

Chapter 6: Incidence and Prevalence

$$\text{Incidence Proportion (IP)} = \frac{\text{onsets over time}}{\text{no. at risk at beginning of study}}$$

1. Synonyms: average risk, cumulative incidence, attack rate
2. Cohorts only (individual follow-up necessary)
3. Interpretation: average risk

$$\text{Incidence Rate (IR)} = \frac{\text{onsets over time}}{\sum \text{person - time}}$$

1. Synonyms: incidence density, person-time rate
2. The sum of person-time by be calculated by summing individual person-time, approximating the sum of person-time in the group (with or without life-table adjustment, or as the (average population size) \times (time)
3. Interpretation: speed at which new event occur; inverse of "wait time" or "survival time"
4. Often used as a *reflection* of risk, i.e., when disease is "rare," the rate per person-year \approx one-year average risk
5. Examples of rates in open populations

$$\text{Crude birth rate (per } m) = \frac{\text{births}}{\text{mid - year population size}} \times m$$

$$\text{Crude mortality rate (per } m) = \frac{\text{deaths}}{\text{mid - year population size}} \times m$$

$$\text{Infant mortality rate (per } m) = \frac{\text{deaths} < 1 \text{ year of age}}{\text{live births}} \times m$$

$$\text{Prevalence (P)} = \frac{\text{cases}}{\text{No. in population}}$$

1. Depends on inflow and outflow (Fig. 6.9)
2. Prevalence \approx (incidence rate) \times (average duration of illness)

Incidences and prevalence are often reported with a population multiplier such "per m people" or "per m person-years." To convert a rate or proportion to "per m people," simply multiplying by m . For example, an incidence rate of 0.00877 per person-year = $0.008770 \times 100,000 = 877$ per 100,000 person-years.