Welcome

Understanding Research & Critical Appraisal

Part 2: Studies of Treatment Effectiveness

For everyone's sake, please be quiet!

Keep your phone on mute

until you are ready to ask questions.

How?

- **Press the "mute" button on your phone**
- **If your phone does not have a mute button, then press *6 to mute your phone, and *6 to un-mute.**

Studies of Treatment Effectiveness

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What We'll Cover

- Issues in designing a randomized controlled trial (RCT)
- Sources of bias
- The outcome

Setting the Scene

An investigator wants to do a study to look at the effectiveness of cognitive behaviour therapy (CBT) for the treatment of depressed patients.

Decisions to be Made

Investigators have to decide (explicitly or implicitly):

- What the question is
- Who is studied
- What research design to use
- What the outcome is
- How to analyze the data

Step 1: What Is The Question?

What's the Question?

- Is CBT better than:
  - A wait-list control?
  - Medication alone?
  - Psychotherapy?
  - Psychotherapy + medication?
  - Treatment as usual?

What's the Question?

- Is CBT equivalent to another therapy but:
  - Less expensive?
  - Longer lasting?
  - Faster acting?
  - More acceptable to the patients?

The Question

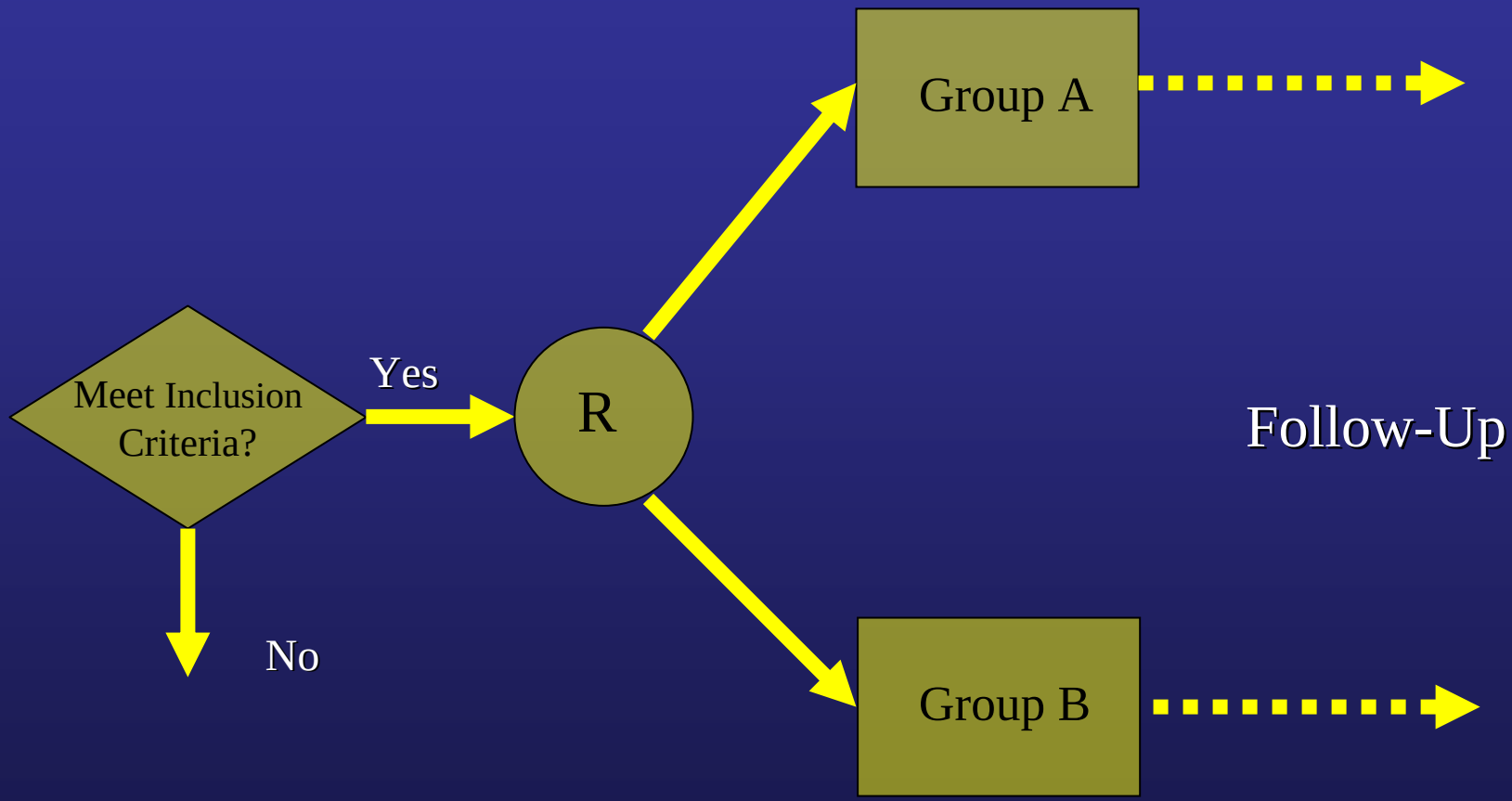
- No study can answer all questions
- Asking one question may preclude asking others.

Step 2: The Design

Design

It is generally agreed that, to study treatment effectiveness, the ideal study design is an RCT.

Design:



RCT Decisions

- Seems straightforward, but not all RCTs are alike.
- Major decision is between an *efficacy* study and an *effectiveness* study.

Efficacy and Effectiveness

- Efficacy – *can* the treatment work under ideal circumstances.

- Effectiveness – *does* the intervention work in the real world?

Efficacy and Effectiveness

Two ends of a continuum

Most studies are somewhere in between

Efficacy and Effectiveness

Keep this in mind; we'll keep coming back to it.

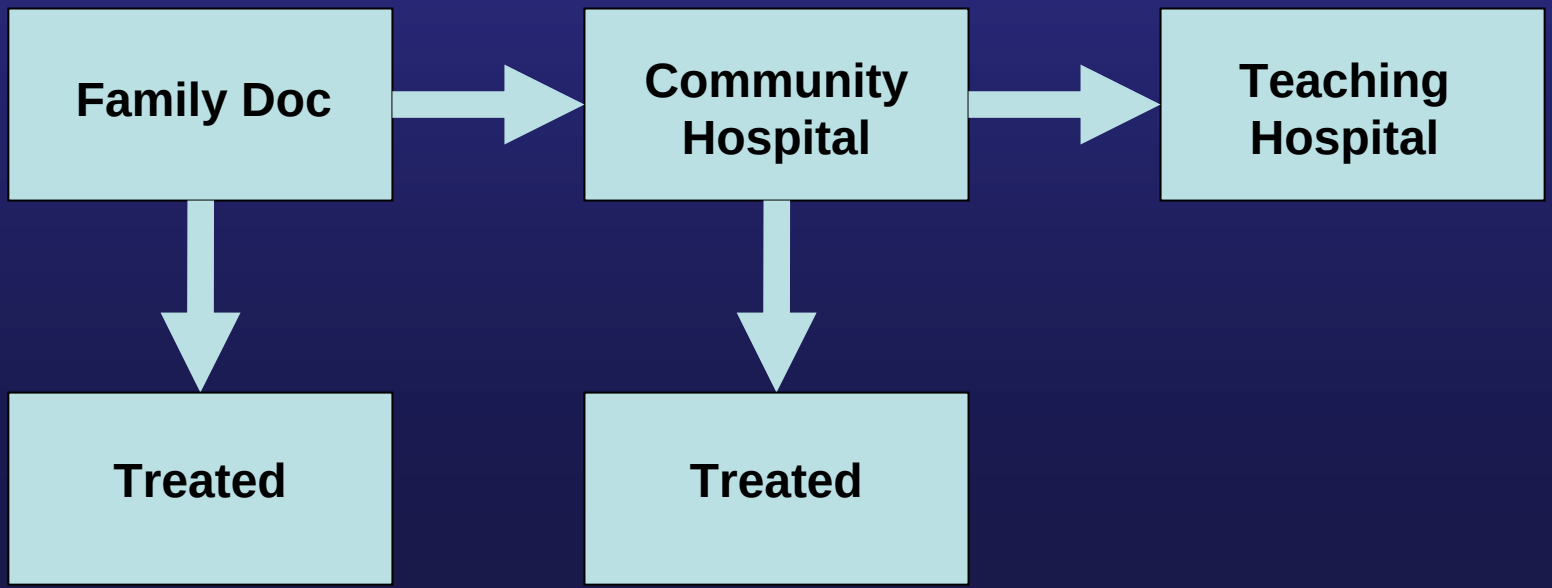
Step 3: Subjects

Who Gets Into Trials

- Possible biases
  - Referral filters

Referral Filters

- Where are studies done?
  - Tertiary care centres
- Who is seen at tertiary care centres?



Referral Filters

- Where are studies done?
  - Tertiary care centres
- Who is seen at tertiary care centres?
  - The most severe
  - The most unusual
  - The most intractable

Who Gets Into Trials

- Possible biases
  - Referral filters
  - Diagnostic access

Diagnostic Access

- Who gets most advanced work-ups?
  - Those in urban centres
  - Those with better insurance (in U.S.)
  - Those with more money (in U.S.)
  - Those with ‘connections’

Who Gets Into Trials

- Possible biases
  - Referral filters
  - Diagnostic access
  - Admission bias

Admission Bias

- A.k.a. Berkson's bias
- More likely to find disorder in people hospitalized for other reasons
- Increases prevalence of comorbidities

Who Gets Into Trials

- Possible biases
  - Referral filters
  - Diagnostic access
  - Admission bias
  - Volunteer bias

Volunteer Bias

- Volunteers more likely to be:
  - Non-smokers
  - Concerned about health matters
  - More highly educated
  - Employed in professional and skilled jobs
  - Married
  - Protestant or Jewish
  - Active in community affairs

Who Gets Into Trials

- Possible biases
  - Referral filters
  - Diagnostic access
  - Admission bias
  - Volunteer bias
  - Patient preferences

Patient Preferences

- Patients have preferences for treatment:
  - Less invasive vs. more invasive
    - Usually prefer less invasive (e.g., drug vs. surgery, therapy vs. drug)
    - But, more invasive if condition is severe
  - Previous experience
- May not volunteer if concerned they may not get treatment of choice

Who Is Studied?

- What criteria for depression?
- Any age limits?
- Are co-morbid disorders excluded (e.g., substance abuse)?
- Can they be actively suicidal?
- Can patients have had previous treatment?
- What about medications in past 8 weeks?

Inclusion/Exclusion Criteria

- Let us know exactly who was studied
- Make the study more efficient
- Make the results easier to interpret
- *But:*
- Limit generalizability of results
- Make patients less like yours

Inclusion and Exclusion Criteria

- Efficacy
  - Diagnoses as pure as possible
  - Patients meet all criteria
  - No comorbidities
  - No concurrent therapy
  - Exclude placebo responders
  - Exclude non-compliers
  - Homogeneous group
  - Small within-group variance
- Effectiveness
  - Anyone for whom therapy may work
  - May not meet all criteria
  - Comorbidities allowed
  - May be cointervention
  - Heterogeneous group
  - Larger within-group variance

Step 4: The Treatment

Treatment

- Efficacy
  - Highly experienced therapists
  - Special training
  - Manualized treatment
  - Therapists checked for adherence
  - Patients' blood levels checked often
  - Telephone reminders of appointments
  - Low-volume centres dropped from study
- Effectiveness
  - Typical therapists
  - No extra training
  - More flexibility in what they do
  - Can mix therapies
  - Little monitoring

Issues With Patients

1. Retention
   - Patients must remain in treatment for an extended time
   - Drop-outs jeopardize validity of the study
2. How to maintain contact
   - Calls
   - Birthday / holiday cards
   - Newsletters
3. Problems:
   - May be an intervention in its own right

Step 5: Outcomes

What Is the Outcome?

- Number of hospitalizations?
- Time in hospital?
- Suicidal attempts?
- Diagnosis?
- Scores on a scale of depression?

Outcomes

- Many of these outcomes may present problems:
  - Number of hospitalizations, number of suicide attempts, days in hospital – data highly skewed.
  - Change in diagnosis – it's binary; need much larger sample size
  - Change on a scale – it's a surrogate measure; it's not what we're interested in

Conclusions

- RCTs are the gold standard for looking at effectiveness or efficacy of treatments
- They are definitely not fool-proof (or idiot proof)
- At times, resemble pyrites rather than gold
- They are not a substitute for critical analysis

Thank you

Please complete an evaluation of today's session. Open the following URL in your browser.

https://www.surveymonkey.com/s.aspx?sm=Iyevj4XLeaXnjdD6cCvdaA_3d_3d

And don't forget, next session:

Part 3: Understanding Bias,

Nov. 27/07 10-11 am