An Online Research Methods Course for Pediatric Emergency Medicine

Module 10: Refining Grant Writing - or "Finally, your time has come!"

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Objective

To understand how to put together the actual grant proposal so that the funding agency will not be able to refuse you.

At the end of this module, the participant will be able to:

- Complete a Letter of Intent and complete an application for a funding agency
- Recognize the different formats for grant proposals required by different agencies
- Understand each of the steps required to write the final research proposal in the format dictated by the agency
- Summarize succinctly in one page or less the whole project in language that can be understood by a lay person
- Write the expanded scientific proposal in 12 pages or less
- Lay out the budget in a clear and articulate way, justifying each of the monies requested
- Complete the application by adding appropriate curriculum vitaes, references, and other pertinent information required by each agency

Background

Granting agencies such Canadian Institutes of Health Research (CIHR), Vancouver Foundation (BCMSF), and the US National Institutes of Health (NIH) now have a two stage system for applying for grants. The first is a Letter of Intent/Inquiry (LOI) to give the agency a chance to look at your idea to see if it fits with their funding mandate and whether the budget is within the limits the agency set. If the answer to the LOI is positive, you then have a few weeks to complete the full proposal for submission.

The Letter of Intent is very important since it is your first attempt to pique the interest of the agency. If it does then you will asked to send the full proposal. The actual writing of the full grant proposal is onerous, not because it is difficult to write but because it is almost impossible to get all the information you feel the agency reviewer needs to know in 12 pages or less (the usual length of a proposal) and still keep the reviewer's interest. That 12 pages has to contain the scientific background for the study, the literature review of work to date, the rationale, the aims and objectives, design, methods, analysis, ethical issues, limitations and relevance of the study. However, the onus of writing a good proposal pales in comparison to pulling together all the administrative documents required by most agencies. You are warned, but you will be guided through the different steps as the module progresses.

Strategy for the module

Interactive Session: Sections ? to ? outline each of the steps required to produce a complete grant proposal from the LOI to the final administrative dotted "i" and crossed "t".

Assignment: To demonstrate that you can follow the steps needed, you are asked to take all the information that you have produced in the earlier modules and put them together in a proposal to be submitted to the Vancouver Foundation (PSI, CIHR, etc… - whichever you choose), from the LOI to the complete package. You are excused from completing the last detailed administrative sections unless you are serious about submitting. Then it would be to your advantage to complete the submission and have it reviewed internally before sending it off.

Discussion: During the module, there will be good and bad examples of grant proposals, altered to protect the guilty. You are asked to look at these and decide which is which.

Evaluation: Your final submission package will be reviewed by the mentors and constructive comments provided.

Interactive Session – Steps in completing a grant submission

Step 1 – Decide on the Funding Agency

Not all agencies will be interested in your topic. If you want to find out which ones are, go to the B.C. Research Institute site on the WEB

http://fundingopps2.cos.com

if you need help. On that site, click on Research Support and then funding opportunites. Some agency web sites are easier to understand than others. CIHR is complicated--if this is your first attempt at asking for money, you don't want to go to CIHR.

Try Vancouver Foundation first. Go to:

http://www.vancouverfoundation.bc.ca/GrantInformation/loiapp.asp

Then click on "Health Research" in the banner. There you will find what is eligible and ineligible. Download the Funding Guidelines for details of what is needed in the LOI and then click on the icon and see what the application looks like. Now try the BC Lung Association:

http://www.bc.lung.ca/

and then click on research grant Applications. Here you will get the basic information needed and then details of the full proposal.

Step 2 – Complete the LOI

As you read the Vancouver Foundation information, you will see that the LOI has to be submitted 6-8 weeks prior to the grant deadline. If you are looking to submit, then make sure that you have at least 2 months leeway prior to the deadlines in January, April and September. Now go to the "Submit Letter of Inquiry "and click. You will find a top form that needs to be completed to be added to your letter.

For the letter, you should put the names of the investigators at the top, with addresses. Then one format follows: Use the headings as a guide to what will be needed. Remember that this is a letter so one to 2 pages is all you need.

Introduction	What is the problem that you wish to study **in brief** with background references This is much more succinct than it would be in a full proposal
Specific Objectives and Hypotheses if relevant	Specify the questions you hope to answer. This can be one or many. One is better!
Design	A simple one sentence description of type of study
Methods	A brief summary of how the study will be conducted. You don't have to detail lab investigations or measures to be used here. That comes later.
Sample Size	Approximate size of the study. You need that anyway for the budget
Timeline	How long you think the study will take without details
Significance of Study	Why you think the study is important for health care
Feasibility	Indicate that you know that you will have sufficient subjects in your center or centers
Budget	Give a tentative budget. Details are helpful if you have tentative estimates

Examples are available in the Extra Resources section.

Now try to develop a LOI for your study

Step 3 - Start on the Full Submission

FIRST task. Get the guidelines for the full proposal from the agency – usually through the WEB site but occasionally from the agency once your LOI has been accepted.

FOLLOW THESE GUIDELINES CAREFULLY. If they say 12 point type, do not try to use 11 or 10. If the guideline says 1 inch margins all around, do not try to make it 0.9 or 0.5 to cram in more written material. It will be noticed and you will irritate the reviewers.

Follow the format suggested. If the administrative forms ask for **ethics** approval, either send a copy of the certificate if you have it or tick that it has been applied for and then remember to send it to the agency. If you are funded, you will not receive any money until the ethics approval is received.

Make sure all signatures asked for are obtained. If you need the Head of Department signature, find out what system is in place to get that signature. DO NOT arrive in the Head's office two hours before deadline. Remember that you are asking someone to sign who may ultimately be held responsible for anything that goes wrong. He or she needs time. If you are asked for the signature of the Head of the Organization, that can mean the Associate Dean on site and a system is in place to obtain that signature. Find out from your mentors or go back to the Research Institute.

Now complete the administrative forms for the agency that interests you. (if you are not submitting, you don't need to get the signatures)

Step 4 – Summary of Research proposal

Most of the agencies require a one page summary of your research proposal. Keep this in simple language since this summary could be used for a lay audience. Don't forget to include the objective, hypothesis (if there is one) and the research plan. Budget and timeline are not needed here.

Now try to complete the one page summary

Step 5 – Summary of Progress

For a new proposal, you can leave this page blank. If you are asking for a further year or more, then the agency wants to know how much progress has been made. However, even if this is a new project, it is possible to use this page to tell the agency about the research you have done in the area of the proposal prior to submitting this grant request. This gives the reviewers the confidence that you know what you are talking about

Step 6 – Full Proposal (12 pages or less)

Now the fun starts. Again, keep in mind the guidelines about the size of font and width of margins.

Using the outline for a research proposal shown in Module 1 (Refining a Research Question), use the headings to ensure that you have included everything.

Abstract or Research Summary	You have that from 3.4 above
Research Question - Specific Aims - Hypotheses	That should have been developed in Module 1.
Background	Information from literature review in Module 2
Previous Work by Applicants	If applicable
Significance or Rationale	Tells the reviewer why it is important to conduct the study
Methods:	
- Setting	
- Study Design	From Module 3, 4 or 5
- Subjects	From Module 3,4 or 5
- Data Collection	From Module 7 data management
- Outcome Measures	
- Procedures	
- Data Management	From Module 7 data management
- Sample Size	
- Analyses	From Modules 8 and 9 statistical analyses
Ethical Considerations	See links in Module 7
Knowledge Translation	
Feasibility	
Timeline	
Relevance	End by telling reviewers how this research is relevant to child health (End on a strong, positive note)

Step 7 – Additional Pages – Budget and Budget Justification

Most agencies will provide you with a budget template that you are expected to follow. The most common headings are shown in the table

Year 1 Year 2 Year 3	
Personnel - Specify each type of personnel but not each person	Details of salaries and indications of part-time or fulltime (Don't forget to add benefits). From implementation module
Services - Statistical - Laboratory/radiology - Pharmacy - Psychology assessments	From implementation module
Supplies - Reagents - Mice - Computer supplies but not computer - Office - Telephone/fax - Post/courier - Forms/photocopying	From implementation module
Equipment - If allowed	Provide 3 quotes from companies
Travel - If allowed	
Other	
Total per year	

For **personnel**, specify the type of person and then detail the salaries for each type. If the person is going to work parttime, prorate the salary. E.g. if you have three research assistants but each is going to work 2 days a week (0.4), then the total is 3 times 0.4 or 1.2 FTEs or fulltime equivalents. If the normal salary is $60,000, then the total in year 1 is $72,000. If the study will last more than 1 year, increase the salary by at least the cost of living. Don't forget to add benefits which must be paid to many employees.

Services should include all the services you are likely to need to complete the study. If you are sending samples to the lab, then you need to budget for that. There is often a person in the laboratory service responsible for assisting researchers to estimate the cost. The same is true for Pharmacy, should you need to have drugs dispensed. If you want someone else to do your statistical analyses most Research Institutes have statisticians to assist you. You must budget for the approximate amount of time (in hours) that the statistician will require. If you are going to conduct a study where you would require a facilitator for focus groups or someone to conduct psychological assessments, that will need to be negotiated with the specific service. Put each service on a separate line since you will have to justify each line item.

Don't forget that you cannot conduct a study without **supplies**. Hospitals are getting to be quite picky about providing supplies for research so do not be surprised if you are charged for photocopying, telephones, computer toner and the like. Better to be proactive and budget for these beforehand. You may also have to buy the psychological instruments that you want to use such as the SF36 for Quality of Life measures.

Equipment is a difficult item to add to a budget. More and more agencies require a separate grant proposal to justify a large expenditure on equipment. In the past, many investigators asked for computers in that section but that is becoming more difficult to justify, although not impossible. However, laptops are frequently required for data entry on clinical trials and this is not an unreasonable expense.

Travel is usually permitted to a conference to present results. However, it is difficult to justify this in the first year. Check the guidelines to see what is allowed.
Other expenses include the cost of an ethics review if your study is funded by a pharmaceutical or device industry. You do not have to pay for an ethics review if the study is investigator driven.

Following the budget page, you should add a **budget justification** page. You should consider each item line by line and explain why each is needed, and why it costs what it does. If you have major costs (such as a very expensive reagent) it helps to get a letter from the lab or company explaining what it costs. The local lab, or pharmacy will be happy to provide you with supporting documentation. The more you can document, the more reviewers note that you have done your homework and will believe that you can conduct the research with rigor.

Step 8 – Additional Pages – References

References can be added as an additional page. Note all references used in the Background and also references to measurement tools used.

Step 9 – Additional Pages – Other Research Funds

Some agencies will want to know what other grants you are involved in – either as the Principal Investigator or as a co-investigator. This is for two reasons 1) to make sure that you don't already have money to conduct the study from another agency (the larger agencies will check) and 2) to ensure that you are not involved in too many other projects which would divert you from the one you are proposing.

Once you have completed the whole proposal plus additional pages it is always a VERY WISE IDEA (and it may be required) to have an internal review of your entire application by a seasoned reseacher at your institution. Grantsmanship is an art that is acquired over time and this early feedback has been shown to be important for the success of the application.

Finally, check how many copies must be sent to the agency, and find a friendly courier who will get it there on time.

NOW…SIT BACK AND RELAX. YOU ARE DONE!!

Here are some websites that give helpful tips on preparing a grant application:

http://www.cihr-irsc.gc.ca/e/documents/ig_guide_for_new_pis_e.pdf

http://www.hfsp.org/how/ArtOfGrants.htm

http://www.umanitoba.ca/research/funding/tips/cihr_grant_tips.pdf

http://healthlinks.washington.edu/rfs/gw/fundamentals.html
http://www.nsf.gov/pubs/1998/nsf9891/nsf9891.htm