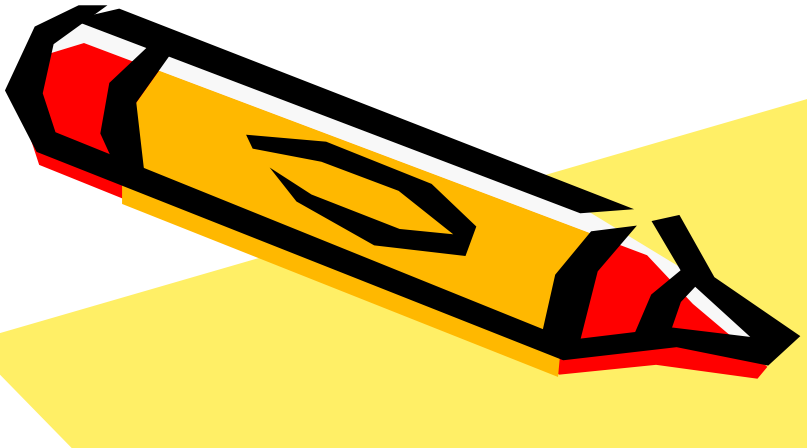


انواع مطالعات

ارائه دهنده : کتایون یزدچي

چند مثال

-گزارش يك مورد فلج اطفال

-بررسي ميزان شيوع علائم مختلف حسي و MS حركتي - توزيع گروههاي خوني در ميا ن مردان و زنا ن

-درصد سني جمعيت

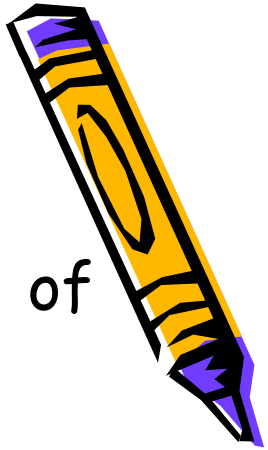
-بررسي علل مرگ ومير كودكان زير يك سال

- مقايسه احتمال رد بيوند مغز استخوان در افراد با و بدون سابقه گرفتن فراورده هاي خوني

- مقايسه اثر درمان طبي و جراحي شريان كرونر در بيماري ايسكميك قلبي بايدار

TYPES OF ***STUDIES***

- Primary
  - ***Experimental(interventional)***
  - ***observational***
- secondary (review article)
  - Narrrative
  - systematic



*A ***systematic review*** is an overview of primary studies

*A ***meta-analysis*** is a mathematical synthesis of results of two or more primary studies

*Although meta-analysis can increase the precision of a result, it is important to ensure that the methods used for the review were valid and reliable

Advantages of systematic reviews

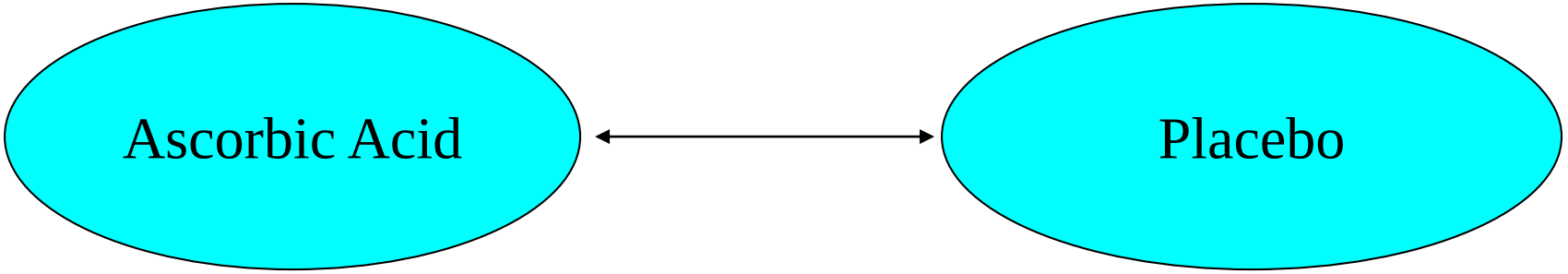
- ✓ *Explicit methods limit bias in identifying and rejecting studies*
- ✓ *Conclusions are more reliable and accurate because of methods used*
- ✓ *Large amounts of information can be assimilated quickly by healthcare providers, researchers, and policymakers*
- ✓ *Delay between research discoveries and implementation of effective diagnostic and therapeutic strategies may be reduced*
- ✓ *Results of different studies can be formally compared to establish generalisability of findings and consistency (lack of heterogeneity) of results*
- ✓ *Reasons for heterogeneity (inconsistency in results across studies) can be identified and new hypotheses generated about particular subgroups*
- ✓ *Quantitative systematic reviews (meta-analyses) increase the precision of the overall result*

Experiment

- An "**experiment**" **deliberately** imposes some "**treatments**" on individuals to see if the treatments have an effect on some "**outcome**" or measurement.

Example of an experiment

Population #1 **Population #2**



<u>Outcomes</u>:

Do the average number of colds differ?

Do their average lengths of colds differ?

Who gets which treatment?

- To conduct a good experiment, "**treatment assignments**" must be "**random**."
- "**Random**" means everybody has an equal chance of getting a treatment.
- "**Haphazard**" does not mean random!

Who is in control?

- Every experiment should have a "**control group**."
- People in control group are treated exactly the same way as the other people in the experiment, except they do not get the "**active treatment**."
- A "**placebo group**" is a special kind of control group.

Close your eyes!

- To conduct a good experiment, individuals should be "**blinded**" to the treatment assignments.
- An experiment is "**double-blinded**," if neither the researcher nor the individuals know who received what.

Interventional studies : clinical trials

Observational study

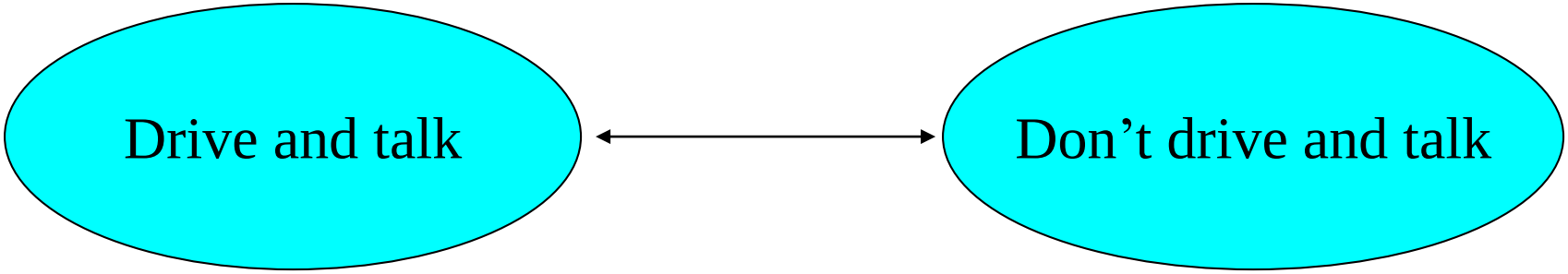
- An "**observational study**" observes the **natural** characteristics of individuals to see if the characteristics have an effect on some outcome or measurement.

- Observational studies may be necessary for obvious reasons or for ethical reasons.

An example:

Population #1

Population #2



<u>Outcome</u>:

Does the risk of having an accident differ?

Advantages of experiments

- Randomization **should** make the two populations similar, on average, with respect to everything except the treatment.
- So if outcomes are different for the two populations, can conclude that it is the treatment that **caused** it.

Disadvantages of observational studies

- The populations may differ in many ways besides the natural characteristics of interest.
- **Cannot** conclude that the primary characteristic of interest is causing the difference in the outcome.

So, some guidelines ...

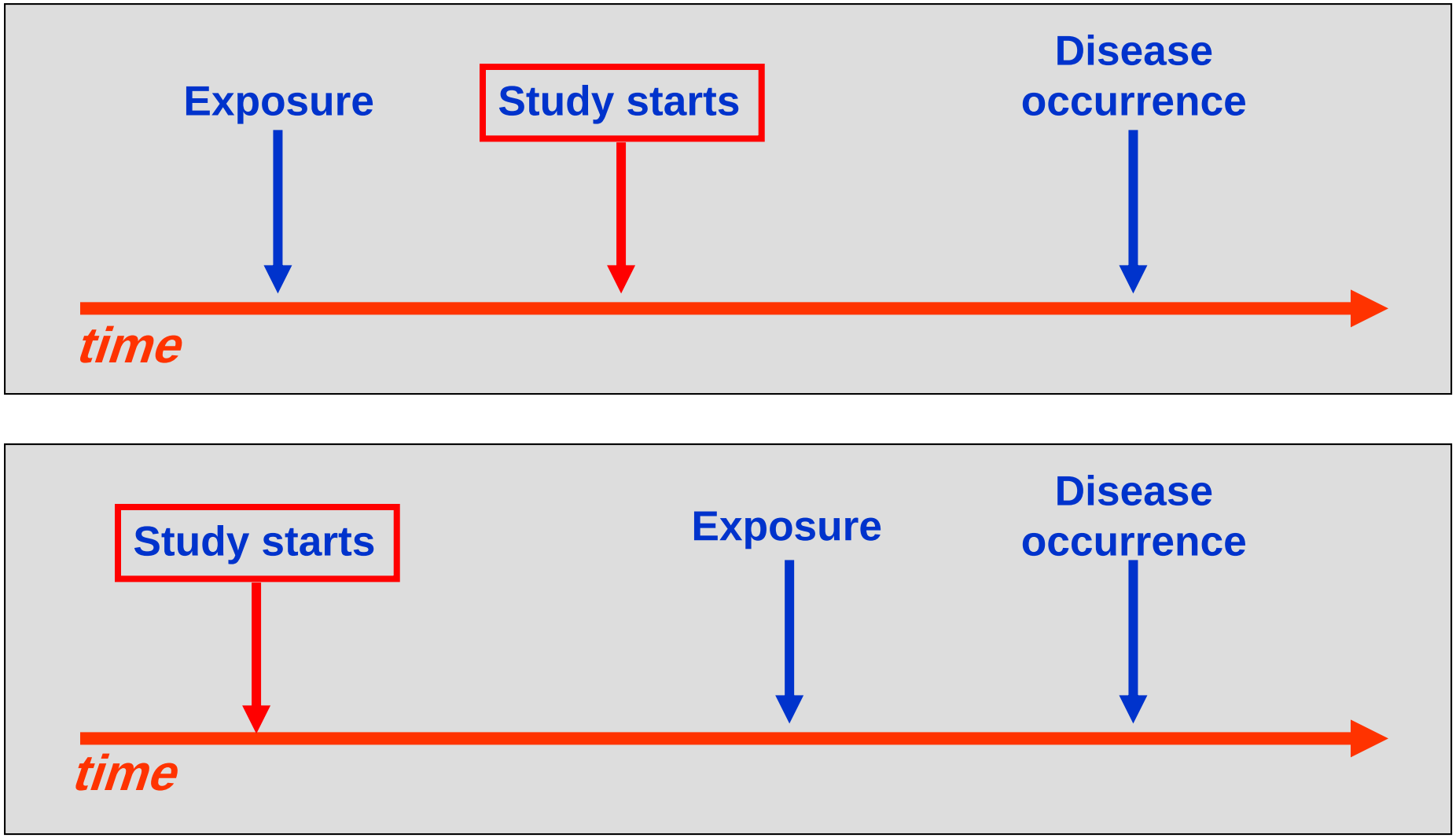
- Whenever possible, conduct a ***randomized, blinded, controlled*** experiment.

- But if you conduct an observational study, be careful of how strong you state your conclusion.

Cohort studies

marching towards outcomes

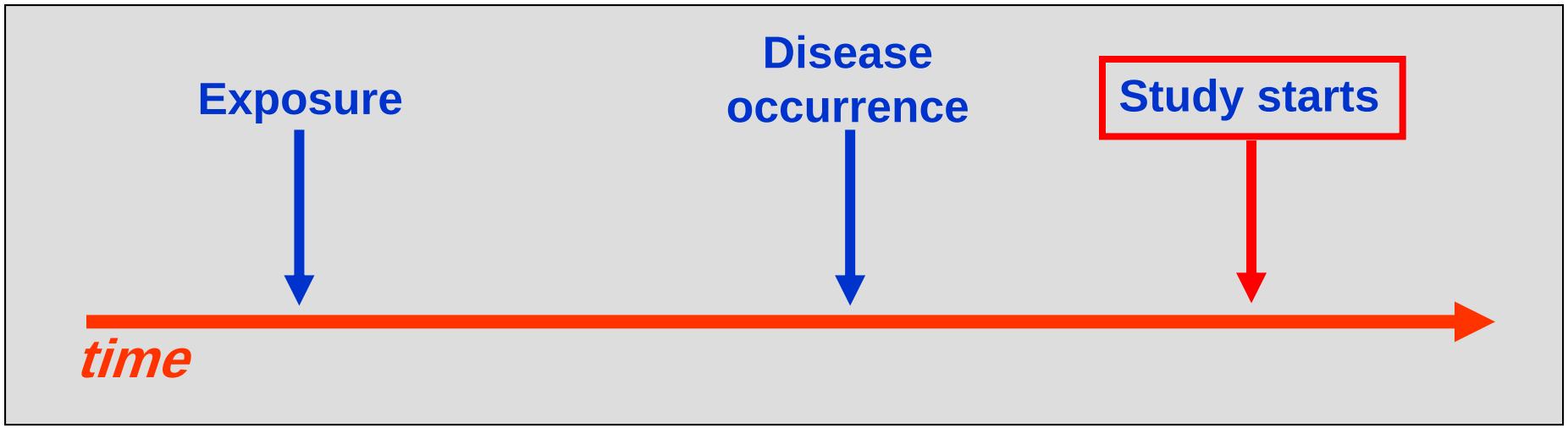
Prospective cohort study



Recipe: Cohort study

- Identify group of
  - exposed subjects
  - unexposed subjects
- Follow up for disease occurrence
- Measure incidence of disease
- Compare incidence between exposed and unexposed group

Retrospective cohort studies



Case study
Salmonella in Belfast

Case control study

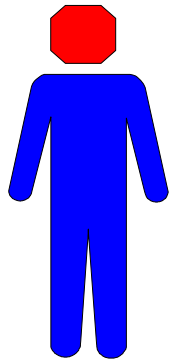
Exposure

?

?

Disease

Controls



Retrospective nature

Limitations of case-control studies

- Cannot compute directly relative risk
- Not suitable for rare exposure
- Temporal relationship exposure-disease difficult to establish
- Biases +++
  - control selection
  - recall biases when collecting data
- Loss of precision due to sampling

Advantages of case control studies

- Rare diseases
- Several exposures
- Long latency
- Rapidity
- Low cost
- Small sample size
- Available data
- No ethical problem

Disadvantages of cohort studies

- Large sample size
- Latency period
- Lost to follow
- Exposure can change
- Multiple exposure = difficult
- Ethical considerations
- Cost
- Time consuming

Strengths of cohort studies

- Can directly measure
  - incidence in exposed and unexposed groups
  - true relative risk
- Well suited for rare exposure
- Temporal relationship exposure-disease is clear
- Less subject to selection biases
  - outcome not known (prospective)