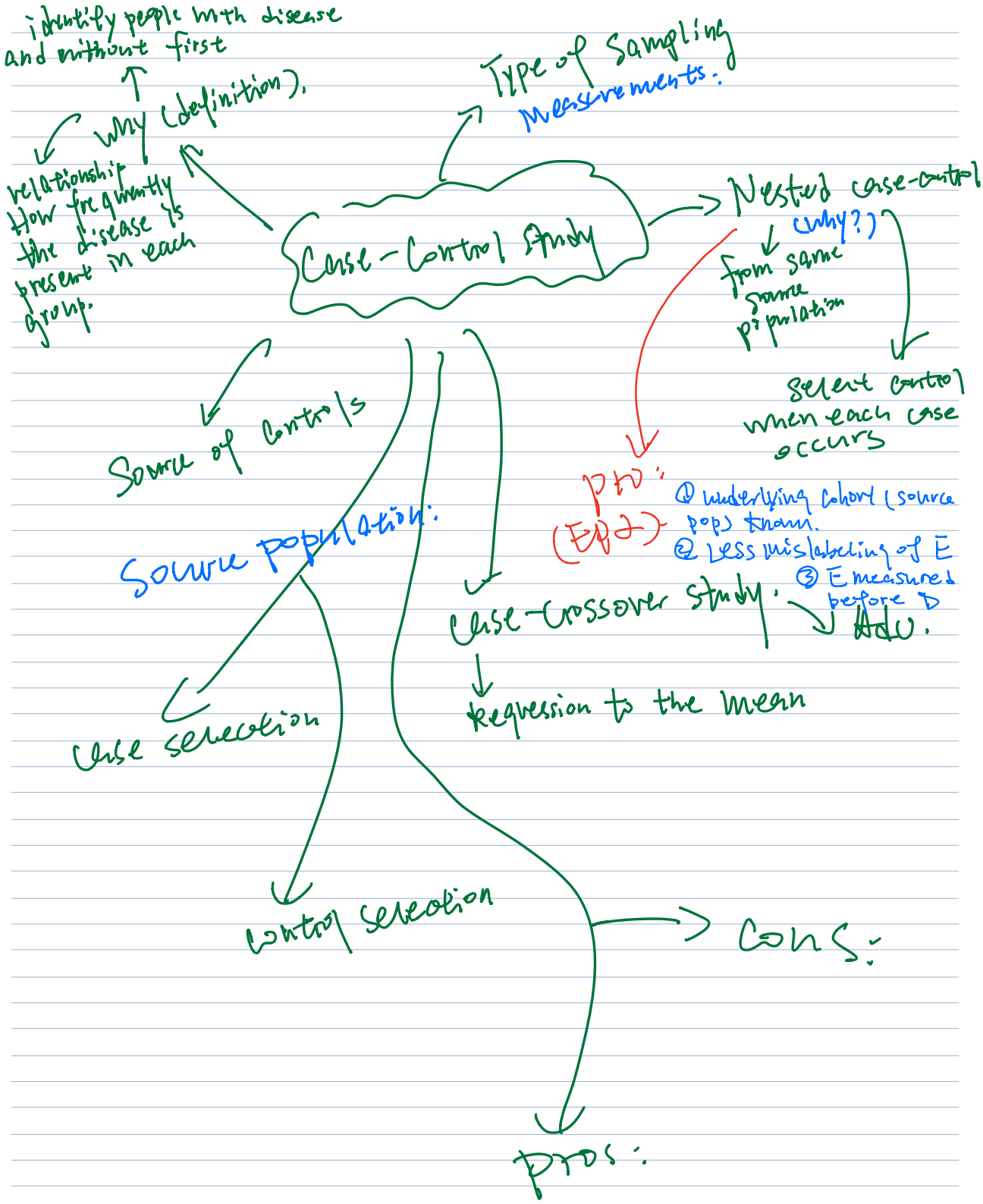

identify people with disease and without first
why (definition).
relationship
How frequently the disease is present in each group.
Type of sampling
measurements.
Case-Control Study
Nested case-control
(why?)
from same source population
select control when each case occurs
Source of controls
Source population:
pro:
(Ep2)
① underlying cohort (source pop) known.
② less mislabeling of E
③ E measured before D
Case-Crossover study.
Adv.
Case selection
Regression to the mean
Control selection
Cons:
pros:

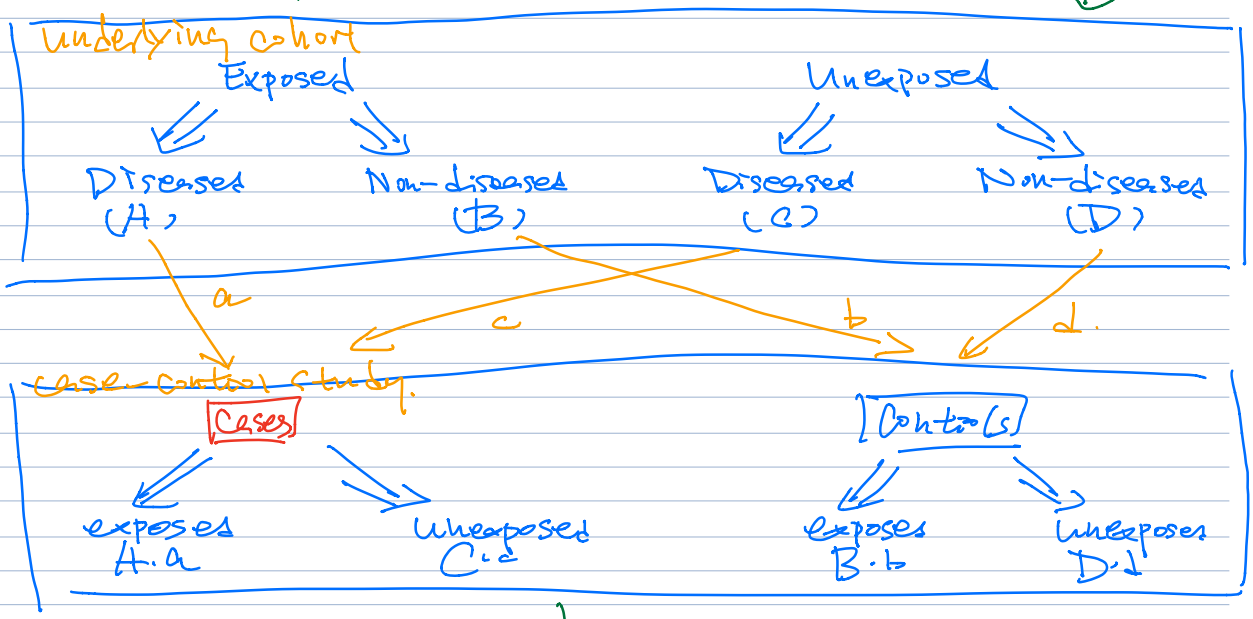
When will sampling from the cohort yield the same OR as in the full cohort?

↓

Remember loss-to-follow-up and OR?

↓

change type of attrition ⟹ type of sampling.



↓

Fixes cohort. End of study ascertainment.

Cohort OR = $\frac{AD}{BC}$. case-control OR = cohort OR $\frac{a}{c} \cdot \frac{d}{c}$

↓

selection odds

↓

Needs balanced odds

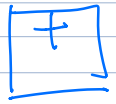
↙ ↘

$\frac{d}{b} > 1$ OR ↑ $\frac{d}{b} < 1$. OR ↓.

↓

Should select controls independent of exposure.

Source population clear?
(cases)



What is the source for hospital?
- referrals
- Locals
- Internationals

↓

select controls from that source

↙ friend controls Guide. (overmatch SES).

{
① Same source pop: controls are those if they got the disease would be cases in your study
② Same inclusion/exclusion for case/control
③ Same method for exposure assessment.
}

What happens if there is significant censoring in the underlying cohort?

↓ Case-Base sampling.
Risk Ratio
$= \frac{a}{c} \approx \frac{N_1}{N_0}$
(Regardless of rare disease assumption)

↓ Incidence-Density Sampling
Rate ratio
$= \frac{a}{c} \approx \frac{PT_1}{PT_0}$
(Regardless of rare disease assumption)

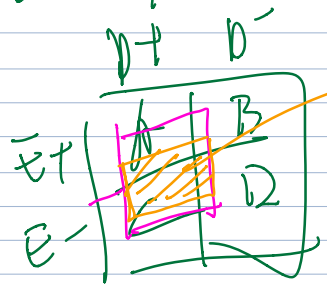
↑ Traditional: Cumulative Incidence sampling
$OR = \frac{ad}{bc}$.

Main source of invalidity:
- Caution: Any Bias in the underlying cohort will reflect in the case-control study
  - Recreate wrong source pop
  - create non-comparability in source.
    - Exposure Ascertainment (differential, misclassified) ↑ Recall bias. Interviewer bias Recording bias
    - Reverse Causation
  - cases: Surveillance Bias. Diagnostic Bias. Prevalence Bias.
    Prevalence cases are survivors. risk factor may be related to survival not

disease.

A Good case-control study depends on selecting controls from the right source population, independent of exposure and with measurement of the exposure that is the same for cases and controls.

Controls should be selected from the same population – the source population – that gives rise to the study case. Exposure distribution in controls should be representative of the exposure distribution in source population.



Nondifferential!

highly motivated healthy controls tend to participate ⟹ then the frequency of exposure in control group will be representative of the frequency in the base population.