Cohort Study

Cohort Study

- The objective of a cohort study is to investigate whether the incidence of an event is related to a suspected exposure
- Steps:
  - A group of people without the outcome is identified
  - Followed
  - Outcome ascertainment

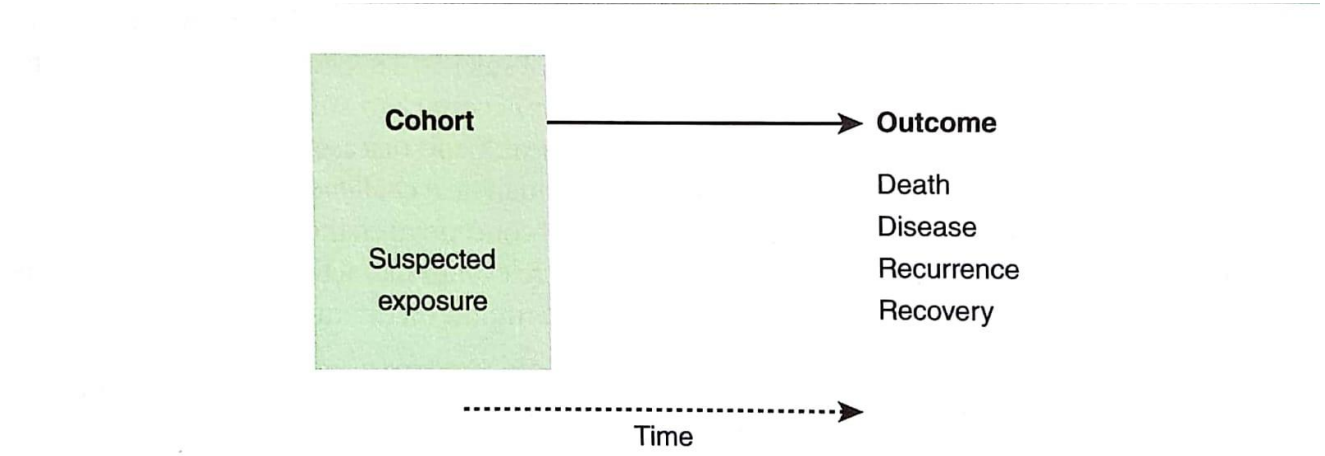

FIGURE 1-12 Basic components of a cohort study: exposure, time, and outcome.

Cohort Study

- Q: When the event of interest is a newly developed disease, what we should do with the prevalent cases?

Cohort Study

- Incidence can be estimated as the number of events occurring during the follow-up period divided by the number of subjects in the cohort at baseline minus one-half of the losses
- 4/[1000-(1/2 X 7)] = 4.01/1000

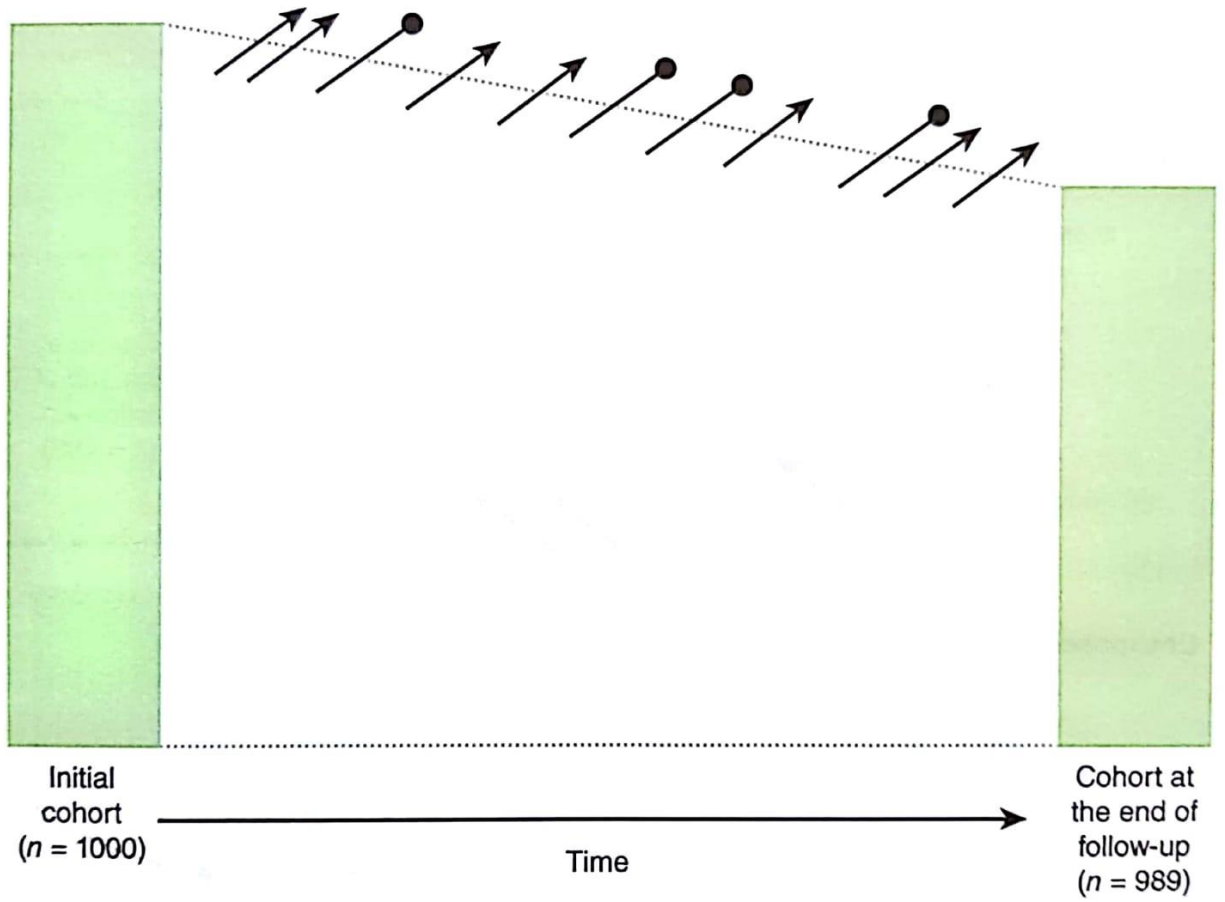

FIGURE 1-13 Diagram of a hypothetical cohort of 1000 subjects. During the follow-up, four disease events (line segments ending in dots) and seven losses to follow-up (arrows) occur so that the number of subjects under observation at the end of the follow-up is 989.

Cohort Study

- The subjects are classified according to their exposure status
- Then, the incidence of the outcome of interest (usually a disease) is ascertained and compared across exposure categories

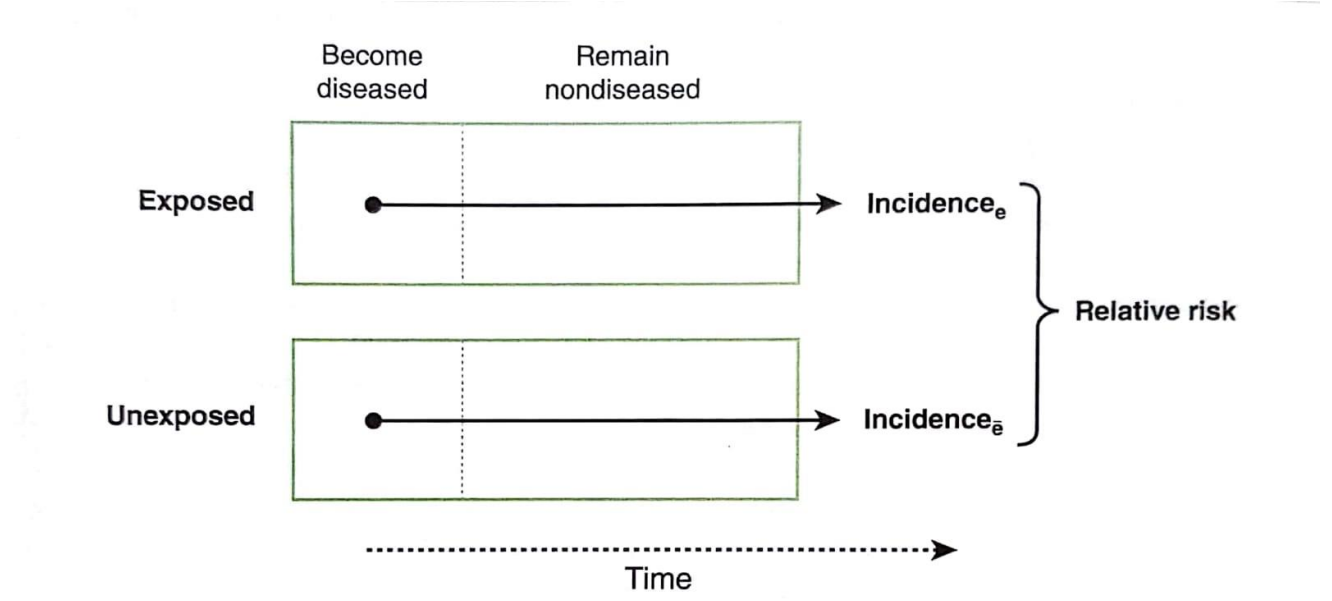

FIGURE 1-14 Basic analytical approach in a cohort study.

Cohort Study

- Example:
- Calculate the incidence of disease in exposed
- Calculate the incidence of disease in unexposed
- Calculate the relative risk (risk ratio)

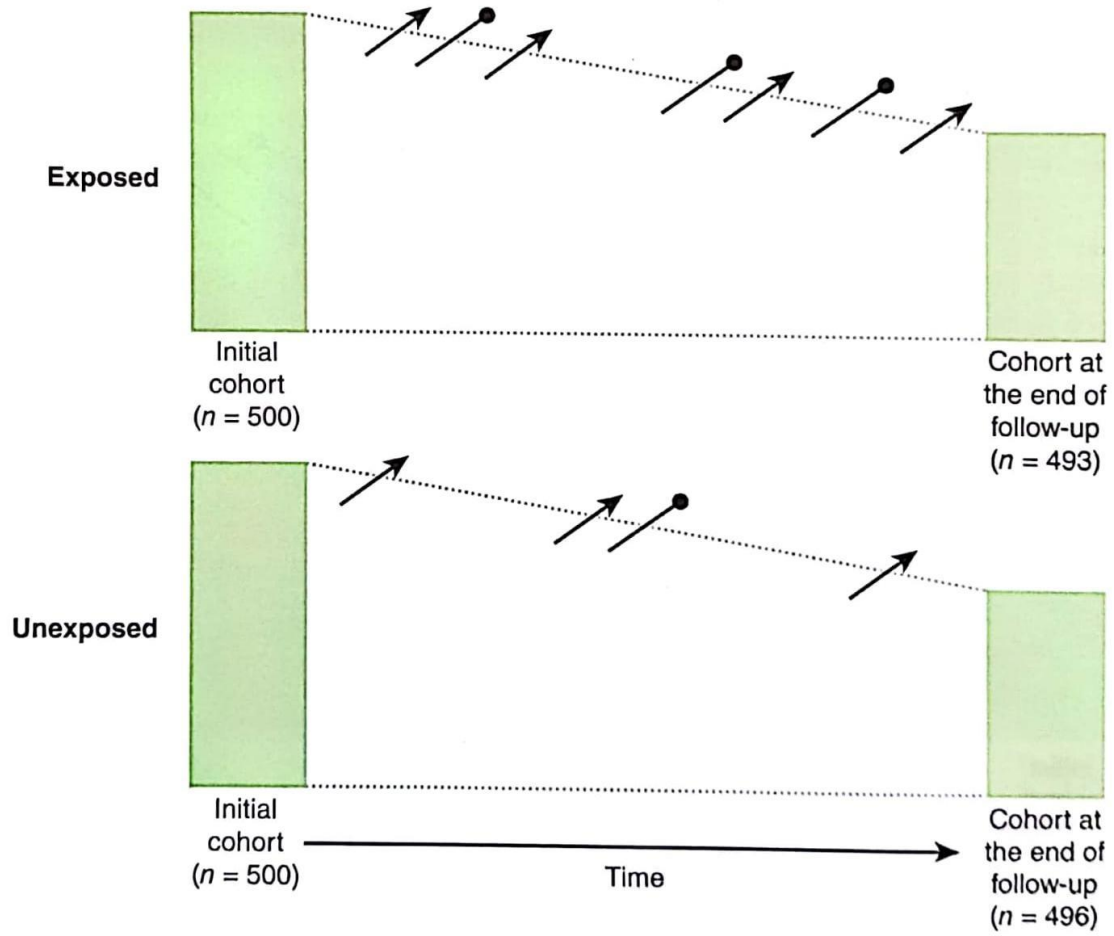

FIGURE 1-15 Same cohort study as in Figure 1-13, but the ascertainment of events and losses to follow-up is done separately among those exposed and unexposed.

- An important assumption for the calculation of incidence in a cohort study is that individuals who are lost to follow-up are similar to those who remain under observation

Cohort Study

- Prospective cohort (concurrent):
  - When the cohort is assembled at the present time and is followed up toward the future
- Retrospective cohort (nonconcurrent, historical):
  - A cohort is identified and assembled in the past on the basis of existing records and is "followed" to the present time

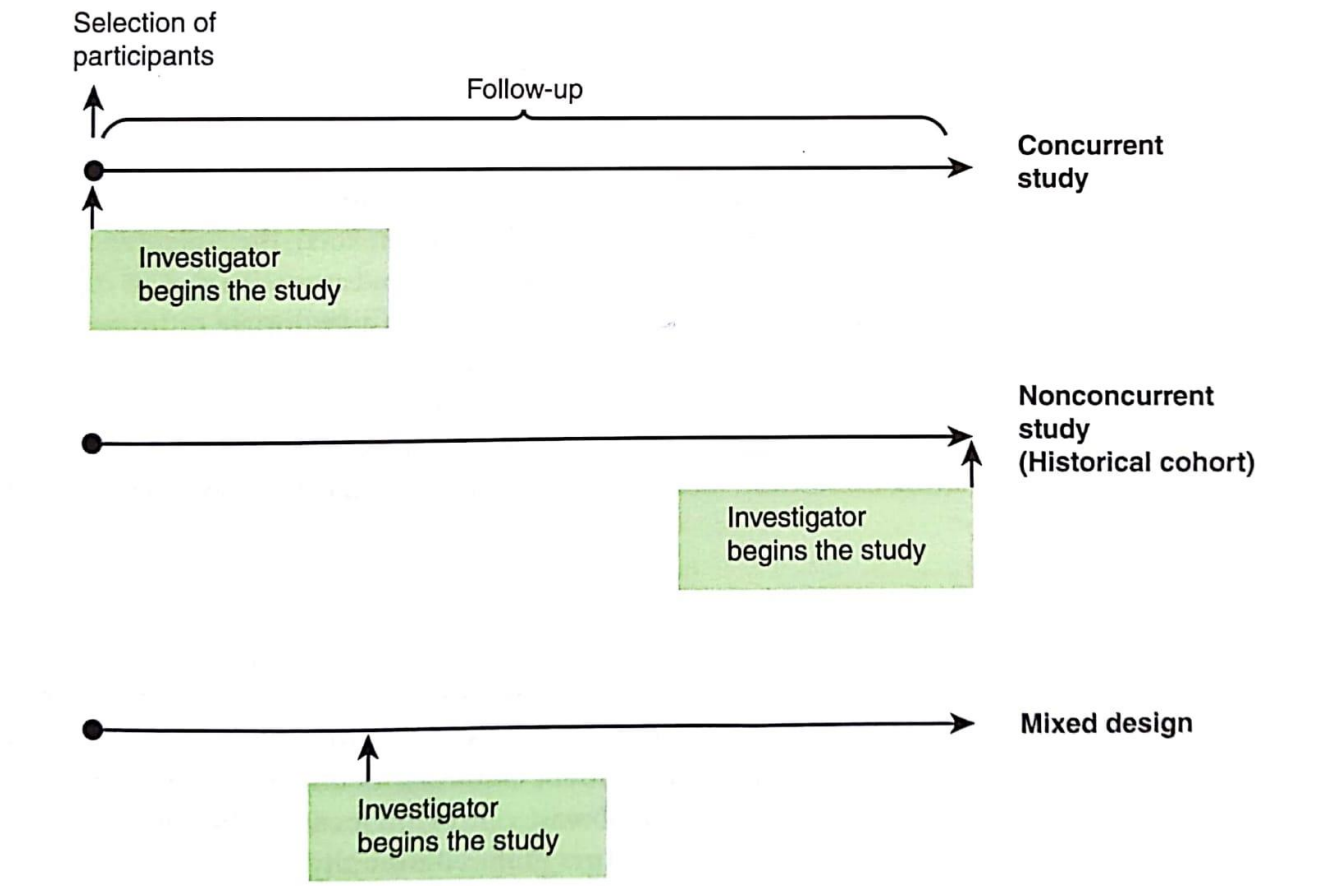

FIGURE 1-16 Types of cohort studies.

Strengths

- Is of a particular value when the exposure is rare
- Can examine multiple effects of a single exposure
- Can elucidate temporal relationship between exposure and disease
- If prospective, minimizes bias inn the ascertainment of exposure
- Allows direct measurement of incidence of disease in the exposed and nonexposed groups

Limitations

- Is inefficient of the evaluation of rare diseases
- If prospective, can be extremely expensive and time consuming
- If retrospective, requires the availability of adequate records
- Validity of the results can e seriously affected by losses to follow-up