

GUIDELINES AND PROCEDURES FOR GRADUATE STUDENT/RESIDENT RESEARCH

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in cooperation with

The Center for Dental Research

**Loma Linda University
School of Dentistry**

**Revised April 2012
Version 3.0**

Guidelines and Procedures for Graduate Student/Resident Research

Congratulations on your decision to pursue research in partial fulfillment of the requirements for a master's of science degree. This is a very important and valuable component of your postgraduate education at the Loma Linda University School of Dentistry. With proper time management and a genuine commitment to research you should be able to write a thesis and complete your training program in a timely manner.

It is important that you review the following guidelines and procedures for planning, undertaking, and completing a research project. For requirements on formatting and writing a thesis, please refer to the publication entitled "Thesis and Dissertation Format Guide, "Loma Linda University, Faculty of Graduate Studies. This handy guide outlines the current format that must be fulfilled for acceptance of a completed thesis. Should you have questions not addressed in the handbook, please contact the thesis editor, Dr. Rafael Canizales at (909) 558-1800 or extension 44529, visit West Hall Room 1301, or e-mail Dr. Canizales at rcanizales@llu.edu.

Definitions:

The following key terms are defined to minimize any potential misunderstandings or misinterpretations of their use in this document.

Chair (of Research Guidance Committee) – This is the individual whom you select (ask) to serve as the chairperson on your graduate committee. Typically, the chair is either your program director or some other designated faculty member from your department. You may ask a faculty member outside your discipline to serve in this role if that individual has expertise unique to your research or that individual has conducted or is currently conducting research in your area of interest. Your program director would have to approve the selection of this individual. The chair is also considered the principal investigator (PI) for your RGC.

Outside Reviewer(s) – Outside reviewers are individuals who are not members of your Research Guidance Committee who agree to critique your protocol and complete an evaluation form for the Research Committee. At least two (2) outside reviewers must read and comment on your protocol. The chair of your Research Guidance Committee may choose these reviewers or defer their selection to the Research Committee. Outside reviewers should be selected based on their expertise in your area of study or general knowledge of research methodology.

Pilot Study - A pilot study is a preliminary experiment designed to ensure the proposed experiment/study could, in fact, be conducted as planned using the equipment/materials selected, and within the proposed budget. An added benefit for individuals with little or no prior research experience is the opportunity to learn how to make specimens, operate test equipment, conduct a timed experiment, collect data, analyze data, and test the feasibility of the same study on a larger scale. This will add time to your project, so plan accordingly.

Proposal - A research proposal is a brief narrative, several pages in length, that describes the project or study you wish to undertake in sufficient detail to permit committee members to determine the value, feasibility, and appropriateness of the proposed investigation. Essential elements of a proposal include an introduction and rationale for the investigation, brief literature review, materials and methods, anticipated statistical analyses, budget, research guidance committee membership, Research Guidance Committee Signature Page, and the significance of the project. Approved proposals can then be developed into complete research protocols.

Protocol - A protocol is the name given to a formalized and detailed description of your proposed research activity. This document must contain, but is not limited to, the following sections: Statement of the Problem, Introduction and a null hypothesis, Review of the Literature, Materials and Methods, Statistical Analysis with a statistical clearance, Budget, References, Institutional Review Board (IRB) Human Studies Application and Informed Consent (if human subjects are to be used in the study), Animal Care Application (if your pilot study or protocol are to include animals), and a curriculum vitae (CV) for the graduate student/resident and principal investigator who is the chair of your research guidance committee (refer to the attachment entitled "Protocol Headings").

Research Guidance Committee (RGC) – A research guidance committee (RGC) is a group of faculty members assembled by a graduate student/resident and typically chaired by that student/resident's program director. An RGC chair may be chosen from outside the graduate student/resident's specialty area with the permission of the program director. The RGC chair also must be a full member of the Faculty of Graduate Studies (FGS). A complete research guidance committee has a minimum of three faculty members who are FGS full or associate members. Ideally, these individuals should be from within the graduate student/resident's discipline. Exceptions can be made for programs with limited full-time faculty by making a written request to the Associate Dean for Advanced Education.

A research guidance committee can consist of up to five (5) members (to include the statistician) chosen to provide assistance to the graduate student/resident in different aspects of the planned project such as experimental design, test methodology, data collection, data analysis, data interpretation, and thesis writing. Because no one RGC member can be expected to assist in all aspect of this process, it is wise to establish a diverse group of faculty with different expertise. RGC members can be faculty from other graduate programs and should meet regularly with students and at least two (2) meetings should be scheduled that include all the committee members: 1.) To finalize the research protocol and 2.) To attend the thesis defense.

Research Committee – On behalf of the School of Dentistry, the Director of the Center for Dental Research has assembled a Research Committee charged with the responsibility to facilitate and advise on all research conducted by students, graduate students/residents, and faculty. Although the primary responsibility for research design and preparation of a graduate research protocol rests with the RGC, the Research Committee reviews all graduate research and reports its findings (recommendations) to the graduate student/resident, the respective RGC chair, and the Associate Dean for Advanced Education.

Statement of the Problem – In the opening section of a proposal and a protocol should explain the issue at hand and why it needs to be examined. Make certain you make it clear to the reader why the research project you have selected is warranted. Provide a brief narrative in which you make the case for why your proposed project has merit.

Statistical Analysis Clearance - This portion of a research protocol indicates to the members of your Research Guidance Committee and the School of Dentistry Research Committee that a biostatistician is working with you and that individual has approved the statistical measures chosen for your research project. Include a statement signed by the statistician with whom you will be working to document his/her approval of the proposed methodology.

Statistical Analysis Clearance

I have reviewed this protocol and discussed the research methodology with the graduate student/resident identified below. I can attest to the fact that the chosen sample size and statistical analyses are appropriate for the proposed experimental design.

Signature (of statistician) _____ **Date** _____

Graduate Student/Resident _____ **Date** _____

Advisory: Please be mindful that during certain periods in the academic year requests for statistical support are made from multiple sources simultaneously. To avoid delays for you and to facilitate workload management, please work closely with your statistician and submit your data as early as possible. The responsibility for the management of this important step in the process rests with you.

Thesis - The guidelines for writing and formatting a master's thesis are contained in a brochure available from the Faculty of Graduate Studies entitled "Thesis and Dissertation Format Guide."

Thesis Defense - Final approval of the written summary (thesis) of the experiment/study, with results and conclusions, must be presented to the entire research guidance committee in a forum open to the public. Graduate students/residents must receive approval from their RGC before scheduling their thesis defense. At the conclusion of the presentation the RGC members meet in private to formally vote whether to accept, accept with changes, or reject the thesis. Once approved, the RGC members will sign the Signature and Approval Page.

Getting Started

One of the first things you should do is select a project for either a laboratory or a clinical study. If you do not have any ideas of your own consult with your program director, department chair, or the faculty members in your department for their input. You may find that they have a project they would like undertaken or, perhaps, you can undertake a portion of their ongoing research. Either way, begin your inquiry as soon as possible to ensure ample time is available to complete this research and a thesis during your training.

Pursuing Your Own Research Idea

If there is a burning issue or question you would like to pursue in your specialty take that idea to your program director. The two of you can then determine if the topic you have proposed is worthy of a full-scale study, and, more importantly, if the project would qualify for graduate-level research here at Loma Linda University.

Establishing Your Research Guidance Committee (RGC)

Once you and your program director or other key faculty members have selected a research topic the next important step is to assemble a research guidance committee (RGC). Generally, it is advisable to have a committee composed of at least three (3) and no more than five (5) members. This is a general guideline and exceptions to the five member recommendations should be directed to your program director. By waiting until after you have a topic to study you can then identify faculty members with the expertise you will need to aid you in your research.

One faculty member will serve as the chair of your research committee with the remaining members having equal status on the committee. You are advised to speak with your program director about the selection of the individual who might best serve you and your project by assuming the role of chair. The duties and responsibilities of program directors are such that directors cannot always act as the committee chair for every one in their advanced education program.

Alternately, there may be a faculty member other than your program director with whom you wish to work to pursue an area of mutual interest. Therefore, discuss this matter with your program director before you ask faculty members to serve on your research guidance committee.

It would be prudent on your part to choose the remaining faculty members based on the expertise they bring to your committee and project. This is why it is recommended to select your research topic and then bring together a research committee to guide you each step along the way.

Try to identify at least two or three individuals who are very familiar with your topic. Include someone who can assist you with the testing procedures and another faculty member who can help you with data analysis. It is also useful to include someone knowledgeable in scientific writing and thesis preparation. The research process will run more smoothly if you have a diverse committee composed of individuals who can guide you through each facet of the process from study inception to thesis preparation and defense.

If you are given approval to develop an idea, then write a draft research proposal containing the following information:

Preparing a Draft of a New Research Proposal

Write a draft of your research proposal and include all of the following information. Then submit this document to each of the members of your Research Guidance Committee for their recommendations with the following headings (Attachment A).

1. **Statement of the Problem** – Explain the issue at hand and why it needs to be examined. Make certain you make it clear to the reader why the research project you have selected is warranted. Provide a brief narrative in which you make the case for why your proposed project has merit.
2. **Review of the Literature** – Prepare a review of the literature to demonstrate what has been studied and reported in the past. Support your contention that the particular project/study will address questions not yet answered in the current body of literature.
3. **Materials and Method** – Include a brief description of how the study would be conducted, if undertaken. Identify any materials and equipment that might be needed and whether Institutional Review Board (IRB) approval would or would not be necessary.
4. **Statistical Analysis** – What sample sizes are needed and what statistical tests are to be performed to analyze your data.
5. **Budget** – How much will it cost to conduct your study? List the anticipated expenses and explain how the investigation will be funded? Some funding is generally available for graduate students through the School of Dentistry, but money is limited. Therefore, consult with your RGC chair, your program director, your department chair, and the Director of Biomaterials Research regarding funding from sources outside the School of Dentistry.
6. **Length of Study** – How long will it take to complete your study? Include a projected timeline and project milestones to include the start and stop dates for the project.
7. **List of Reference** – This is a short list of key articles germane to the project you wish to undertake.
8. **Research Guidance Committee (RGC) Approval and Signature Page** - When the proposal is written to the satisfaction of your *entire* committee, create a page with the heading *Research Guidance Committee Members Signature Page*, and ask your committee members to sign it. Once signed you now have approval to transform the proposal into a full research protocol.

Duplicate Your Approved Proposal. Photocopy your approved proposal and retain an electronic copy in your files. Ask your RGC members if they wish to have a copy (printed or electronic version) for their records or wait for a final protocol.

Participating in Ongoing Research

It is possible that your program director or a member of your department may be involved in extensive and ongoing research. In this instance, the chair of your RGC may approve your participation in that research as your graduate research project. Also, your graduate program may have different expectations for research that is simply part of the certificate program versus a project that is appropriate for the award of a master of science degree.

Preparing a Draft of a Research Proposal for Ongoing Research

If you plan to undertake a new approach to this ongoing research, you should write a research proposal and submit it your Research Guidance Committee. However, if you decide to pursue one aspect of an ongoing larger study, you do *not* have to write a proposal, but should proceed directly to the preparation of a research protocol. Follow the format previously approved for this study, but be certain to make clear the specific role you will play and the tasks you will perform. In other words, customize the previously accepted protocol to make it clear to your Research Guidance Committee and the Research Committee the full extent of your activity.

Moving from Proposal to Protocol

After your research guidance committee has reviewed and approved the project described in your proposal, determine if it would be prudent to conduct a pilot study to assess the feasibility of the project as originally designed. Once that is done, you can proceed to the preparation of a complete research protocol.

What is the difference between a Proposal and a Protocol?

The rationale for preparing a proposal before writing a complete protocol is to minimize the time you spend developing an idea into a cohesive plan to the extent required of a viable protocol. In this way you will not take critical time from your program preparing a lengthy and detailed protocol that might not be worthy of investigation and accepted by your committee.

It is not uncommon for graduate students to abandon their initial idea, because the project is soon found to be impractical, costly, too time consuming, or previously reported. In these instances, students discard their initial proposal and go on to pursue an entirely different topic. Preparing a *brief* proposal of no more than a few pages in length minimizes the time spent to identify a topic that can eventually be developed into a complete protocol.

Budgetary issues alone can make a project unrealistic unless outside funding is secured in advance. So establish the actual cost of materials and equipment for any idea you wish to consider.

Transform the Approved Proposal Into a Protocol.

An approved proposal can become a protocol by expanding the following sections:

1. Abstract – Prepare a brief summary of the research project to include an introduction, a purpose, material and methods, proposed statistical analysis, and any anticipated outcome. Dental journals typically require an abstract but limit its length to a few hundred words, so begin here by limiting your narrative to one page or less. The Research Committee members will be given a copy of your abstract to review prior to their meeting. They also may exercise the option to review your complete protocol and/or contact you or your RGC chair should questions arise. *After completion of your study, you can add the Results and Conclusion sections and have an Abstract to accompany any manuscript you wish to submit to a dental journal for publication.*

2. Statement of the Problem – Having completed the Research Proposal and discussed your idea with faculty members, you may discover that changes to your project are needed. If you have to revise the “Statement of the Problem” then do so in the Research

Protocol.” If not changes are necessary, you may restate the same text used in the proposal for your Research Protocol.

3. Introduction (with null hypothesis) – Use this portion of the protocol to establish the basis for the research project you wish to undertake explaining why your study is needed and how it differs from previously published reports. Include sufficient references (recent and historical) from the literature to substantiate statements made in this section. End the Introduction with your null hypothesis and any alternative hypotheses.

4. Review of the Literature – Make certain the review is up-to-date by ensuring the articles are thorough and include current literature. The few, key articles you selected for inclusion in your proposal can serve as the foundation for your protocol, but they should be complemented by the addition of background references and the most current published reports.

Remember that these articles will eventually become part of the Review of the Literature for your thesis.

5. Materials and Methods - Revise this section so it describes all the steps and procedures you will undertake by explaining what and how you will conduct the study, define the required sample size and provide complete details for each step of the project. Include a table whenever there are multiple materials being used and groups being tested. Be sure to make any changes to the test methodology brought about as a result of information obtained during the course of any pilot study.

Write the Materials and Methods section as though you were leaving instructions for someone else to perform the tasks for you. Provide the level of detail needed to make a specimen, measure or test a specimen, evaluate a patient, and so on. Leave no doubt in the mind of any reader of your protocol as to what you are going to do and how you are going to do it. Also, clearly indicate what tasks or roles you will personally perform if other investigators are involved or if the study is a continuation of an ongoing project.

- **Sample Size (if applicable)** – Review the literature and consult your statistician to arrive at an appropriate number of samples, study subjects, test groups, etc. to improve the likelihood that your investigation will detect difference between or among groups, samples, patients, etc. if they exist. Your statistician can help you in this regard or you can use previous studies as a guide.
- **Control Group** – If you are evaluating a new procedure, product, or treatment it is helpful to have something to compare those results to in your analysis. That is why you are advised to include a current, recognized treatment, product, or technique as the standard (benchmark) against which you compare new treatments, products, or techniques. Failure to include a control makes it difficult to assess and comment on the significance of the outcomes you obtain. You can only make relative comparison among your different products or groups and not comment on how your outcomes compare to the accepted way or ways of doing things.

6. Statistical Analysis – Finalize your selection of the appropriate statistical tests and significance levels after consulting with a statistician and reviewing any pilot study findings.

7. Budget – Once you have designed your study, develop an itemized budget with an estimate of the cost to conduct the entire investigation.

For example, if you are conducting a laboratory study, include expenses related to photographing, measuring and analyzing specimens, and obtaining photographic images (using a scanning electron microscope for example). What costs are associated with obtaining specific products to evaluate, especially if you are comparing multiple brands of a similar item? Do you need to obtain special equipment or use devices not currently available within the School of Dentistry? Can you obtain funding from a third-party outside the School to offset all or a portion of your projected costs?

You would be wise to document that your research project is affordable in the sense that you have accounted for all the anticipated expenses and matched them with an equal source of funding, both internal and external. The Research Committee can grant up to \$3,000.00 per student to help underwrite the cost of a research project. However, even a well-designed study could be rejected, if it is found to be too costly to undertake. Also, funding from the School of Dentistry cannot support travel expenses or the cost associated with a laboratory technician.

Important Note: Loma Linda University requires that all project funded from sources outside the School of Dentistry allocate 28% of the total budget for indirect costs (IDC). Protocols reflecting outside funding will receive a high degree of scrutiny to ensure compliance with this requirement.

8. Pilot Study Results (if applicable) – Typically, a pilot study is a scaled-down version of the proposed full investigation during which you have the opportunity to familiarize yourself with the procedures or equipment planned for the investigation and you evaluate the proposed data collection and measurement techniques. In some instances you may have to devise new and unique methods to gather your data in the absence of previously published reports.

If this is your first attempt at a research project, a pilot study can provide an invaluable opportunity to assess your ability to conduct the main study in the manner in which you have described it.

It is not uncommon to revise portions of the Materials and Methods section based on the outcomes obtained from a pilot study. Work with your RGC during the pilot study phase, because these committee members can provide you with valuable guidance before you attempt to collect data on a larger scale.

9. List of References – Update and expand the list of references used in the Proposal to include any key historical publications and current, related articles related to your research project.

10. Length of Study – Provide a projected start date for the investigation, explain how long the study will take, and give a projected completion date.

11. Research Guidance Committee Members Signature Page – As was done for the Research Proposal, create this signature page listing the name of your RGC chair and all your committee members.

Readability – Assume readers are not familiar with the subject of your study. Write your protocol in such a way that every step and procedure can be easily understood. If English is not your primary language, have several colleagues with English writing skills read your protocol before submitting it to your RGC members.

Obtaining Approval of Your Research Protocol

Effective as of June 2006, the Research Guidance Committee is now charged with the responsibility and authority to approve a graduate research protocol. However, the process is not finalized until a protocol has been submitted to the School of Dentistry Research Committee for review, recommendations, and budget approval. In years past, the Research Committee was the approving body and the RGC served more of an advisory role in the approval process.

Once your Research Guidance Committee has approved your protocol, create another *Research Committee Members Signature Page*. Ask all the members to sign their name to document that approval of your protocol for the Research Committee.

Review of Your Research Protocol by the Research Committee

By reviewing all graduate-level research protocols, the Research Committee is in the unique position judging whether a project fulfills the expectations for the research requirement for a master's of science degree or a specialty certificate.

Step #1

Collect all the documents required for submission of a protocol to the Research Committee: a research protocol sign-off sheet (for your RGC members to sign), a **Statistical Analysis Clearance** sheet, as well as two copies of the **Proposal Review Form for Reviewers**.

Step #2

Carefully examine the **Proposal Review Form for Reviewers** (form available from the Center for Dental Research) before finalizing your protocol and submitting it to your RGC members. This is the document that Research Committee members will use when reviewing your protocol. So it is to your advantage to ensure, in advance, that you have addressed the topics this committee will examine when reviewing your protocol for your benefit and the benefit of your Research Guidance Committee members.

Step #3

Provide each member of your Research Guidance Committee with a copy of the completed protocol. Revise this document to the satisfaction of each RGC member and then ask all the members to sign the **Research Guidance Committee Signature Page**.

Step #4

Select two individuals to serve as outside reviewers of your protocol and ask them to complete a **Protocol Review Form for Outside Reviewers** (form available on Canvas.)

Step #5

Deliver an electronic copy of your protocol along with completed Outside Review Form for Reviewers, Compliance Check sheet and Research Committee Approval Form to the Center for Dental Research (Room 122), Taylor Street (Dr. Yiming Li's office).

Submission Deadline – Protocols must be submitted no later than the first day of each month in order for a protocol to be placed on the agenda of the Research Committee that month. It is strongly recommended that you make your submission as far in advance of the first day of each month to facilitate the processing of multiple protocols and reviewer forms. The Research Committee meets on the third Wednesday of each month and dates are posted on Canvas.

Outside Reviewers (Two are required) - You and the RGC have the option to select the two outside reviewers in advance and include those completed review with your protocol. In other words, you can expedite the process by providing the Research Committee with all the documents it needs at one time. It is to your advantage to select two individuals with expertise in the area of research you wish to pursue, revise your protocol to incorporate their recommendations, and submit all the documents together. Taking this approach minimizes delays and ensures your protocol is ready for a full review.

If you and your RGC chair choose not to select the outside reviewers, two individuals will be chosen by the chair of the Research Committee. These outside reviewers must have at least two-weeks to read your complete protocol and contact you or your mentor if questions arise about your proposed project. Additionally, the two outside reviewers may wish to meet with you and/or your Research Guidance Committee members.

Irrespective of who selects the outside reviewers, their two critiques of your protocol must be completed on the Research Committee's protocol review form for outside reviewers. The document must be typed (submit typed and handwritten, signed version if applicable). Those documents are then submitted to the Research Committee at cdrcom@llu.edu along with your protocol which is due on the first day of the month in which you want to present.

Scheduled Research Committee Meetings – The Research Committee meets every third Wednesday of the month during the academic year (see Appendix C).

Submission of Revisions - If substantive changes are made to a protocol during the two-weeks following submission and prior to the Research Committee meeting, the changes must be made using the "Track Changes" mode in Word. Any amended pages should immediately be sent to cdrcom@llu.edu for distribution to the committee members.

Format for Changes - Use the "Review Mode" in word and use "Track Changes" so committee members can readily see the nature and extent of any revisions.

Required Supporting Documents – Please provide the following information with your Protocol:

1. A two-page (maximum) *curriculum vitae* (CV) for both the graduate student/resident and the chair of the Research Guidance Committee.
2. The e-mail address and contact phone numbers for both the graduate student/resident and the chair of the Research Guidance Committee.
3. For studies requiring IRB approval – include a draft copy of your Informed Consent along with a copy of the IRB application, along with copies any proposed advertising and include the IRB number.

Presentation of Protocol – Graduate students/residents should arrange to attend the Research Committee meeting during which their protocol will be reviewed. They will be asked to make a brief oral presentation of their protocol to the committee members present and answer any questions that might arise. The presenter's Research Guidance Committee chair (or designee) also should attend the meeting.

Notification of Research Committee Recommendations

An electronic (e-mail) message with the Research Committee's recommendations will be sent to the graduate student/resident, his/her Research Guidance Committee chair, and the Associate Dean for Advance Education within approximately one week following the Research Committee meeting in which a protocol was reviewed.

Possible Outcomes – The Research Committee will vote and recommend one or more of the following changes on all submitted protocols.

1. No Changes Recommended – *Begin the research project as written*
2. ☐ Reevaluate of the statistical analyses because _____

☐ Reconsider the study design because _____

☐ Revise as suggested by the committee.
☐ Other _____

Implementation of Research Committee Recommendations – The recommendations of the Research Committee should be carefully assessed by the graduate student/resident, the members of the Research Guidance Committee, and the Associate Dean for Advanced Education in writing. Every effort should be made to incorporate the recommendations of the Research Committee.

Appeals of Research Committee Outcomes – A graduate student/resident or his/her RGC chair may appeal portions or all of the recommendations of the Research Committee. Appeal must be made in writing to the Associate Dean for Advanced Education, who will make a final ruling and disseminate decisions to the Research Committee chair as well as the chair of a graduate student/resident's RGC.

Note: It is extremely important to prearrange an estimated completion date for the collection of data so the statistician can schedule time for the analysis process. If many students complete their projects close to the end of the Spring term a backlog is created that can not be readily remedied. So plan to complete your study early and stay in contact with the statistician who has agreed to assist you.

Thesis Preparation

Please refer to the separate publication entitled “**Thesis and Dissertation Format Guide**” for all questions pertaining to the formatting, preparation, and submission of your thesis.

The thesis editor is Dr. Rafael Canizales, and he can be reached at (909) 558-9484 or extension 49484 (on campus).

University Policy and Thesis Preparation

University Records is now enforcing the policy that a student may carry an IP (in progress) grade no longer than five (5) quarters. Typically, an IP grade is given at the end of the first quarter a student registers for thesis writing. A student is graded out for their thesis within that five-quarter time period.

Consult your program director or University Records if you are unclear on this policy or anticipate you will require more than five quarter to complete your thesis.

The five-quarter limit policy is now being enforced, so it is in your best interest to start the thesis registration clock, so-to-speak, only when you are fully prepared to begin and complete all phases of thesis writing within this prescribed time period.

Assistance with Scientific Writing

If you want some additional insight into scientific writing please refer to the following article:

Naylor, WP, Munoz-Viveros, CA. *The Art of Scientific Writing: How to Get Your Research Published*, J Contemp Dent Pract 2005 May; (6) 2: 164-180.

The article is available as PDF file online from the **Journal of Contemporary Dental Practice** website. Go to www.thejcdp.com and click on the button labeled “Manuscript Submission Guidelines.” The link to the above named article appears on the bottom of the last page of those guidelines.

Acknowledgements

Special thanks go to Dr. Huan Lu, Dr. Joseph Caruso, and Dr. Mahmoud Torabinejad for their suggestions and contributions to this document.

Required Sections for a Research Proposal and a Research Protocol

Proposal Headings:

1. Statement of the Problem
2. Review of the Literature
3. Materials and Method
4. Statistical Analysis
5. Budget (with estimated costs)
6. Length of Study (preliminary estimate)
7. List of References
8. Research Guidance Committee Members Signature Page

Duplicate Your Approved Proposal

Protocol Headings:

1. Abstract
2. Statement of the Problem
3. Introduction (with null hypothesis)
4. Review of the Literature
5. Materials and Method
6. Statistical Analysis with Statistical Analysis Clearance
7. Budget (Proposed)
8. Pilot Study Results (if applicable)
9. List of References
10. Length of Study (refined estimate with projected start and stop dates)
11. Research Guidance Committee Members Signature Page

Duplicate Your Approved Protocol

Attachment B

Checklist for Submission of a Research Protocol

1. Do you have a completed protocol?
2. Has your protocol been approved by all the members of your Research Guidance Committee?
3. Has the Chair of your Research Guidance Committee given you approval to submit your protocol to the Research Committee?
4. Has a statistician reviewed and approved your proposed statistical analysis and signed the Statistical Analysis Clearance?
5. Have you prepared a realistic budget and reviewed it with the Chair of your Research Guidance Committee?
6. Have you received or applied for research funding from a source outside the School of Dentistry or are you limiting any funding to that provided by the School?
7. If Institutional Review Board (IRB) approval is needed for your project have you had your committee review:
 - a. Your IRB application?
 - b. Your Informed Consent Document?
 - c. The advertising for your study?
8. Will you be able to submit your protocol to the Center for Dental Research (Room 122) by the first of the month (at the latest) for the month in which you want a review?
9. Have you submitted any revisions to the original protocol in advance of the Research Committee meeting?
10. Have you made arrangement for you and the Chair of your Research Guidance Committee (or his/her designee from your committee) to attend the Research Committee meeting when your protocol will be on the agenda for review?
11. Have you prepared a brief oral presentation summarizing your proposed project?
12. Have you included all the following personal information?
 - a. A two-page (maximum) *curriculum vitae* for both the graduate student/resident and the RGC chair (principal investigator).
 - b. The e-mail address and contact phone numbers for both the graduate student/resident and the RGC chair.
 - c. For studies requiring Institutional Review Board (IRB) approval, include a draft copy of your Informed Consent along with a copy of the IRB application, and examples of any proposed advertising.