Roadmap to completing your residency research project (from a non-researcher)

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Steps to a residency research project

1. Find a supervisor
2. Formulate a question
3. Complete a literature search

**These first three pieces are done in varying orders depending on the process

4. Submit a research ethics board (REB) application which will include your project plan
5. Lay out resources
6. Build a realistic timeline
7. Execute the project: data collection and analysis
8. Report the findings and conclusions of the project

Finding a supervisor

Meet with different researchers that do research in topics that interest you.

Choosing a supervisor with resources such as statistical support, administrative support, or funding allows for you to take on a more resource intensive project

Some researchers will have a small project or an idea they are looking for assistance with.

If you already have your own project idea, look for a supervisor who does research either:

- In the same field
- With the same methods

Lay out ahead of time the goal of the project: Publication? Conference presentation?

Formulate a question

Population, patient, problem

Intervention (controlled) **or exposure** (not controlled)

Comparison or control

Outcome

Source: The Centre for Evidence-Based Medicine - https://www.cebm.ox.ac.uk/resources/ebm-tools/asking-focused-questions

Complete a literature search

Has the question already been asked?

If the question has been asked:

- Has it been answered well?
- Does the current answer apply to your setting/population?
- If it has not been answered, is there some literature to help build a foundation for why it is important?

Tools:

- University online library
- PubMed
- Medline
- UpToDate

Preparing your REB Application

Background

Objectives

Methods

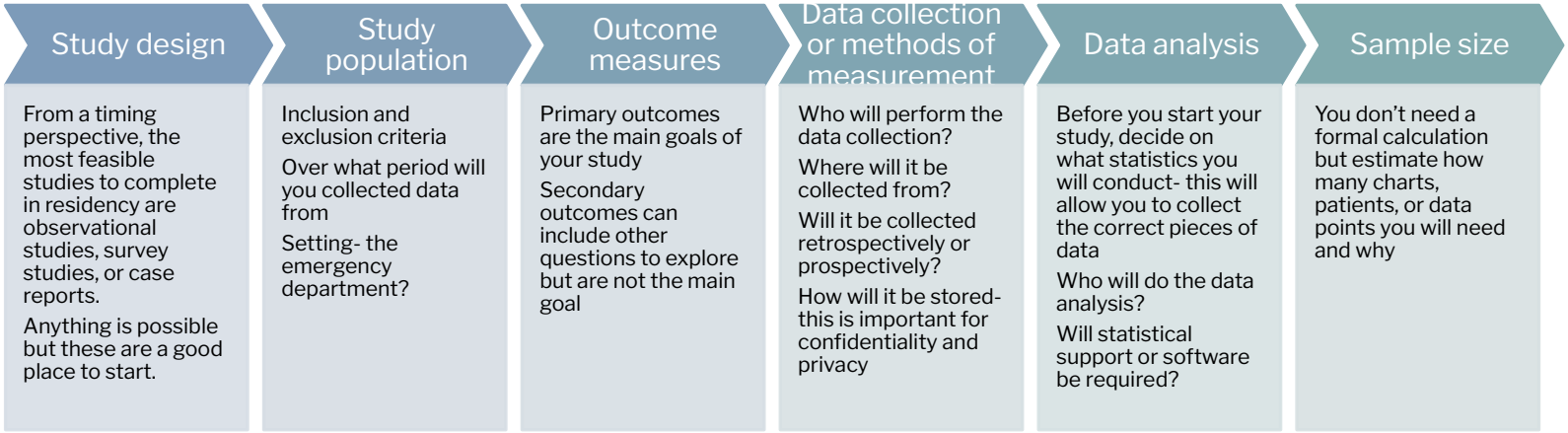
Consent process

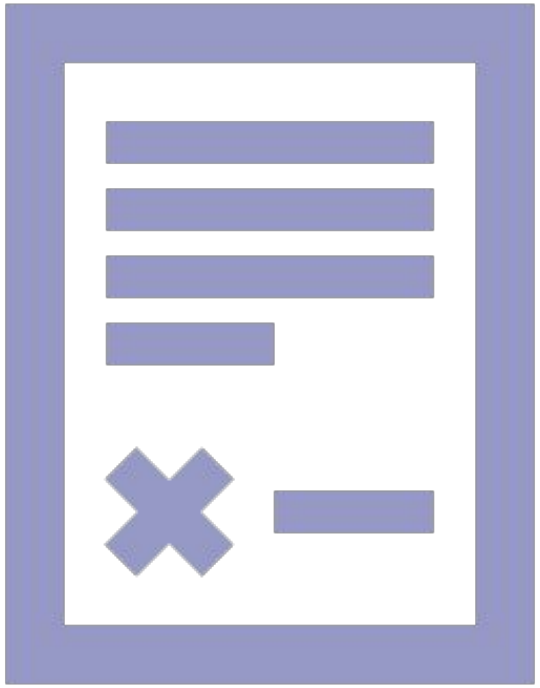
REB: Objectives

What is the main goal of the study?

- Clear
- Measurable
- Specific
- Simple

REB: Methods


Study design
From a timing perspective, the most feasible studies to complete in residency are observational studies, survey studies, or case reports.
Anything is possible but these are a good place to start.
Study population
Inclusion and exclusion criteria
Over what period will you collected data from
Setting- the emergency department?
Outcome measures
Primary outcomes are the main goals of your study
Secondary outcomes can include other questions to explore but are not the main goal
Data collection or methods of measurement
Who will perform the data collection?
Where will it be collected from?
Will it be collected retrospectively or prospectively?
How will it be stored- this is important for confidentiality and privacy
Data analysis
Before you start your study, decide on what statistics you will conduct- this will allow you to collect the correct pieces of data
Who will do the data analysis?
Will statistical support or software be required?
Sample size
You don't need a formal calculation but estimate how many charts, patients, or data points you will need and why



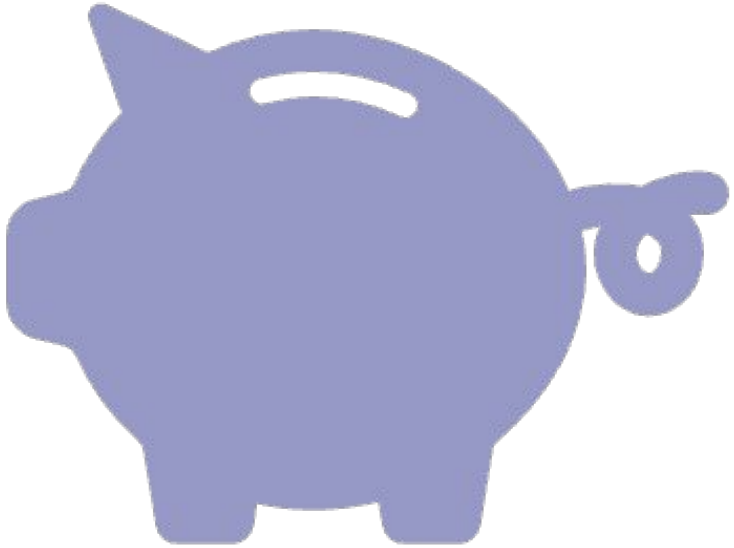
REB: Consent process

General consent principles:

- Voluntary
- Informed
- Ongoing process

There are consent form templates available on via the Government of Canada

More info re: consent in research can be found here



Resources

Budget

Personnel

Funding/grants

Administrative

Timeline

Make a timeline of each step of the project

Remember: EVERYTHING takes double the time you think it should take

Mark out the parts of the project that are dependent on factors you cannot control. For example:

Other people assisting you
Time for grants/applications/REB to be returned to you

If you are collecting data prospectively estimate how long that will take based on past charts that fit your inclusion criteria

Mark out big life events or busy times in your schedule where you will not be able to do as much on the project

Execute the project

Data collection

- After a small proportion of data is collected (ex. 10%) review the data to identify:
  - Misinterpretations of the planned data collection
  - Challenges with data that is missing
  - Areas for improvement

Data Analysis

- Having a plan ahead of time will make execution straightforward

Report your findings

Choose the journal or conference you plan to present at AHEAD of writing the abstract/paper

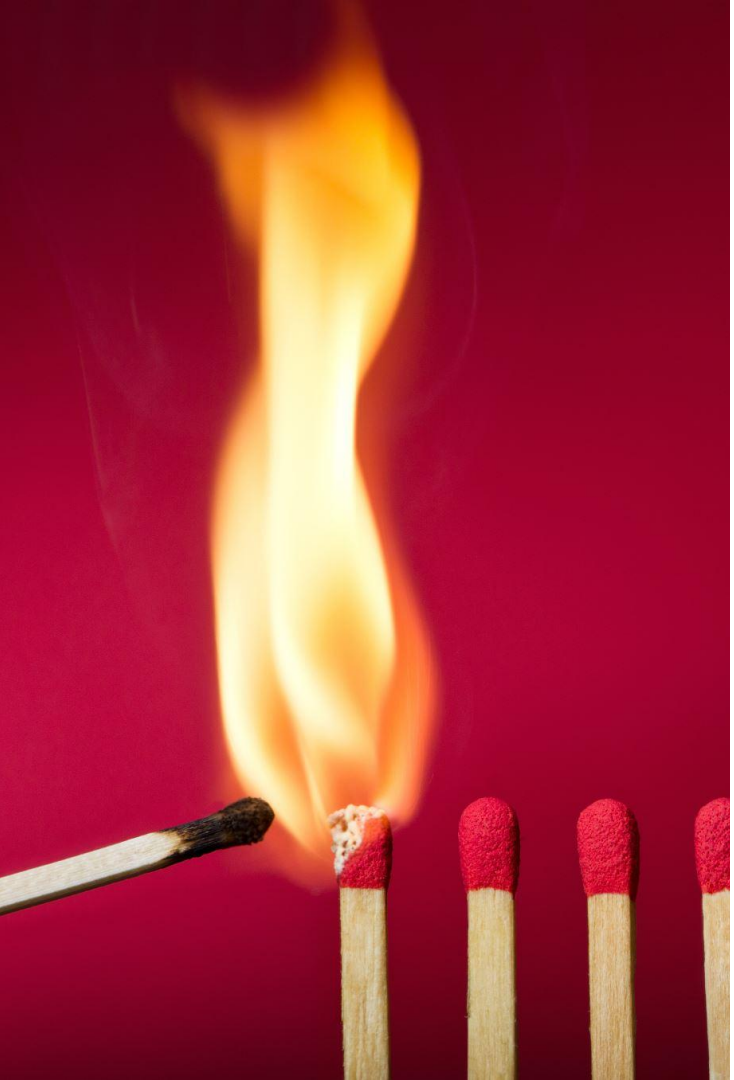
Aim for a higher/more prestigious journal that you expect

Use your literature search to form the introduction

Methods can be in a similar way to the REB

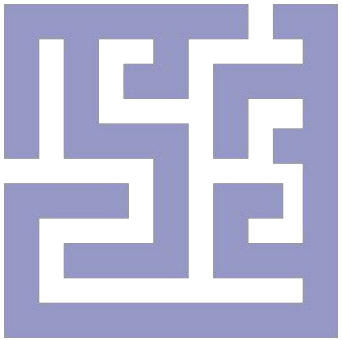
Incorporate graphics

Include limitations/future directions in the discussion



Hot Tips

SIMPLE PROJECTS = GOOD PROJECTS



Often the easier a project is to understand, collect data on, and analyze- the greater the impact the results have.

Complexity does not equal better.

Think about simple projects/simple questions around your department/clinical practice to inspire you.

USE DATA WE ALREADY COLLECT

Using data that is already collected day to day will save a lot of effort.

For example:

- Vital signs
- Discharge diagnosis
- Times
- Medications administered

DO NOT BE DISCOURAGED BY REJECTION

Many manuscripts require several submissions before they are ultimately accepted! This is a normal part of research.

If you received a rejection, put it away initially. Then go back and read the comments a few days later- you will be able to appreciate the feedback more once out of the initial window.

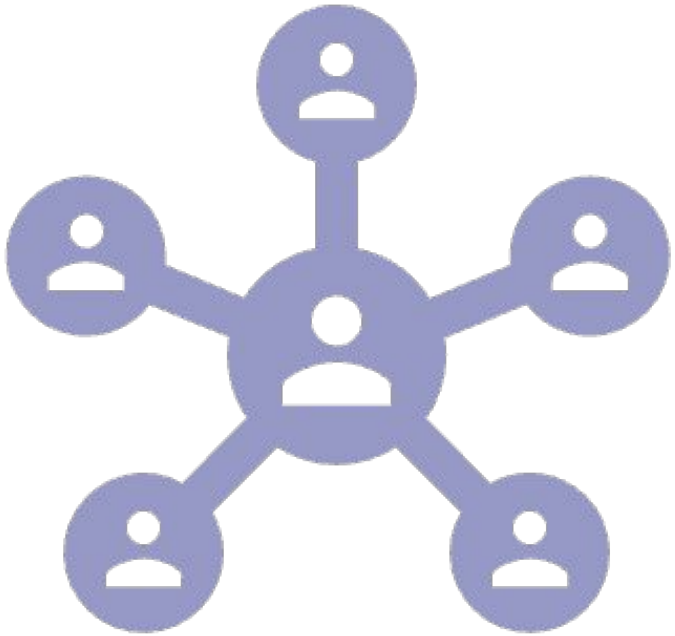
CHOOSING A SUPERVISOR IS VERY IMPORTANT

Make sure you click with your supervisor from a project perspective but ALSO

- Make sure you are on the same page about the timeline
- Make sure you are on the same page about your future goals

Agree on authorship order ahead of time, not after the paper is written

It is easier to work with a colleague who works/thinks similarly to you



COLLABORATE WITH COLLEAGUES

Work with your peers on their projects and vice versa – everyone will benefit and it spreads out the labor