**Solution for homework 1**

**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 since there is an increase in the risk of disease 1000/10000= 10%

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

Mortality rate = number of deaths from yellow fever/ number of child 1-4 years

Number of deaths = 75

Number of child 1-4 years = 2000

Mortality rate = 75 / 2000

= 3.75%

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

Case fatality rate = number deaths during specific period after yellow fever / number persons with yellow fever in that period

Case fatality rate for less than 1 yr = 700 / 750

= 93.3%

Case fatality rate for 1-4 years = 75 / 150

= 50%

Case fatality rate for +5 = 25 / 100

= 25% the best prognosis

The age group has the best prognosis (lowest case fatality) is the +5 years.

**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 = number of individuals having the disease at a specific time / number of individuals in the population at that point in time

Prevalence = 1000 / 10000

Prevalence = 10%

1. **Calculate the annual risk of diabetes among these employees.**

Risk = 45/9000 = 0.5%