vs. chemoprevention (95% CI)**	**Hazard ratio, combination vs. vaccine Alone (95% CI)**
Chemoprevention alone	5449.9	1661	304.8 (290.5–319.8)	Reference	
Vaccine alone	5535.7	1540	278.2 (264.6–292.4)	0.92 (0.84–1.01)	Reference
Combination	5508.0	624	113.3 (104.7–122.5)	0.37 (0.33–0.42)	0.40 (0.36–0.45)

a) **Describe and interpret the data in the table above (50%)**
b) **With reference to the data, summarise the factors that should be considered when planning the roll out of a malaria vaccine program in a country with seasonal malaria. (50%)**

Question 2

A retrospective observational cohort study evaluated the effectiveness of remote patient monitoring for managing people with acute coronavirus disease 2019 (COVID-19) on 28-day mortality and hospital use in Australia.

The results of the multivariable analysis are shown in the figure and table below.

Figure: Comparison of clinical outcomes for people with COVID-19 who received remote patient monitoring versus those who received usual care.

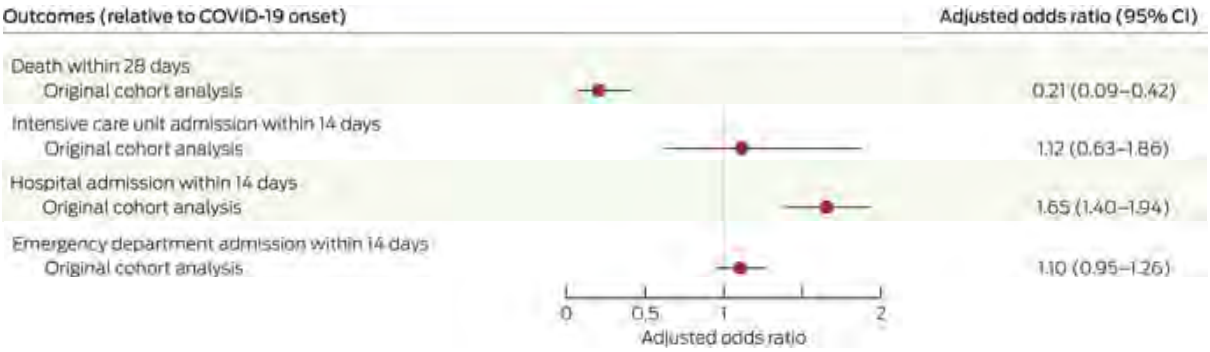


Table: Mean hospital length of stay for people with COVID-19 who received remote patient monitoring and those who received usual care

			Mean difference (95% CI)	
Study cohort	**Standard care**	**Remote monitoring**	**Unadjusted**	**Adjusted†**
Original cohort				
Number of people	2043	190		
Hospital length of stay (days), mean (SD)	8.9 (11.8)	6.2 (11.6)	−2.71 (−4.44 to −0.97)	−2.01 (−2.81 to −1.21)

† Adjusted for age group, sex, Indigenous status, socio-economic status (Index of Relative Socio-economic Advantage and Disadvantage quintile), selected medical conditions, and local risk of hospitalisation group.

a) **Describe and interpret the results in the figure and table (80%).**
b) **Discuss what other metrics could be used to evaluate the effectiveness of remote patient monitoring (20%).**

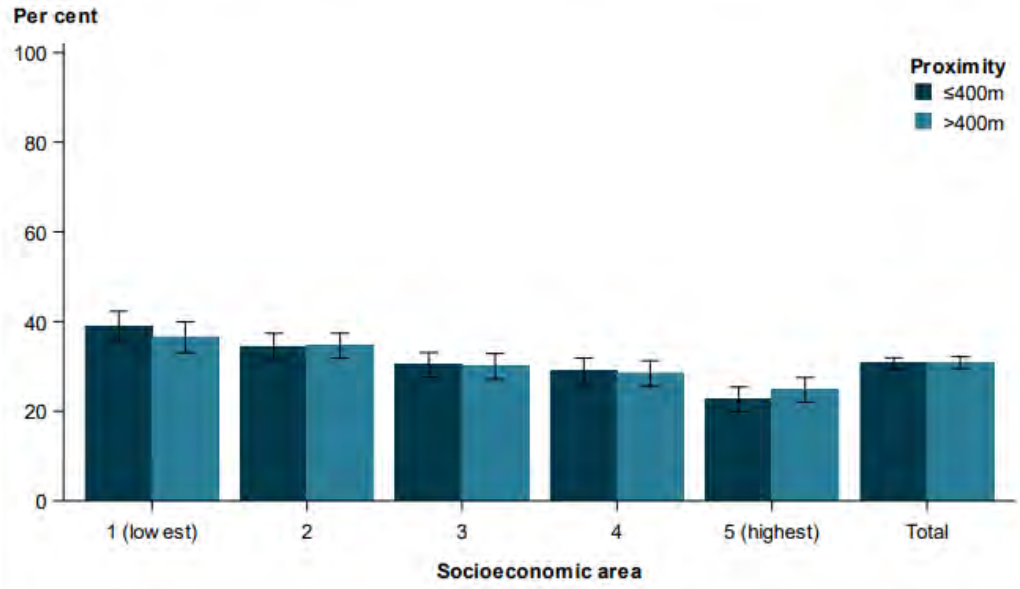
Question 3

The below figure shows the results of an analysis of the relationship between various health risk factors and the neighbourhood environment.

The analysis was based on data collected in the 2017–18 National Health Survey conducted by the Australian Bureau of Statistics (ABS). This survey is based on a nationally representative cross-sectional sample of the population.

The survey sample size was 21,300 people. The survey collected information on measured height and weight as well as other factors, including residential address.

Figure Age-standardised prevalence of obesity among adults, by proximity to a public open space greater than 1 hectare and socioeconomic area, 2017–18



Notes:
a) Data have been age-standardised to the 2001 Australian Standard Population.
b) Error bars on figures indicate 95% confidence intervals.

a) Describe the results shown in the figure (40%)
b) Discuss factors that may explain these results (60%)