WRITING RESEARCH PROPOSAL

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WHY WRITE A RESEARCH PROPOSAL?

- ❑ Convince others that the project you have designed is important, worth the effort.
- ❑ Convince others that you have the ability to carry out the research design & report the findings
- ❑ Generate funds to sustain the research units operation
- ❑ Ethical committee approval !!

GETTING STARTED

- Writing a research proposal is both science & art
  - A good research proposal is based on scientific facts & on the art of clear communication
- Know your subject
  - reviewers will look for an up-to-date knowledge of research area
- Consult experts/ colleagues
  - do not be afraid to discuss

GOOD RESEARCH PROPOSAL

- Well prepared
  - contain sufficient important information:
    - ✓ *what you plan to accomplish?*
    - ✓ *why you want to do it?*
    - ✓ *how are you going to do it? – duration, equipment, budget etc.*
  - use of diagrams & tables
- Well structured
  - refer guideline – page, word & font size restrictions
- High scientific quality

STRUCTURE

- ✓ Title
- ✓ Abstract
- ✓ Introduction
- ✓ Background /Review of literature
- ✓ Methodology
- ✓ Time frame nd work schedule/Gantt chart
- ✓ Personnel needed / available
- ✓ Facilities needed / available
- ✓ Budget

STRUCTURE

- ✓ Title
- ✓ Abstract
- ✓ Introduction
  - ➢ background of study
  - ➢ problem statement
  - ➢ research questions
  - ➢ objectives - general & specific
  - ➢ definition of terms
- ✓ Review of literature
- ✓ Methodology
- ✓ Time frame and work schedule/Gantt chart
- ✓ Personnel needed / available
- ✓ Facilities needed / available
- ✓ Budget

TITLE

- first impression is important !
  - an effective title not only pricks the reviewer's interest, but also predisposes him/her favorably towards the proposal.
- concise & clear
  - avoid ambiguous or confusing word
  - focused, highlighting the main ideas
  - often stated in terms of functional relationship – indicate the independent & dependent variables

ABSTRACT

- It is a brief concise summary of the WHOLE project.
- It is the first impression a reviewer gets of an application worth!
- It should include :
  - unique and creative idea
  - research question
  - rationale for the study
  - hypothesis (if any)
  - methods
- Tips:
  - Do not include unnecessary detail
  - make each phrase count.
  - Write and rewrite and refine the abstract to maximize clarity.
  - Give it to lots of peers to read

INTRODUCTION

- Introduce the problem proposed to be studied (short 1-2 pages)
- It should help the reader to acquaint with the topic
- The problem should be stated in such a way that it's importance & relevance is realized by any one who reads it

Background

- Brief description of the proposed study.
- What has already been accomplished in the field? Provide preliminary data, if any.
- What relevant work has been done by the investigators (or others) to indicate the expected productivity of the proposal?

Problem statement

- What is the rationale behind the study?
- Why is it worth doing? (justification)
- What gaps would the study fill in the area of investigation?

Objectives

- General & specific objectives (what you hope to accomplish)
- Research questions
- Operational definitions

Conceptual framework

OBJECTIVES/AIMS

- This is the most important section of the proposal.
- Must be :
  - S – specific (states as clearly and as specifically as possible)
  - M – measurable
  - A – achievable
  - R – realistic (not overly ambitious)
  - T – time frame

OBJECTIVES

Primary:

1. To compare recurrence-free survival in patients with cancer Y on drug X compared to standard treatment.
2. To estimate the sensitivity of a new minimally invasive approach for detecting cancer.
3. To investigate whether presence of genetic variant X is associated with Parkinson's disease.
4. To investigate whether a new type of TKA surgery leads to shorter operating times

Secondary:

1. 1. To compare drug X to standard treatment. Quality of Life as measured by the Short-Form 36 at 3m after start of treatment.
2. 2. To compare the proportions of patients experiencing at least one of the following side effects.

LITERATURE REVIEW

- The literature review serves several important functions:
  - ✓ Demonstrates your knowledge of the research problem.
  - ✓ Shows your ability to critically evaluate relevant literature information.
  - ✓ Ensures that you are not "reinventing the wheel".
  - ✓ Gives credits to those who have laid the groundwork for your research.
  - ✓ Convinces your reader that your proposed research will make a significant and substantial contribution to the literature (i.e., resolving an important theoretical issue or filling a major gap in the literature).

Acetylcholine: It is a neurotransmitter of crucial importance in the central nervous system may also be involved in ischaemic injury that can be studied. It is a marker of atheresclorotic plaque destabilization. The concentrations of both precursors of acetylcholine, choline and acetylcoenzyme

Previous researches on stroke biomarkers: For decades endeavours are made to identify biomarker by researches all over the world. A systematic analysis published recently revealed 21 studies testing 58 single biomarkers and 7 panels of several biomarkers. The se studies demonstrated either a high sensitivity or specificity, but the author declared that there were limitations in the design and reporting. Implying that no biomarkers can be recommended for use in clinical scenario. Among them NMDA -R antibody was focused by Dambinova et al. They found ischaemic stroke (IS) patients had higher NMDA -R antibody if it was of atherothombotic origin. Test sensitivity and specificity for diagnosing IS within 3 hours of symptom onset was 97% and 98%. However, high NMDA-R autoantibody concentrations were found in persons without stroke

METHODOLOGY

- shows the plan to tackle the research problem.
- should provide the work plan & describe the activities necessary for the completion of your project.
- Includes:
  - Study design
  - Population & sample
    - Inclusion & exclusion criteria
    - Sample size
    - Sampling method
  - Data collection procedures
  - Consent form
  - Research tool/instruments – questionnaire, CT scan
  - Statistical analysis
  - Ethical consideration

GANTT CHART (TIME SCHEDULE)

10. Work Plan (Time schedule)

No	Task	MONTHS																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1.	Submission of study protocol for IRB in each center	√																							
2.	Prepare a consent form	√																							
3.	Design a Case Report Form (CRF)	√	√																						
4.	Create an electronic database	√	√																						
5.	Coordinate with each center	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√				
6.	Educate the ER physicians	√	√				√				√				√				√				√		
7.	Purchase biomarkers	√						√				√					√								
8.	Budget accounting	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
9.	Blood collection			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
10.	F/U of discharged stroke patients (30, 90 day)			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
11.	Monitoring of CRF			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
12.	Review of log books for any missed cases			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
13.	Review of all charts by neurologists			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
14.	Biomarker evaluation			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
15.	Arranging meeting with the Co-PI's	√	√	√	√	√	√		√		√		√		√		√		√		√	√	√	√	√
16.	Statistical Analysis									√				√		√			√			√	√	√	
17.	Manuscripts														√		√		√		√	√	√	√	√
18.	Attending conferences																		√					√	√
19.	Concluding meeting																								√

REFERENCES

- A numbered list of complete references, in order of appearance, should be included (refer guideline)

IMPORTANT TIPS

- Have someone else proofread it.
- Have a third person critically read it *(need to have experience)*

SUMMARY

- Study design and protocol development is a highly individualized process
- Extensive discussion is often necessary to develop a strong design and analysis plan
- Involve the statistician early in the process

PROTOCOL DEVELOPMENT ALGORITHM

- State research objectives
- Define Methods
- Consult Statistician
- Define Variables
- Develop Data Collection Forms
- Develop Consent Form
- Develop Draft Budget
- Submit for IRB/Funding

"There is no way to get experience except through experience."