

## Chapter 6: Incidence and Prevalence

$$\text{Incidence Proportion (IP)} = \frac{\text{onsets}}{\text{no. at risk}}$$

1. Synonyms: risk, average risk, cumulative incidence
2. Follow-up of closed populations, only (length of follow-up should be specified)

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

1. Synonyms: incidence density, person-time rate
2. Denominator (person-time) in cohorts: tally or estimate individual person-time
3. Denominator in open populations: person-time  $\approx$  (population size)  $\times$  (time), for rare outcomes
4. About equal to IP when outcome is rare (risk  $\leq$  5%), also inverse of survival time under certain conditions
5. Examples of rates calculated 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 (see Fig. 6.9)
2. Prevalence  $\approx$  (incidence rate)  $\times$  (average duration)

**Incidence and prevalence are often reported with a population multiplier of “per  $m$  people”.** To convert the rate or proportion to “per  $m$  people,” simply multiplying by  $m$ . For example, to express 0.008770 per year with a unit multiplier of “per 100,000,” multiply by 100,000, i.e., 0.008770 = 877 per 100,000.