

CASE-CONTROL STUDIES

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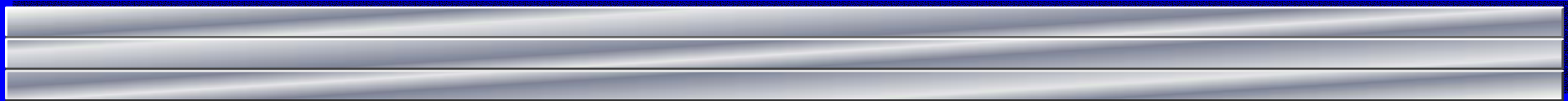
CASE-CONTROL STUDIES

- Key features of CC studies
- Selection of cases
- Selection of controls
- Measuring exposure
- (Analysis)
- Interpretation

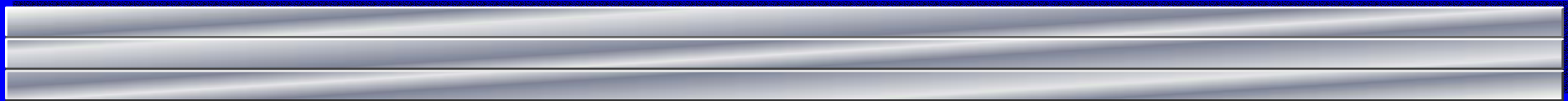


Definition

Observational analytic epidemiologic investigation in which subjects are selected on the basis of whether they do (**cases**) or do not (**controls**) have the disease under study



- ⌚ The case-control method (especially the analysis) was developed in the 1950s as an approach to the problem of investigating risk factors for diseases with **long latent periods** and **rare diseases**.



CASES

☉ Case definition

Set of standardised criteria used to identify cases

Criteria might be

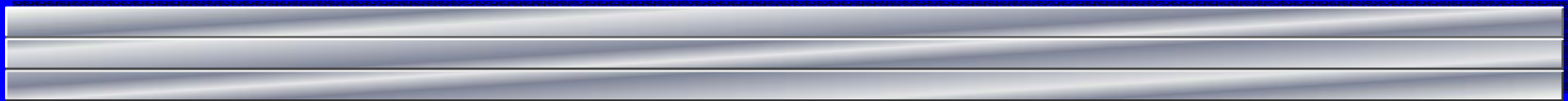
- clinical
- histological
- specific category of diagnosis (e.g. death certificates)

CASES

☉ Source

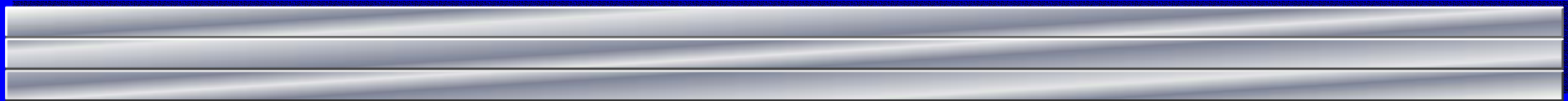
Definition of the population from which the cases are drawn

Controls are drawn from the same population group



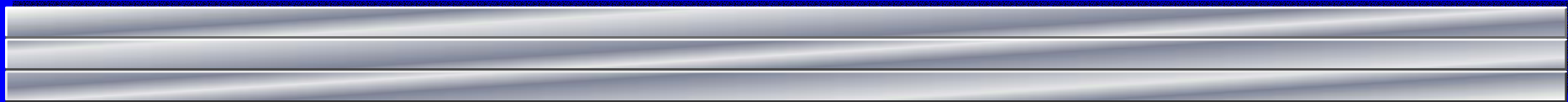
CASES

- ◉ Incident or prevalent cases
 - Incident cases: all new cases identified within a specific population at a specific time period
 - Prevalent cases: cases within a specific population at a specific point in time



CONTROLS

- Provide an estimate of the frequency and amount of exposure in subjects in the population without the disease being studied
- Must be representative of the population from which the cases derived, but must not have the outcome in question



CONTROLS

- ⌚ Matching:

- selecting controls who are similar to each case with respect to potential confounding factors

- ⌚ group matching

- ⌚ individual matching



MEASURING EXPOSURE

- Method used to measure depends on the type and period of time when the potential exposure may have occurred
 - sources of exposure data:
 - » interview of individual
 - » interview of a person close to the subject
 - » medical records
 - » biological samples



MEASURING EXPOSURE

- use objective records rather than subjective measures
- standardised questionnaire
- use measures of exposure taken before the outcome occurred
- if no pre-existing sources available, 'blind' the investigator to the outcome status of the patient

INTERPRETATION

- ◉ Assessing potential sources of error
 - Bias
 - » selection bias
 - » information bias
 - Confounding
 - » matching, restriction
 - » stratification, regression modelling
 - Reverse causality



STRENGTHS

- ◉ relatively quick and inexpensive compared with other analytic design
- ◉ well-suited to evaluate diseases with long latent periods
- ◉ optimal for evaluation of rare diseases



LIMITATIONS

- ⌚ temporal relationship between exposure and disease may be difficult to establish
- ⌚ prone to bias, particularly selection and recall
- ⌚ cannot usually provide information on incidence rates of disease
- ⌚ choice of appropriate control group may be difficult

