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How To Do Research

From Idea To Abstract

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Disclosures

- None

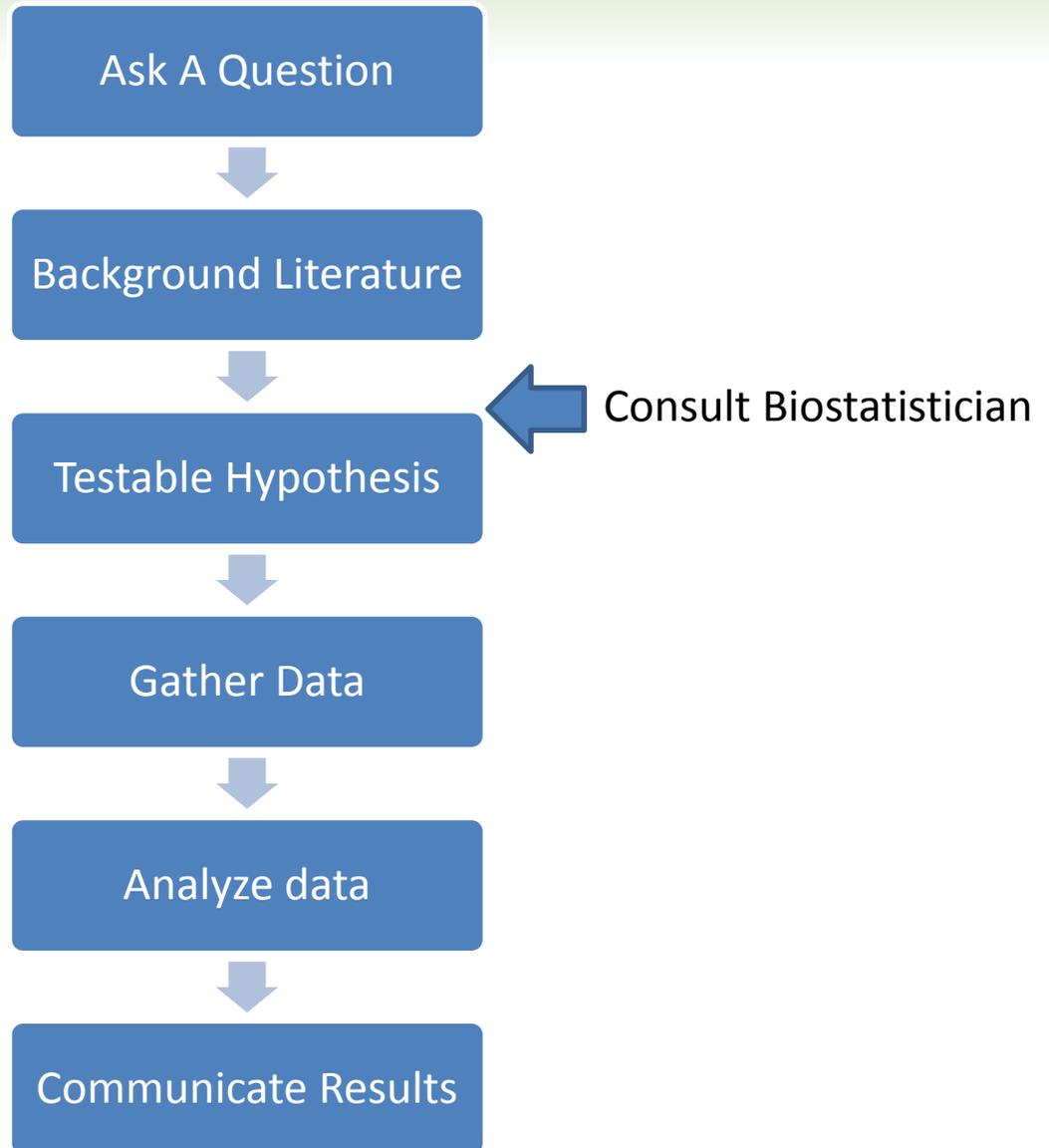


Outline

- Scientific Method
- Study Design
- IRB Protocol
- Writing an Abstract
- Making a Poster
- Other useful information



Scientific Method



Scientific Method- Question



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- Idea stage
- Culture of research
- Freedom to ask questions
- Forums to answer questions
- Consult the literature



Scientific Method- Literature



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- PubMed, Google Scholar, Medical Librarians
- Narrow the focus
- What is has and has not been answered



Scientific Method- Testable Hypothesis



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- Idea to testable research hypothesis
 - Null Hypothesis: implies no difference between groups, or the current state
 - Alternative Hypothesis: assertion that some difference or effect exists between groups

Scientific Method- Study Design



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- How will you answer your question
 - What study design is needed?
- Retrospective or prospective
- Observational or experimental
- Dependent on
 - Research support
 - Logistics
 - Cost



Study Design

- Goals of study design
 - Clearly plan out before beginning
 - How will data be obtained
 - Statistical analysis plan
- If meeting abstract deadline is the goal
 - Start from that deadline and work backwards
 - Make reasonable assumptions about IRB process and data collection
 - Abstract draft can be started prior to final results



Study Design

- Case Study
 - Unique event
- Case Series
- Case-Control
 - Two groups, one with an outcome one without, retrospectively analyzed
- Cohort
 - Longitudinal analysis of a group of subjects
 - Retrospective or prospective





Study Design

- Cohort Study
 - Prospective or retrospective
 - Defined population sharing some characteristic or attribute
 - Estimates risk of disease, incidence rate and relative risk
 - Prospective cohort studies can be used to discover causal relations
 - Cannot determine causality (need experimental trail)



Study Design

- Experimental
 - Pilot Study: small sample 10-20 subjects
 - Determines ease of conducting a larger study
 - Allows for sample size estimation
 - Necessary without any prior data
- Randomized Controlled Trial
 - Subjects are assigned to a specific treatment
 - Clearly defined inclusion/exclusion criteria
 - Design
 - Parallel- each group receives different treatments
 - Crossover- each group receives sequences of different treatments over time
 - Subjects can serve as their own controls
 - Cluster- groups of subjects are randomized



Study Design

- Meta-Analysis
 - Study question
 - Primary and secondary research hypotheses
 - Protocolize study selection
 - Literature search
 - Study Selection
 - Tests of heterogeneity
 - Analysis
 - Fixed/ Random/Mixed Effects models



Study Design-Survey

- Best to use validated survey
 - Ask authors permission
- If creating your own
 - Determine the audience
 - Avoid bias
 - Allow adequate time
 - Have someone unrelated to the study test the survey



Research Protocol

- Assemble
 - Literature
 - Research hypothesis
 - Study design
- Need to add
 - Title
 - Investigators
 - Purpose
 - Dates of data collection

Study Protocol

Date:

Study Title:

Principal Investigator (PI):

Co-Investigators (Co-I)

Introduction:

Purpose:

Study Design:

Methods:

References (if applicable):

Literature Review:

Institutional Review Board



- Serves to protect the rights and welfare of human participants as subjects in research
- Members
 - Scientific, MD/PharmD/PhD
 - Non-Scientific
 - Community member
- IRB is your friend
 - Protect you as a researcher just as much as the human subjects

Scientific Method- Data

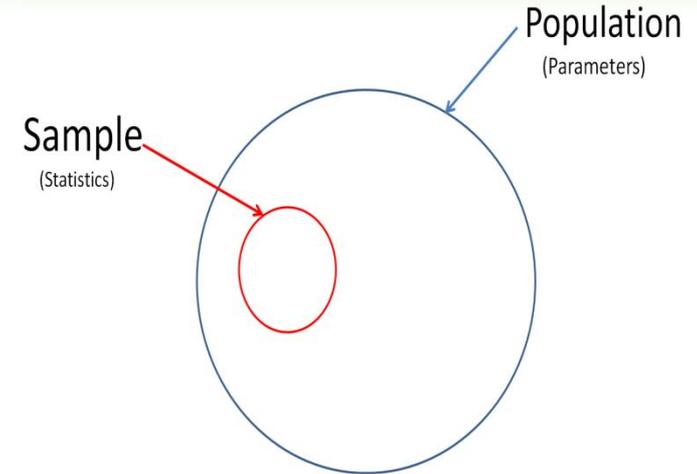


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- Electronic Data from medical records
- Survey
 - Validated tool's are preferred
 - Un-validated, self written survey's can also work
- Chart Review
 - Requires people and time

Scientific Method- Data

- Inclusion Exclusion Criteria
- Sampling
 - Reduce Bias
 - Convenience Sample, based on available data
 - Select appropriate controls or comparative group



Scientific Method- Analysis

- Conduct tests to directly answer the research hypothesis
- Follow your protocol
- Understand clinical vs. statistical significance
- It is ok to analyze the data multiple ways
 - Most retrospective studies are underpowered
 - Don't P-hack





Abstract

- All meetings outline the criteria and structure of abstracts
 - Assemble required information from protocol and results
- Have all co-investigators read and approve
- Try not to wait till the last minute



Things to consider

- At this point
 - The study is complete, ideally
 - You know what you did, methods
 - You have results
 - You're waiting to hear back
- ...So why not draft a manuscript



Things to consider

- If your abstract gets accepted
 - Poster or Podium
 - Who will present?
 - Are accepted abstracts invited for manuscripts?
- If your abstract gets denied
 - Feedback?
 - Another meeting
 - Publish without attending meeting



Poster

- Use a template
- More figures, tables, and graphs, than words
- Fill in from the protocol and abstract

Click to edit Master title style
Subtitle

SECTION TITLE

- Use this poster as a guide:
- Be creative
- Delete, move and resize any items except the GHS Logo
- Do not spell out Greenville Health System in the title
- If you are representing GHS, the logo must be on the poster

SECTION TITLE

- Type text here
- Swap from 11% to larger and smaller views as needed to see all or individual sections of poster. Use the zoom tool to swap back and forth
- Change text size for body of poster. Do not use a font smaller than 24 other than for captions under pictures
- The text box will expand to fit as you enter information
- Copy text box to other locations on poster as needed
- Recolor and change attributes

SAVING YOUR POSTER

- Rename Poster
- Save to your hard drive frequently
- If there are scanned images or graphics, you may need to save to a thumb drive

SECTION TITLE

Sub Header

- ✓ List

Table Header	Table Header	Table Header
Data	Data	Data

Copy and paste images and text already in a PowerPoint presentation

SECTION TITLE

- Poster dimensions are 36" tall by 55" wide
- You can copy and paste from an existing presentation to the poster template or enter the information directly into the template
- Try for an even balance on your poster
- Use graphs and bar charts to represent data
- Do not download and use gif images from the internet. You could unknowingly infringe on a copyright.
- Scanned images should be in a jpeg format and of good quality
- If an image doesn't look good at 50%, it will only get worse when viewed at 100%

Contact: YourEmail@ghs.org



Podium Presentation

- Bullet Points, not paragraphs
- Don't read from the slides
- Have a script
- Practice Practice Practice



Now What?

- Write a manuscript for publication
- Use information gained for future work
- Repeat the process

Questions?



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