الكلية : كلية طب العام

الفرع : طب االسرة والمجتمع

المرحلة : الرابعة

أستاذ المادة : د بديعه ثامر يحيى

اسم المادة باللغة العربية: وبائيات

اسم المادة بالانكليزيEpidemiology

اسم المحاضرة الخامسه باللغة العربيه :الاوبئة

اسم المحاضرة الخامسه باللغة الانكليزية:Epidemics

## ***5-Epidemics:***

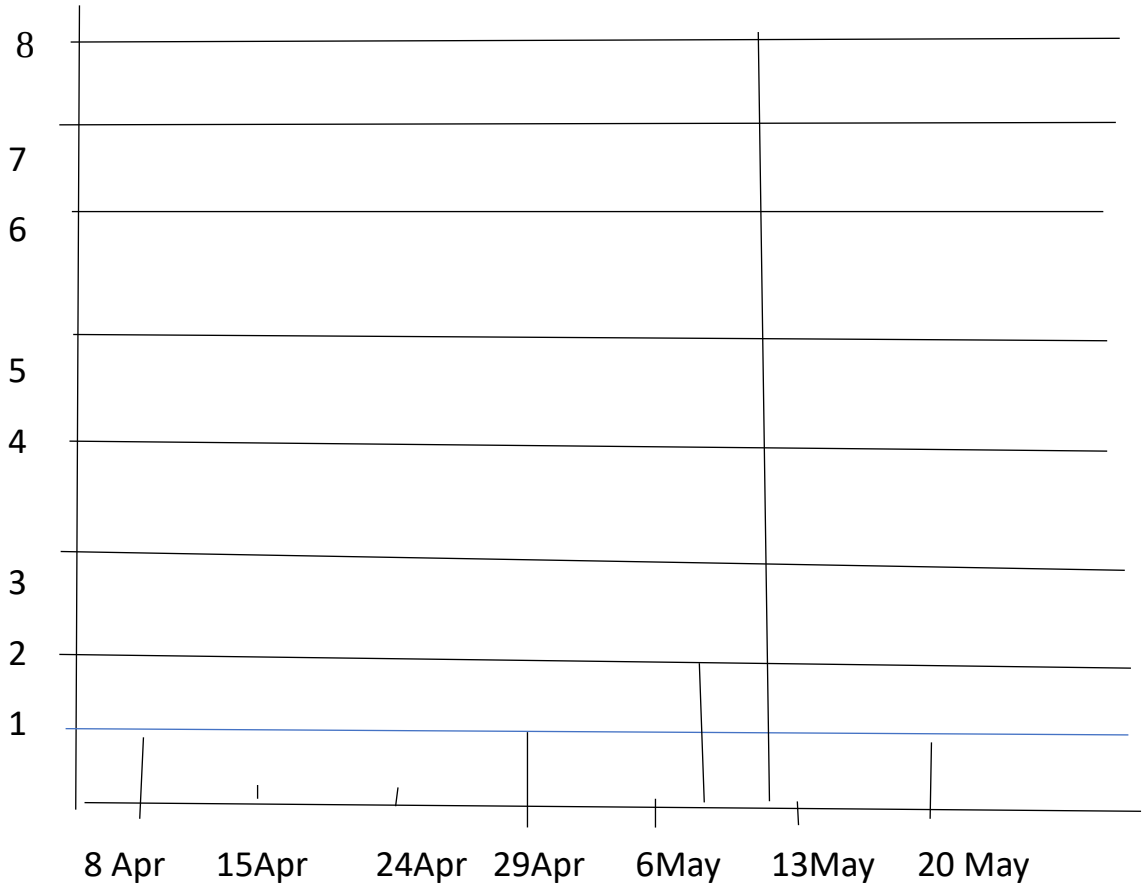
Q28- The table below shows data on measles outbreak among first year primary school children. The number of children was 46 of whom 11 had history of clinical measles in the past. The class assembled on April 6 following a holiday:

| Date of onset | Number of cases reported |
|---|---|
| April 8 | 1 |
| April 29 | 1 |
| May 7 | 2 |
| May 10 | 8 |
| May 20 | 1 |

a. Plot an epidemic curve to illustrate the data. What type of epidemic is it? Explain.

b. Calculate appropriate measures of the spread of cases in this group.

*Sol:*



- The type of epidemic is measles infection
- Propagated (or progressive) epidemic because it is person to person infection allowing the infection to spread from person to person so here transmission is person to person rather than from a common source

$$\text{b- incidence rate} = \frac{\text{No. of new cases}}{\text{population at risk}} \text{ Xk} = \frac{13}{46} \text{ X } 100 = 28.2\%$$

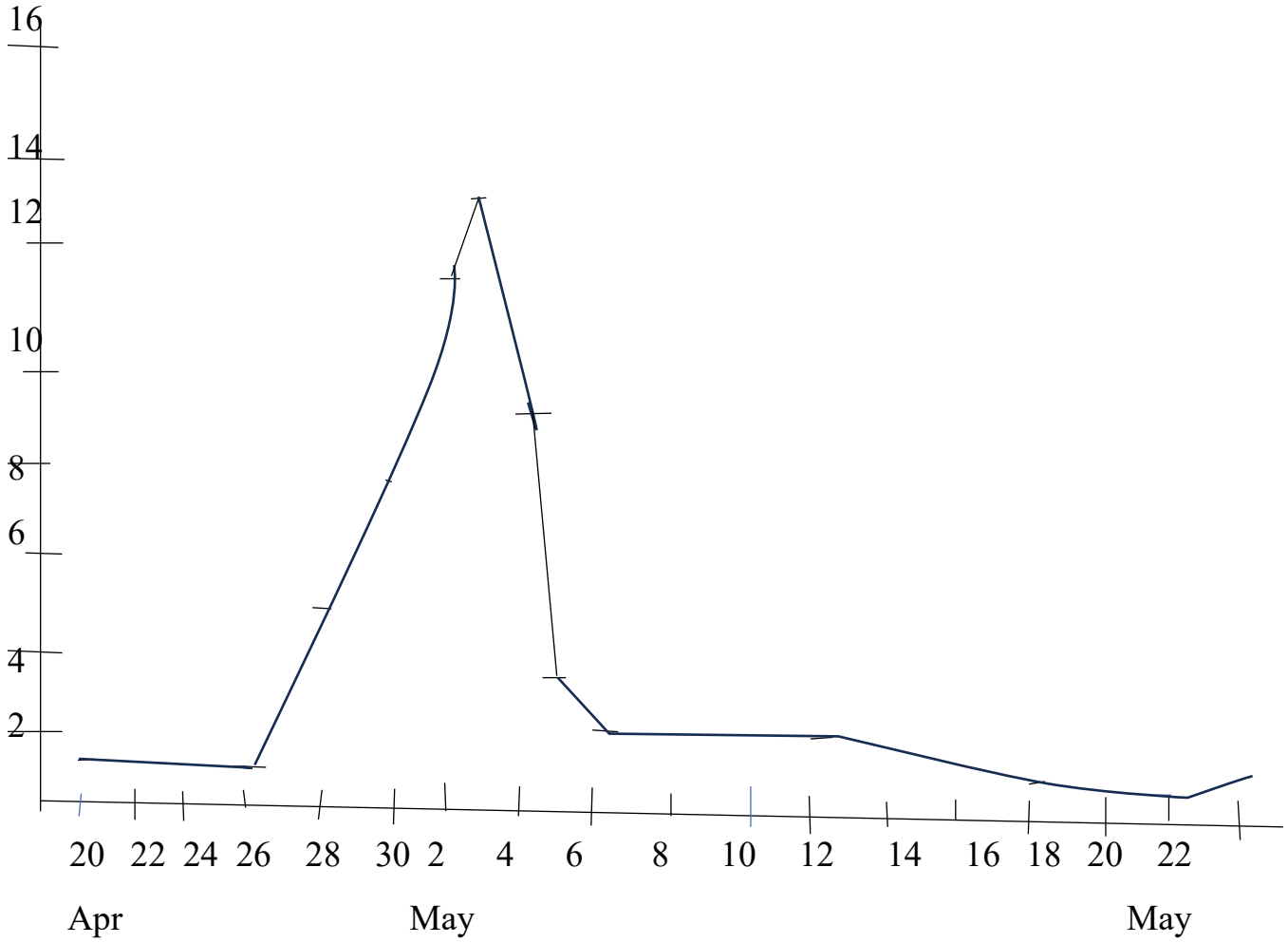
$$\text{c- prevalence rate} = \frac{\text{no. of existing cases}}{\text{total population}} \text{ Xk} = \frac{13+11}{46} \text{ X}100 = 52.1\%$$

Q29- In an outbreak of a communicable disease 63 cases were reported over the period from 20th of April to the 22nd of May 1994. The details of all cases reported are given below:

| Date | Number of cases reported |
|---|---|
| 5 April | Probable exposure to infection |
| 20 April | 1 |
| 26 April | 1 |
| 28 April | 5 |
| 30 April | 8 |
| 1 May | 11 |
| 2 May | 13 |
| 3 May | 9 |
| 4 May | 5 |
| 5 May | 4 |
| 6 May | 2 |
| 12 May | 2 |
| 18 May | 1 |
| 22 May | 1 |

a. Plot an epidemic curve using the data above. What type of epidemic curve is this?
b. Estimate the incubation period of this disease.
c. Can you name one communicable disease that fits the estimated incubation period in b above?

Sol:




- a-type of the epidemic curve is a continuous common source epidemic curve
- b- two weeks
- c-Hepatitis A

Q30- In an outbreak of gastroenteritis among university students camp, the investigators were able to identify the source of food for different groups of students and then trace the subsequent disease events among them. Some of the results are given below:

| Type of meal | Students who ate specific food | | | Students who did not eat specific food | | |
|---|---|---|---|---|---|---|
| | Ill | Well | Total | Ill | Well | Total |
| Breakfast | 52 | 100 | 152 | 51 | 94 | 145 |
| Lunch | 88 | 150 | 238 | 6 | 58 | 64 |
| Dinner | 87 | 150 | 237 | 31 | 64 | 95 |

a. What was the risk of gastroenteritis in relation to food eaten in each meal?
b. What food was more likely to be related to the (cause) of the outbreak?
c. Name at least three microorganisms that could be the causes of this outbreak.

Sol: specific food

| | ill | well | Total |
|---|---|---|---|
| B | 52 | 100 | 152 |
| L | 88 | 150 | 238 |
| Total | 140 | 250 | 390 |

$$a\backslash a+b \qquad \frac{52}{152} \times 1000$$

$$a\text{-}RR = \frac{\quad}{\quad} = \frac{\quad}{\quad} = 0.9$$

$$c\backslash c+d \qquad \frac{88}{238} \times 1000$$

No specific food

| | ill | well | Total |
|---|---|---|---|
| B | 51 | 94 | 145 |
| L | 6 | 58 | 64 |
| | 57 | 152 | 209 |

$$= \frac{\frac{51}{145} \times 1000}{\frac{6}{64} \times 1000} = 3.75$$

Specific food

| | ill | well | Total |
|---|---|---|---|
| B | 52 | 100 | 152 |
| D | 87 | 150 | 237 |
| Total | 139 | 250 | 389 |

$$RR = \frac{\frac{52}{152} \times 1000}{\frac{87}{237} \times 1000} = 0.9$$

Non specific food

| | ill | well | Total |
|---|---|---|---|
| B | 51 | 94 | 145 |
| D | 31 | 64 | 95 |
| | 82 | 158 | 240 |

$$RR = \frac{\frac{51}{145} \times 1000}{\frac{31}{95} \times 1000} = 1.1$$

b- Lunch : meet

c- Salmonellosis , E.coli , Staph aureus

Q31- The following statistics were obtained from an area with a population of 50000 in 2009. Antenatal care clinics were visited on average by 200 pregnant women of different gestational age for repeated visits. Of them, 34 were attending for the booking visit (initial visit). The crude birth rate was 44 per 1000 population.

| Vaccine | Average monthly number of vaccinated infants |
|---|---|
| BCG. | 154 |
| DPT first dose | 94 |
| Polio first dose | 94 |

1. What is the extent of coverage of antenatal care in this population using clinic approach?
2. Analysis of immunization records in the same clinic showed the following figures.

Assuming that 40% of infant deaths occurred within the first two months of life and that the annual infant mortality rate was 80/1000 L.B. What was the coverage rate for BCG, DPT, and polio, vaccines in the year 2009 in this population?

Actually immunized

Coverage rate =----------

Eligible (live birth )

No. of live birth

Crude birth rate = ----------

Total population

x

44\1000 = -------- =220 عدد الحوامل لمدة شهر

5000

1st trimester غياب الزيارات

2nd and 3rd trimester الزيارات تكثر

$$220 \times \frac{2}{3} = 147 = 2^{nd} \text{ trimester}$$

$$220 \times \frac{9}{12} = 165 = 3^{rd} \text{ trimester}$$

Coverage rate( anti natal )

$$1^{st} \text{ visit} = \frac{34}{220} \times 100 = 15.5\%$$

$$\text{IMR} = \frac{\text{No. of infant death}}{\text{Live birth}}$$

$$80\backslash 1000 = \frac{x}{220}$$

$X = 17.6 \approx 18$

$$\text{Coverage rate of BCG} = \frac{\text{Actually immunized}}{\text{Eligible}}$$

$$= \frac{154}{220} \times 100 = 70\%$$

Because 1st week no death of infant

$$18 = \frac{40}{100} = 7.2$$

$$\text{Coverage rate of DPT} = \frac{94}{212.8} \times 100 = 44.3\%$$

عدد الحوامل الموجودين بالمنطقة

$$\frac{4}{100} \times 5000$$