**PHAR (222) homework 1
Omar Taweel 1160150**

**I. In a village of 10,000 population in 1/1/1998, 1000 people got infected with yellow fever. From the infected people, 800 died and the rest of the infected people remained infected carriers for their life. The age distribution of people, cases and deaths was as follows:**

| Age | Total population | Total infected | Total Deaths |
| --- | --- | --- | --- |
| Less than 1 yr | 1500 | 750 | 700 |
| 1-4 years | 2000 | 150 | 75 |
| 5+ | 6500 | 100 | 25 |
| Total | 10,000 | 1000 | 800 |

1. **Answer the following:**
2. Can you conclude from this data that there is a disease outbreak (epidemic) occurring in the village? Justify your answer.

**Yes**, there is an epidemic occurring in the village because the disease spread rapidly among the population.

1. What is the child (1-4 years old) mortality rate (risk of dying)?

Age specific mortality rate = ASMR = $\frac{Total deaths (1-4)}{Total population (1-4)} x 10000$

**ASMR = 375 deaths per 10000 population**

1. Which age group has the best prognosis (lowest case fatality)? Show in calculation.

Case fatality risk or rate= CFR = $\frac{Number of deaths }{Total population diagnosed with the disease} $

**The group of people (5+) has the best prognosis because its CFR= 25%. The lowest compared to other groups**

- CFR (less than 1 year) = 700/750 = 93%

- CFR (1-4) = 75/150 = 50%

II.10,000 employees were screened for diabetes mellitus. Diabetes was detected in 1000 of these employees during the initial screening. 45 new diagnosis were detected at a subsequent annual screen 1 year later.

1. Calculate the prevalence of diabetes at the beginning of screening.

Prevalence = $\frac{Number of individuals with diabetes at that time}{Number of individuals at that time} $= 1000/10000 = 10%

B. Calculate the annual risk of diabetes among these employees.

 **When we measure the risk of getting a disease we measure it rot healthy people. Therefore, Number of healthy employees = 10,000-1000 = 9000

Annual risk =** $\frac{Newly diagnosed cases}{Total healthy employees} =\frac{45}{9000}=0.5\%$