Writing a Research Protocol

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Goals of Presentation

- Importance of writing a research protocol when conducting a research study
- Types of research protocols with different formats
- Suggestions for writing a research protocol
- Example of a research protocol
What is a Research Protocol

A research protocol is a document that describes the background, rationale, objectives, design, methodology, statistical evaluation of the data, and organization of a clinical research project.
Need for Written Research Protocol

- forces the investigators to clarify their thoughts and to think about all aspects of the study—study conduct, analysis of the data

- guide for a team working on research—help ensure study is performed similarly by different people over time

- essential if study involves research on human subjects or on experimental animals, in order to get institution’s ethical approval

- essential component of a research proposal submitted for funding

- use to start writing a manuscript when study completed
Developing a Clinical Research Protocol

- Start with a good question - one for which the answer matters either to other researchers in the field, practicing clinicians, or patients.
- Convert the question to a hypothesis by asserting a position.
- Construct the protocol:
  - Generate measures of exposure (treatments) and outcome.
  - Test the hypothesis by making a comparison in two or more groups.
Developing a Clinical Research Protocol

- Develop a plan for data collection and management

- Determine the statistical methods for analysis, consult with statistician

- Estimate the magnitude of expected difference between the two groups, as a basis for determining sample size (power calculation)

- Assess feasibility of the study:
  - Can enough people be obtained for the study?
  - Can the outcome events be observed and suitably analyzed?
Research Protocol Format

- Project title
- Project summary
- Project description
  - Rationale
  - Objectives
  - Subjects to study: Inclusion/Exclusion criteria
  - Methodology
  - Data management and analysis
  - Sample size needed for the study
- Ethical considerations
  - Recruitment plans, Compensation
  - Risks, Benefits of the study
  - Informed Consent, Approvals (IRB)
- References
Project Title

- Should be descriptive of the study, but concise

- May need to be revised after completion of the writing of the protocol to reflect more closely the sense of the study
Project Summary (Abstract)

- The abstract should concisely summarize the elements of the protocol.

- The summary should stand on its own, and not refer the reader to points in the project description.

- Although present first in protocol, written last, being taken from the subsequent parts.
Project Rationale (Background and Significance)

- Sets the stage for why the research project should be done. Cite appropriate references.

- General Format:
  - The condition to be studied
  - Treatments currently available, note gaps present
  - Specific treatment to be studied
  - Preliminary data for treatment in the condition to be studied
  - Purpose of the study
Research Objectives (Aims)

- Briefly describe the broad objectives and specific aims of this study, including the hypotheses. Objectives should be simple, specific, and stated in advance of performing the research. E.g., To determine ....

- After statement of the primary objective, several secondary objectives may be mentioned

- List research hypotheses - written as statements of what you expect

- Types of Specific Aims
  - Hypothesis aim, based on scientific hypothesis to be tested
  - Exploratory aim seeks to obtain useful data about a specific question
Study Title: Use of Sancuso in patients with nausea and/or vomiting from gastroparesis

The hypotheses to be tested include:
1) Sancuso improves symptoms of gastroparesis
2) Symptoms of nausea and vomiting improve to a greater degree than abdominal pain
3) The beneficial response of Sancuso is seen in both diabetic and idiopathic gastroparesis
4) The symptom reduction occurs on the second day and continues throughout the treatment course
The aim of this study is to determine the efficacy of Sancuso patch in improving symptoms of nausea and vomiting in patients with gastroparesis.

The specific objectives of this study are:

1) To determine the treatment response of Sancuso in gastroparetic patients with nausea and/or vomiting - The percent of patients treated with Sancuso that have improved symptoms of nausea, vomiting.

2) To determine which specific symptoms of gastroparesis improve – nausea, vomiting, early satiety, abdominal distension, abdominal pain

3) To determine symptomatic responses in both diabetic and idiopathic gastroparesis

4) To determine the time course of symptom improvement with Sancuso for symptoms of gastroparesis
Research Design and Methodology

- **Research Design**
  - The choice of the design should be explained - how it will address study objectives
  - The research design, methods and procedures should help answer your research question(s) as written in your study objectives and aims

- **Research Subjects or Participants**
  - Inclusion/exclusion criteria
  - In intervention studies, how will subjects be allocated to the treatment and comparison groups?
  - What are the criteria for discontinuation?

- **Interventions**
  - If an intervention is performed, a description is given of the drugs or devices to be used, and whether they are already commercially available, or in phases of development

- **Observations**
  - What observations will be made, how they will be made, and how frequently will they be made

- **Sample size needed**
Data Management and Analysis

- Describe the statistical methods to be used for each study objective

- The protocol should provide information on what types of data will be obtained and how the data will be managed

- Describe plans for data and statistical analyses, including the timing of interim and subgroup analyses, as appropriate

- Describe which subjects will be included in the data analysis for each of your study objectives (e.g., all participants, all participants dosed, all evaluable participants, etc.)

- What criteria will be used to stop the study, if necessary?
Sample Size

- The protocol should provide information and justification on the sample size – the number of patients needed to be studied

  - A larger sample size than needed to test the research hypothesis increases the cost and duration of the study and will be unethical if it exposes human subjects to any potential unnecessary risk without additional benefit

  - A smaller sample size than needed can also be unethical if it exposes human subjects to risk with no benefit to scientific knowledge

- Calculation of sample size has been made easy by computer software programs. The principles underlying the estimation of the sample size should be well understood
Ethical considerations

- Risks, Benefits of the study
- Recruitment plans
  - Compensation for subjects in study
- Informed Consent, IBR Approval
Getting started on a Research Protocol

- Read and understand the instructions
  - IRB, pharmaceutical, society, NIH grant submission
- Know the timelines
  - Deadline for submission
- Know the format
  - Electronic/Paper
- Notify collaborators in advance
  - Letters, CV
- Frequent reviews and critiques by others
GI Research Project Proposal Presentations

- During the September and October months, our GI Research Conferences are devoted to hearing the projects of the second and third year GI fellows and the GI motility fellow.

- The presentation is 10 minutes long with 5 minutes for questions.

- Fellows go over their presentation with their research mentor prior to the presentation.

- General format for the power point slides:
  - Title of Project, your name, and name of Research Mentor: 1 slide
  - Background for project: 1-2 slides
  - Aims and Hypotheses: 1 slide
  - Methods for the project: 1-4 slides
  - What is hoped to be found in the data, importance of project: 1-2 slides