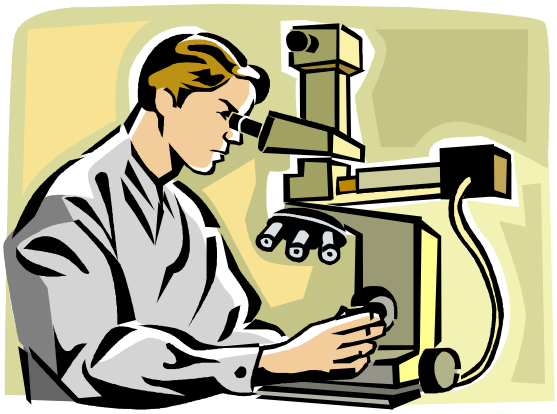
INDEPENDENT INVESTIGATIVE INQUIRY (III)
HuBio 597



POLICY AND PROCEDURES MANUAL

Autumn 2007

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INDEPENDENT INVESTIGATIVE INQUIRY (III)

Overview

The purpose of the III portion of the curriculum is to engage students in activities that will foster the skills of life-long learning essential for practicing physicians in the 21st century. Students will gain experience generating questions related to the practice of medicine and exploring the various methods available to resolve such questions. The student is strongly urged to select a topic of particular interest to him/her and to investigate the subject independently, utilizing the advice of a sponsor and other resources in the WWAMI community. This is a unique opportunity for students to choose both the content and form of their learning and to pursue an interest that may not be included elsewhere in the curriculum.

There are four selectives by which the III requirement can be fulfilled. Each offers the student a different type of learning experience and each has its own expectations, procedures and deadlines. These are described briefly here; handouts describing each selective in detail are available online and through the Curriculum Office, A-300.

Selective 1: Data Gathering/Hypothesis-driven Inquiry

This selective can take the form of a basic laboratory study, a survey, secondary analysis of an existing dataset, a chart review, a qualitative study or a prospective clinical trial. The research can be initiated by the student or by the sponsoring faculty member, as long as the student has an independent role and makes an intellectual contribution to the project. If a student undertakes research as part of a funded program such as T-32 or Medical Student Research Training Program (MSRTP), the study can also be used to fulfill the III requirement.

Students selecting this option can expect to learn the steps and logic involved in trying to resolve an empirical question through data collection and analysis. Students will learn how to conduct research in a way that conforms with human or animal use regulations.

Selective 2: Critical Review of the Literature

A critical review of the literature poses an unresolved scientific question relevant to the practice of clinical medicine and attempts to answer that question using evidence published in medical literature. Particular attention is paid to the methods of the studies reviewed in addition to the results. Alternatively, students can use published literature and other sources to analyze an issue in health policy or to perform a historical investigation.

Students selecting this option will learn how to use medical databases effectively. They will learn how the population and methods employed in a study affect the interpretation of study results. In addition, they will learn how to synthesize information from a variety of sources in the form of an evidence table to draw a reasonable conclusion.

Selective 3: Experience-driven Inquiry

An experience-driven investigation is looking at a health problem, implementing a community medicine project and presenting a poster on it. There are several programs available for students to obtain clinical experience such as Rural/Urban Opportunities Program (RUOP), Community Health Advancement Program (CHAP) and International Health Opportunity Program (IHOP). Experience-driven investigations can be done within any of these programs, although the number of students allowed to do their III within the program may be limited. The project could take several forms, including a community needs assessment, a plan for a community health intervention, or evaluation of a service delivery project. Further information on each program can be obtained at the following websites or email address:

RUOP **http://www.fammed.washington.edu/predoctoral/ruop/iiioptions.htm**
CHAP **http://www.fammed.washington.edu/predoctoral/chap/**
IHOP **http://depts.washington.edu/ihg/ihop.htm**

Selective 4: Special Simulation Selective (currently in pilot phase)

This selective offers medical students an opportunity to participate as a member of the staff of the Institute for Surgical and Interventional Simulation (ISIS). The student will have the opportunity to research and develop the content for one or more simulated patients. This patient, as well as others being concurrently developed, will be incorporated into a simulated hospital as the core of a computer based 'continuity of care' experience being developed for use with medical students.

PROCESS FOR COMPLETING A III PROJECT

Step One:
Submit a **Declaration of Intent** form. Students make an initial determination of which Selective they would like to pursue and submit it to the Curriculum Office by April 15th of their first year. Students who have applied for any of the Selective 3 options, or for MSRTP Selective 1 will know sometime in February (of their first year) if they have been selected. You must still turn in a Declaration of Intent form.

NOTE: The guidelines for completing Selective 3, Experience-driven Inquiry, are set by the respective programs (RUOP/ CHAP/ IHOP) and will be given to students once they are accepted.

Step Two:
Selectives 1 and 2, submit a **III Proposal** for approval by the III Approval Committee. All proposals must be accompanied by a signed faculty sponsor/advisor form. The proposal must also be signed by the III Departmental Coordinator. A complete list of III Departmental Coordinators may be found as a link on the III website or you may contact Marcie Buckner 206-543-0922.

For Selective 1: If your project involves working with human subjects, a copy of the Collaborative IRB Training Institute (CITI) student-training certificate and IRB application must accompany the proposal.

For Selective 2: A list of references (minimum of 10) must accompany the proposal to demonstrate that there are sufficient published studies to proceed with the literature review. Only proposals that are complete will be sent to the III Committee.

Proposals must be approved by the III Committee prior to initiation of the project. An approval letter will be sent to the student when the III Committee approves the proposed project. Should the committee request changes to the proposals, the student will be notified with the necessary modifications. When the proposal is acceptable, the student will receive an approval letter from the III Committee. **Second-year students are required to have an approved III Proposal prior to being allowed to register for clerkships.**

Note: Students accepted in the MSRTP program are not required to submit a separate III proposal to the III committee. The approved MSRTP application will be forwarded by the MSRTP staff person to the III staff person. Similarly, the final MSRTP paper submitted in January of the second year is forwarded to the IIIstaff person, thus, there is no need to submit a status report, which is Step Three.

Step Three:
Submit a Status Report to the Curriculum Office signed by the faculty sponsor. The Status Report enables faculty sponsors to provide information and guidance that will be helpful in completing the project and facilitating the sponsor's final review. Status Reports are due in July, at the beginning

of the fourth year. NOTE: If you complete your III project prior to the status report deadline, you are NOT required to turn in a status report.

Step Four:
Selectives 1 and 2, submit a final paper along with a signed Faculty Sponsor/Advisor Statement to the Curriculum Office no later then January of the fourth year. Specific dates are noted in the table below.

- **Faculty Sponsor/Advisor:** Students choosing Selectives 1 or 2 will work with a faculty sponsor/advisor who is affiliated with the WWAMI Program. Faculty sponsor/advisor responsibilities are to guide the student throughout the process of their research project, including evaluating the plan, critiquing and approving the final product.

- **Final Product:** For Selectives 1 and 2, the student must write a paper related to the investigation. Specific paper guidelines and evaluation criteria differ for each selective and are described in guidelines available online, from the III Manager in A300, or from the Research Advisor in T557. Writing the paper is an essential component of the Independent Investigative Inquiry requirement, so the student must be the sole author of the paper, even if the student has collaborated with another student, faculty member, or plans to submit the paper for publication under joint authorship. Papers used to fulfill requirements for other courses are not acceptable.

WAIVERS

Students who have received a Master's or Ph.D. degree with a thesis or dissertation in disciplines basic to medicine, or those who are first authors of published papers basic to medicine in peer-reviewed journals may petition for waiver of the III requirement. A letter of request for a waiver should be submitted to the Curriculum Office along with a copy of the publication or a publication acceptance letter. The paper must be published by Spring of the first year of Medical School. For a thesis or dissertation, ONLY the title page and table of contents should accompany the request. Papers used to fulfill requirements for other degrees or courses are NOT acceptable.

The letter and any supporting documents should be sent to:Marcie Buckner, UWSOM Curriculum Office, Box 356340, Seattle, WA, 98195-6340.

MD/PhD (MSTP) studentsfulfill the III requirements through their course course work, this will be noted in their records after their Declaration of Intent form is received in the Curriculum Office.

TIME FRAME

All III paper work may be turned in prior to the deadlines.

- **Extensions** If a student is unable to meet a deadline, an extension may be requested prior to the deadline. The student should submit an email request to Marcie Buckner describing the current status of the project or paper, what remains to be completed, any information that the student would like considered regarding circumstances, and a timeline for completion. Extensions will be approved on a case-by-case basis

Timelines are summarized in the table below.

NOTE: Due Dates are Deadlines!

	Selective 1	**Selective 2**	**Selective 3**
Year 1	MSRTP application due January and notified February III Intent due April	Intent due April 15th	RUOP, CHAP and IHOP Applications due January and notified February or March (Limited # of students)
Year 2	Proposal due 1st day of class Winter Quarter ; MSRTP final paper due January	Proposal due 1st day of class Winter Quarter	Final product due January R/UOP, CHAP and IHOP
Year 4	Status report due beginning of July Final Paper due 1st day of class	Status report due Beginning of July Final Paper due 1st day of class	

Questions:
Marcie Buckner (206)-543-5562
Email:mbuckner@u.washington.edu

Deadlines and Extensions

Determination of Deadlines

III deadlines include the Declaration of Intent (April 15th of 1st yr.); Proposal (January of 2nd yr.); Progress Report (July of 4th yr.) and Final Paper (January of 4th yr.). This information is entered into student record database, published in the student handbook, located on the UW School of Medicine Curriculum (SOMOC) website, and a hardcopy is given to students at orientation.

Deadlines for Students on an Expanded Schedule

Students granted an expansion in their second year of the HuBio curriculum ***must*** complete a III final paper with a signed faculty sponsor/advisor statement prior to handing in their third year track requests.

Students granted an expansion in their fourth year ***must*** complete all III requirements including signed faculty sponsor/advisor statements by January of year 4A..

Request for Extension

Extensions granted for any of the deadlines noted above are made by the Associate Dean for Curriculum. New deadlines will be entered into the student record database for tracking.

If a student is unable to meet the deadline the following process is used:

1. Student submits a written request to Marcie Buckner which must include the following:
    i. Current status of the paper
    ii. Reason extension is needed
    iii. Estimated timeline for completion
2. Student meets with the Associate Dean for Curriculum.

Process for missed deadlines:

Intent Form

1. Notify the student of the missed deadline
2. Notify the College Faculty Mentor to request assistance for the student
3. Notify Associate Dean for Student Affairs/Student Progress Committee

Proposal

1. Notify the student they have to request an extension and explain the process
2. Inform the Registrar and Associate Dean for Student Affairs/Student Progress Committee
3. Place a hold on clinical clerkship scheduling
4. Registrar may place students in a track which has an elective period first in order to enable the student to complete their proposal

Status Report

1. Student's clinical schedule may be adjusted if satisfactory progress is not demonstrated

Final Paper

1. Notify the student and explain the process for requesting an extension
2. Notify Associate Dean for Curriculum
3. Inform the Registrar and Associate Dean for Student Affairs/Student Progress Committee
4. Consequences for not meeting deadline may include:
    a. Pulling student from elective rotation(s) until final paper is submitted
    b. Deferring match and residency training
    c. Student may not graduate

CRITERIA FOR GRANTING WAIVERS

Certain students can apply for a waiver of the Independent Investigative Inquiry (III) graduation requirement:

- Students who have completed advanced degrees (e.g. Masters or PhD) with a thesis or dissertation in a discipline basic to medicine, may submit a request for waiver.
- Students with previous research experience in a discipline basic to medicine, which has resulted in a published paper of which the student is first author. The paper must be published by Spring of the first year of Medical School.
- If the student is a second or third author, credit may be granted upon receipt of a letter from the principal author describing the students part in the research and paper.
- Waivers of paper and/or credits may be granted in other special circumstances as determined by the III Committee.

Non-eligible for waiver:

- A paper or manuscript submitted to any course as part of that course's requirement can not be considered to meet the III requirement.
- Honor's papers
- Papers used to fulfill requirement for other degrees or courses.

Academic Honesty

The following information regarding plagiarism is from the University of Washington web site located at http://depts.washington.edu/grading/issue1/honestyl.htm.

(a) ***What is academic misconduct?***

You are guilty of cheating whenever you present as your own work something that you did not do. You are also guilty of cheating if you help someone else to cheat.

(i)Plagiarism

One of the most common forms of cheating is *plagiarism*, using another's words or ideas without proper citation. When students plagiarize, they usually do so in one of the following six ways:

1. *Using another writer's words without proper citation.* If you use another writer's words, you must place quotation marks around the quoted material and include a footnote or other indication of the source of the quotation.

2. *Using another writer's ideas without proper citation.* When you use another author's ideas, you must indicate with footnotes or other means where this information can be found. Your instructors want to know which ideas and judgments are yours and which you arrived at by consulting other sources. Even if you arrived at the same judgment on your own, you need to acknowledge that the writer you consulted also came up with the idea.

3. *Citing your source but reproducing the exact words of a printed source without quotation marks.* This makes it appear that you have paraphrased rather than borrowed the author's exact words.

4. *Borrowing the structure of another author's phrases or sentences without crediting the author from whom it came.* This kind of plagiarism usually occurs out of laziness: it is easier to replicate another writer's style than to think about what you have read and then put it in your own words. The following example is from *A Writer's Reference* by Diana Hacker (New York, 1989, p. 171).

    - **Original:** *If the existence of a signing ape was unsettling for linguists, it was also startling news for animal behaviorists.*

    - **Unacceptable borrowing of words:** *An ape who knew sign language unsettled linguists and startled animal behaviorists.*

    - **Unacceptable borrowing of sentence structure:** *If the presence of a sign-language-using chimp was disturbing for scientists studying language, it was also surprising to scientists studying animal behavior.*

    - **Acceptable paraphrase:** *When they learned of an ape's ability to use sign language, both linguists and animal behaviorists were taken by surprise.*

5. *Borrowing all or part of another student's paper or using someone else's outline to write your own paper.*

6. *Using a paper writing "service" or having a friend write the paper for you.* Regardless of whether you pay a stranger or have a friend do it, it is a breach of academic honesty to hand in work that is not your own or to use parts of another student's paper.

7. *In computer programming classes, borrowing computer code from another student and presenting it as your own.* When original computer code is a requirement for a class, it is a violation of the University's policy if students submit work they themselves did not create.

Note: *The guidelines that define plagiarism also apply to information secured on internet websites. Internet references must specify precisely where the information was obtained and where it can be found.*

You may think that citing another author's work will lower your grade. In some unusual cases this may be true, if your instructor has indicated that you must write your paper without reading additional material. But in fact, as you progress in your studies, you will be expected to show that you are familiar with important work in your field and can use this work to further your own thinking. Your professors write this kind of paper all the time. The key to avoiding plagiarism is that you show clearly where your own thinking ends and someone else's begins

Declaration of Intent
for
Independent Investigative Inquiry

Name _____E20__

Email address _____

I choose the following selective to satisfy the requirement in Independent Investigative Inquiry:

Selective 1: Data Gathering/Hypothesis-driven Inquiry _____

MSRTP ___

Selective 2: Critical Review of the Literature _____

Selective 3: Experience-driven Inquiry _____
(Check here only if you have already been selected)

RUOP/III ____

CHAP/III ____

IHOP/III ____

Selective 4: Special Simulation Selective (in pilot phase) _____

____ I plan to request a waiver of the requirement on the basis of my Master's thesis, PhD dissertation, or first-author published paper.

____ I am currently an MSTP (MD/PhD) student

Please return the Declaration of Intent form to the cirruculum office box 356340 or e-mail to ***mbuckner@u.washington.edu***

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Deadline : April 15th of your first year of Medical School.

Recommendations of the III Approval Committee:
Approved:_____
Approved w/ Provisioins:_____
No Approved:_____

Proposal for Selective 1

Empirical Research Proposal Coversheet

1. Name _____ E20_____

2. Email address_____ Telephone_____

3. Title of Project:_____

4. Does the study involve human subjects? This can include, but is not limited to, data collected via personal interviews, questionnaires, medical records, direct physiological measurements, or tissue samples.

☐ Yes ☐ No

If the answer above is "Yes", you must obtain appropriate clearance from the University of Washington Human Subjects Division. You may also need to be cleared by other participating organizations. Approval must be granted before any data collection takes place and a copy of the approval letter must be turned in to the Curriculum Office. Further information on UW Human Subjects regulations can be found at: http://www.washington.edu/research/hsd/index.php

Additional Selective 1 Requirements:

a. The student must attend a workshop with a Human Subjects Division administrator **prior to beginning** their Selective 1 project.

b. The student must complete the Collaborative IRB Training Institute (CITI) course in the protection of human subjects. This course is linked to the Human Subjects Division website link above. Attach a copy of the course completion record to your III proposal.

c. The III proposal will not be considered without IRB approval and CITI documentation.

4. **IN NARRATIVE FORM**, describe the plan for the proposed research study, including the following:

A. Background and rationale; research question

B. Hypothesis to be investigated

C. Methodology

1. Study design
2. Population:
    i. Inclusion/exclusion criteria
    ii. Recruitment procedures
3. Sample size:
    i. Ideal
    ii. Achievable
4. Define variables and how they will be measured
    i. Outcomes (dependent variables)

ii. Exposures (independent variables)
iii. Potential confounders (control variables)

5. Procedures for data acquisition; attach data sheets, questionnaires, etc.
6. Methods for data analysis

D. Possible difficulties with research project and strategies to address them

E. Clearly define your role in the project

F. Timetable for completing project

5. **COMMENTS FROM FACULTY SPONSOR**:

Please include a brief statement including your plans for regularly scheduled meetings with the student for discussion of methodology and principles appropriate to the student's project. It is important that you discuss with the student your expectations in terms of time and commitment.

_____

_____

_____

_____

Faculty Sponsor signature _____Date_____

Please print or type name _____

Department _____Box number _____

Telephone _____E-mail _____

6. APPROVAL AND COMMENTS OF III DEPARTMENTAL COORDINATOR:

NOTE: This section must be completed. If you or your faculty sponsor do not know the name of the III departmental coordinator, please contact Marcie Buckner at (206) 543-5562.

Departmental Coordinator Signature_____ **Date:** _____

_____

Please print or type Name

_____ _____

Department **Box Number**

7. The proposal and any supporting letters should be sent or delivered to the School of MedicineCurriculum Office (A300, Box 356340) for processing and review by the III Approval Committee. Administrative questions should be directed to Marcie Buckner A-300 (206) 543-5562 mbuckner@u.washington.edu . Methodological questions should be directed to Mary Walls, Student Resource Center (T557), (206) 616-3047, mwalls@u.washington.edu.

8. Attachments:
   - Copy of the course completion record (CITI)
   - Copy of IRB approval letter

Guidelines for Selective 1
Empirical Study

Empirical research poses a hypothesis regarding the relationship between variables and attempts to validate the hypothesis through observation. An empirical research study can take the form of a basic laboratory study, a survey, a secondary analysis of an existing data set, a chart review, a qualitative study or a prospective clinical trial. The research may be initiated by the student or by the sponsoring faculty member, as long as you make an intellectual contribution to the project.

A. Research with Human Subjects (see Appendix 6). If your proposed research project involves humans, their tissues, cadavers or medical information about humans, you need to obtain Institutional Review Board (IRB) approval and attend a workshop with a Human Subject Division Administrator **before data collection begins**. **In addition, you must complete the online training in the protection of human subjects** via the Collaborative IRB Training Institute (CITI) https://www.citiprogram.org/default.asp. Federal, state and university regulations require that the use of human subjects in research be reviewed and approved by an Institutional Review Board (IRB). At the University of Washington, the Human Subjects Review Division carries out this function. If your work involves other organizations, you may need to apply for and receive approval from their IRB's as well. Discuss IRB approval with your faculty sponsor before submitting your proposal. The UW School of Medicine takes the protection of human subjects in research very seriously and monitors students' compliance with human use regulations. We want medical students to understand the obligation of the physician and scientist to protect the rights of research subjects.

The Human Subjects Review application is not difficult, provided you clearly and specifically articulate your research methods, particularly those pertaining to subject recruitment and protection of privacy. Most student projects qualify for either exemption or minimal risk review, and Human Subjects Division personnel understand and try to accommodate the time constraints on medical students. Nevertheless, **allow a minimum of 2 months** for securing approval for working with human subjects. Documentation of IRB approval must accompany your proposal.

You will be required to meet with a Human Subjects Division Administrator to go over completion of the application form. In order to accomplish this, the Research Advisor will be contacting you about an IRB workshop that will be held in the spring.

B. Faculty sponsor. You will have the opportunity to work on your research with supervision and guidance from a faculty sponsor. Any regular or clinical faculty member in any health care related department at any WWAMI university is eligible to be a faculty sponsor. The sponsor's role is to help you plan your study, meet with you as necessary during the execution of the project and provide feedback on your final paper. In some cases, the sponsor is the principal investigator on an ongoing research project that you connect with. Your sponsor must sign and approve your research proposal, your fourth year status report, and your final paper.

The sponsor you choose and the relationship you build will be among the most important considerations in making this experience successful, enjoyable and valuable. Sponsors need to be:

1. Experienced, interested and familiar with your topic.
2. Familiar with the methods you are planning to use in your study.
3. Available to you through phone, email and scheduled meetings.
4. Someone with skills and knowledge that complement those you bring to the project.

In your search for your faculty sponsor, start first with the III Departmental Coordinator (see attached list). A faculty member from each department has been designated III Departmental Coordinator. NOTE: You will need to obtain a departmental coordinators' signature on your III proposal. Ask the departmental coordinator for suggestions of faculty that may be interested in serving as faculty sponsor for your III project. Other resources are people you know: professors,

guest lecturers, residents, fellows, other students, and preceptors. You might also consult departmental websites and faculty interest databases such as the Community of Science (COS) http://www.cos.com/. COS is the leading global resource for hard-to-find information critical to scientific research and other projects across all disciplines. When you first contact a potential faculty sponsor, be prepared to explain information about the III requirement.

C. Research Proposal. A written proposal outlining your research plan must be submitted to the III Approval Committee for review. This review is primarily for feasibility and secondarily for scientific soundness. Proposals are reviewed on the first Thursday of each month throughout the school year, and you will receive written notice about your proposal shortly after it is reviewed. The Committee will approve your proposal, ask for further information, or ask that you meet individually with the Research Advisor or a Committee member.

A successful proposal (and a successful study) begins with a simple, clear purpose. This purpose should be reflected in each of the components of the study described below. The purpose will dictate which subjects to choose, what study design to use, what variables to measure, and what analyses to perform.

The proposal should be brief; generally 1-2 typed pages, but should provide sufficient information to give the committee a good idea of what you plan to do. The III Approval Committee includes members from a variety of clinical and basic science departments, so write your proposal for a broad audience. If additional information can best be presented in non-narrative form (graph, bulleted list, flow diagram, etc.), include that as well.

Below are guidelines explaining what to include in your proposal. Because each study is different, not all items will be pertinent to every study.

Background and rationale. Provide a brief introduction to the problem you are investigating. This might include:

- What is the research problem?
- Why is the problem important?
- What is already known about the problem and what remains unknown?
- How will your study contribute to this field of knowledge?

Question and hypothesis to be investigated. As much as possible state your research question in specific, measureable terms. A hypothesis is a testable assertion about the relationship between variables in your study. If you are investigating a clinical rather than a theoretical question, the hypothesis should include an effect size. For example, "Hospital length of stay will be at least 10% lower in the intervention group than in the comparison group." The study hypothesis is different from the null hypothesis which is only a statistical construct.

Study design. The study design is the logical structure of the study. This has to do with how subjects are selected and grouped and whether an intervention is imposed. It does not have to do with the way data will be collected (chart review, survey, etc.)

- Is this an experimental study (where you impose an intervention) or an observational study (where you collect data but do not intervene)?
- If it is experimental, is there a separate control group or will you compare the same subjects before and after the intervention.
- If it is observational, are subjects chosen and grouped based on their outcomes (e.g.; survival status) or based on their antecedent conditions (e.g.; smoking status)?

Resource for research methodology: *The Practice of Searching Research-Conduct, Critique, and Utilization.* Burns, N. & Grove, S.K. 2001. W.B. Saunders Company. Philadephia, PA.

Population. The generalizability of your results depends, in part, on the population you study, so it is important to specify what that population is. Inclusion criteria define the broad category of subjects to be included (e.g.; women 18-40 years of age, who have never been pregnant and who are currently using oral contraceptives). Exclusion criteria define small subsets of otherwise eligible subjects who will be excluded (e.g.; women with BMI < 22 or who are not fluent in English). Also describe how you will identify subjects (patients from a particular practice, volunteers from posted flyers, etc.).

Sample size. From the goals of the study, it is possible to calculate an estimate of the ideal sample size—a sample that is large enough to demonstrate the effect you are looking for but not so large that resources are wasted. Using the recommended sample size may not be practical for you, but you should still know what it is. Sample size calculations are best made in consultation with a biostatistician. You may also use a web-based calculator such as this one from the University of Iowa: http://www.stat.uiowa.edu/~rlenth/Power/index.html or The University of California at Los Angeles: http://calculators.stat.ucla.edu.

You will need the following information for most studies:

Study goal	Values you need
Compare 2 groups using means	Difference between means of each group Standard deviation of scores in each group Significance level (.05 is conventional) Number of tails (2 is conventional) Desired power (.80 is conventional)
Compare 2 groups using proportions	Difference between proportions Significance level (.05 is conventional) Number of tails (2 is conventional) Desired power (.80 is conventional)
Estimate a single mean value	Standard deviation of scores Acceptable level of error (95% confidence interval) Population size (if small)
Estimate a single proportion	Estimate of proportion value Acceptable level of error (95% confidence interval) Population size, if small

Variables and Measurements. List variables by category: independent, dependent, or confounder. Independent variables (or exposures) are putative causal factors being investigated. Dependent variables (or outcomes) are the results being investigated. Potential confounders (or control variables) are additional factors that, if not considered, can lead to misinterpretation of the main results. Most measurable factors can and do play different roles in different studies, so make the category clear. Also, describe how variables will be measured and defined. For example, if your study compares non-drinkers, social drinkers, and heavy drinkers, how will those categories be defined? If your study looks at pain as an outcome, how will pain be measured?

Attach drafts of instruments, scales, questionnaire forms, etc. to your proposal. Whenever possible, use instruments that have been used by other investigators with similar populations. This will save you work, will usually provide some insight into the reliability and validity of the instrument, and may enable you to compare your results directly with those of others. If you are developing a new questionnaire, justify why this is necessary.

Procedures for data acquisition. Describe the sequence of events that will take place during the study. For some studies, this can be done from the subject's point of view. Step-by-step, describe what will actually take place.

Methods for data analysis. How will you use the measurements you collect to test your hypothesis? The statistical procedures you choose will depend on the purpose and study design of your project along with the scale of measurement of the variables. For statistical help, try the "Selecting Statistics" website at www.socialresearchmethods.net/selstat/ssstart.htm.

Possible difficulties. Briefly describe possible problems you may encounter and your plan for handling them. Examples might include low rates of subject recruitment or untried lab techniques that do not work the way you expected them to.

Student's role in the project. Empirical research is seldom a solitary endeavor! If you will be working as part of a research team, describe what your responsibilities will be.

Timetable. As best you can, lay out a realistic timetable for completing the key steps of the project.

D. Funded Summer Research Opportunities. The School of Medicine offers several summer research programs that provide students a stipend. If you do research under one of these programs, the research may be used to fulfill your III requirement. These programs are competitive and have their own application and reporting procedures. You can indicate on the MSRTP application form whether to apply the project to the III requirement, you do not need to submit a separate III proposal. Other funding sources for summer research projects such as the Family Medicine Externship requires that a III proposal be submitted to the III Approval Committee. Note: there are many funding sources for student research, for more information, go to: http://www.uwmedicine.org/Education/MDProgram/StudentAffairsAndServices/SpecialResearchandAwardOpportunities.htm (the login ID is *research* and the password is *medstudent*).

E. Deadlines.

First Year	End of January	Application deadline for many summer research funding opportunities
	April 15th	Declaration of intention to pursue a Selective 1
Second Year	1st day of class in Winter Quarter	III proposal due in Curriculum Office.
Fourth Year	Beginning of July	Status report due in Curriculum Office. *Your clinical schedule may be adjusted if you do not demonstrate satisfactory progress.*
	First day in class in Winter Quarter	Final paper due in Curriculum Office

F. Final Paper.

The title should be brief and narrowly focused. It will become a permanent part of your curriculum vitae, so give it considerable thought.

The abstract is a succinct summary of the paper's methods and results.

The introduction provides a rationale for why the study was done. Think of the introduction as a funnel. It can begin with a broad introduction to the issues, but quickly narrows its focus to the specific research problem being investigated. It should first convince the reader that there is an important research problem needing resolution and second, lead the reader to conclude that the obvious next step in solving the problem is your study. By the end of the introduction, the reader should understand what your study will be about and why it is an important study to do.

The methods section ought to contain enough detail to enable another investigator to replicate your study. This should include how subjects were selected (inclusion and exclusion criteria), how subjects were contacted and recruited, what measurements were taken and what statistical methods were used. If you are following methods that have been published elsewhere, you can refer to the citation rather than describe the methods in detail. (For example: Radiographs were graded following the recommendations of Spencer, et al. [13])

The results section is the heart of the paper. The first results reported describe the sample in detail. This includes survey response rate, subject demographics, etc. If the study uses new or questionable methods, data regarding their validity should also be presented early. Following this, report the data that is most significant to the primary hypothesis of the study. Be sure to include numerical values, means, proportions, odds ratios, and not just p-values. Secondary results can be presented later, but you do not need to report all the data you collected. Do not choose what to include based on statistical significance but on the objectives of the study. The results should be presented in a well-organized manner.

The text should refer to tables and graphs but should not reiterate the information contained in them. The text can, however, guide the reader toward the message contained in the table or graph: "Table 1 shows that the treatment and control groups were comparable in age and disease severity," or something like, "Pain was about 30% lower in the treatment group relative to the control group at all three times of measure, as shown in Figure 3."

The discussion should be an interpretation of the results. Begin by providing an answer to the research question posed earlier. Include the limitations of your study and how those limitations could influence the results. Comment on the validity and generalizability of the study. After considering the weaknesses, what is the meaning of the study for the field of medicine? What questions has the study resolved? What questions or directions for future research has the study generated?

Resources for Writing:

1. Writing A Scientific Research Paper
   http://www.bio.davidson.edu/courses/Bio111/Bio111LabMan/Preface%20C.html

2. Tips & Guidelines For Scientific Writing
   http://www.medbioworld.com/advice/presenting.html

The following guidelines are given to reviewers for selective I papers:

Section	Required Criteria	Criteria of Excellence
Introduction	Demonstrates general understanding of relevant concepts and adequate literature review (i.e., reviewed studies relevant to research question; not missing important studies; not drawing inappropriate conclusions).	Demonstrates clear understanding of relevant concepts and thorough literature review, which is well articulated and makes interesting or creative points.
Question	Important *or* interesting/creative	Important *and* interesting/creative
Method	Generally appropriate to the question with no fatal flaws.	Appropriate design, which is clearly articulated**,** power addressed, clear description of measures and procedures.
Results	Results accurate but (a) not particularly well articulated/illustrated, (b) showing small misunderstandings of the data or design, or (c) missing details expected in a published article	Results accurate and well articulated; appropriate use of statistics, tables and figures; inclusion of treatment effects, not just p-values.
Discussion/ Conclusion	Demonstrates adequate understanding of the results and the relation of the results to the literature. Articulates limitations of the study.	Draws interesting implications, strong understanding of the results in relation to the literature, clearly articulates both the limitations of the study (including threats to internal validity and generalizability) and the future directions suggested by the study.
Presentation	Reasonable organization and readability, formatted in style for refereed journal, few spelling or grammatical errors.	Well-organized, readable, clear, style appropriate for refereed medical journal, almost no spelling or grammatical errors.

G. Key Personnel

Susan G. Marshall, M.D. ***Associate Dean for Curriculum*** ***smarsh@u.washington.edu***	***Marcie Buckner*** ***III Curriculum Office*** ***mbuckner@u.washington.edu*** ***206-543-0922***	***Mary Walls, MPH, CHES*** ***Research Advisor*** ***mwalls@u.washington.edu***

IRB Information

University of Washington Human Subjects Division Manual **Information taken from IRB website:** (***http://www.washington.edu/research/hsd/hsdman1.html***)

Human Subjects Policy

In order to protect the rights, well-being, and personal privacy of individuals, to assure a favorable climate for the conduct of scientific inquiry, and to protect the interests of the University of Washington, the policy and procedures described below have been established for the conduct of research involving human subjects (University of Washington Handbook VOL. IV, Part II, Chapter 2, "Use Of Human Subjects").

The following general principles apply equally to all research involving human beings, whether carried out solely with University resources or with the assistance of outside funds. The University assumes responsibility for communicating and explaining these principles to University personnel, and for providing procedural guidelines to effect their observance.

a. The University of Washington and the individual members of its faculty, staff and student body recognize their responsibility for protection of the rights and welfare of human subjects.

b. Appropriate professional attention and facilities shall be provided to insure the safety and well-being of human subjects. No subject in a research activity shall be exposed to unreasonable risk to health or well-being.

c. Research involving children (persons under 18 years of age), other legal incompetents, and persons unable to give informed consent may be approved if there is no risk or suffering for the individual subject. On the other hand, research involving a child, another legal incompetent, or a person unable to give informed consent should not be approved if there would be a significant risk or suffering without the possibility of benefit to the individual subject. Title 45, Code of Federal Regulations, Part 46, Subpart D, shall be followed for research involving children.

d. The confidentiality of information received from subjects in experiments or respondents to questionnaires shall be fully protected, both during and after the conduct of a research activity, within the limits of the law.

e. Before a subject participates in research involving risk or substantial stress or discomfort, this shall be carefully explained; the investigator shall be satisfied that the explanation has been understood by the subject; and the consent of the subject shall be obtained. The elements of informed consent are established by the Federal government and by the University.

f. A request by any subject for withdrawal from a research activity shall be honored promptly without penalty or without loss of benefits to which the subject is otherwise entitled, within the limits of the research.

I. Human Subjects Policy (continued)

Oversight

The Research Advisory Board shall have general oversight responsibility for University policy on the protection of human subjects and shall consider policy changes that may be required to comply with Federal regulations, to ensure fairness to investigators, or to protect more adequately the rights and welfare of human subjects in research. When appropriate, such policy changes should be recommended by the Board to the Vice-Provost for Research.

Appeal process

If a Subcommittee of a Human Subjects Review Committee makes a decision that the investigator believes to be unduly restrictive on the proposed research, the investigator may appeal, in writing, for review by the appropriate Human Subjects Review Committee.

If a Human Subjects Review Committee makes a decision that the investigator believes to be unduly restrictive on the proposed research, the investigator should first discuss the matter with the Chair of the relevant Human Subjects Review Committee, taking care to explain the reasons for believing that the proposed procedures are in compliance with University policy and with Federal regulations. If the issue cannot be resolved satisfactorily by negotiation, the investigator may appeal the decision of the Committee, in writing, to the Vice-Provost for Research.

Upon receipt of an appeal the Vice Provost shall convene an ad hoc committee constituted so as to fulfill the Federal requirements pertaining to Institutional Review Boards, and with a majority of the members being past but not current members of Human Subject Review Committees at the University of Washington. This ad hoc committee shall consider the appeal and issue a recommendation within no more than sixty days from receipt of the appeal by the Vice-Provost for Research. The ad hoc committee shall give the investigator an opportunity to present orally, or in writing, or both, the reasoning underlying the appeal. Upon completion of the review, the ad hoc committee shall communicate its decision in writing to the Vice-Provost, giving the reasoning for the decision. A copy of the decision of the ad hoc committee shall be given to the investigator. The decision of the ad hoc committee shall be treated as a decision of a University of Washington Human Subjects Review Committee (Institutional Review Board duly approved by OPRR prior to convening as an IRB appeals board).

CITI Training Information-*taken from IRB website:* https://www.citiprogram.org/default.asp

CITI Collaborative IRB Training Initiative

Welcome to the Registration Site for the CITI Program in the Protection of Human Research Subjects

The CITI program site provides a comprehensive selection of educational modules that can be used to satisfy institutional instructional mandates in The Protection of Human Research Subjects.

The Modules include:

- 17 basic modules focused on biomedical research
- 11 basic modules focused on Social and Behavioral research
- Continuing Education (CE) modules for biomedical researchers who have completed the basic modules

Links to modules in foreign languages, including Chinese, will be available in the coming months. Please check back.

Institutions / Organizations use the CITI modules in several ways. They may:

- Prescribe a curriculum from the available basic or CE modules
- Permit researchers to design their own curriculum using modules that are relevant to their own research
- Use the basic modules to supplement in-house instructional programs

Participating institutions have created specific instructions and requirements for their investigators. Links to these institutional instructions are provided on the "Welcome page" of the course site. **Be sure to read the instructions and requirements carefully when you go to the course site.**

Follow the appropriate link to register for the:

- Basic modules for biomedical or social and behavioral researchers

OR

- Continuing education modules for those who have completed the basic modules

If you have any questions about how to use the site, please contact your IRB office.

III Selective 1 – MSRTP

The **Medical Student Research Training Program** (MSRTP) is a funding mechanism for a Selective 1 project that follows an accelerated timeline for completion of the research and submission of the final paper. Students receive a stipend for 10 weeks of full-time research during the summer between their first and second year. The final paper is due at the end of January of the second year.

Students work with a research mentor on a distinct project connected to the ongoing work of the mentor, or, in some cases, design an independent project and have faculty supervision. In cases where a student wants to work with a UW clinical faculty member or a research mentor at another university, the student must obtain a second, UW mentor who is affiliated with the WWAMI Program and has a full-time faculty appointment.

Besides the final paper, students write up an abstract of their work and create a poster for presentation at the School's Medical Student Poster Session, held each year in September.

Applications are reviewed and approved for funding by a committee of faculty members appointed by the Dean. The committee typically meets in mid- to late February, and awards are announced immediately thereafter.

Students' approved MSRTP applications are forwarded by the MSRTP Coordinator to the III Program Coordinator. Thus, students do not need to submit a separate III proposal to the III Approval Committee. However, MSRTP students ARE required to submit the III Declaration of Intent form, indicating Selective 1.

For more detailed program information, visit the MSRTP Web page under the "Special Research and Award Opportunities" link at http://www.uwmedicine.org/Education/MDProgram/.

R/UOP MSRTP

Each year 2-4 opportunities exist to combine the Medical Student Research Training Program with the Rural Underserved Opportunities Program (R/UOP). Students who participate in this combined offering, are funded for a 10-week summer research project between their first and second years under the supervision of a full-time faculty mentor. Four weeks of this time is spent doing a complementary R/UOP experiences in a rural or urban underserved community. Research projects are hypothesis driven and generally all into the category of clinical and health services. Abstracts for these projects are posted in November marked "MSRTP-RUOP". Interested students should contact the sponsor identified on the abstract. If no "MSRTP-RUOP" projects are listed, students may contact the R/UOP office for information at (206)543-9425.

Students must complete an application to R/UOP as well as applying for the MSRTP-R/UOP project (see website: http://www.fammed.washington.edu/predoctoral/ruop/.

UNIVERSITY OF WASHINGTON
MEDICAL STUDENT RESEARCH TRAINING PROGRAM (MSRTP) SUMMER 2006

APPLICATION FORM

Please submit original (paper-clipped, not stapled) and four (4) copies of this signed, completed application to: Mary Lambeth, Office of Student Affairs, A-300 Health Sciences Building, Box 356340, Seattle, WA 98195, by **January 27, 2006**.

Section 1.02 Project Title

Section 1.03
Section 1.04 Project Location

Project Category (Please mark only one.)

	Article II. Laboratory Based		Article III. Clinical or Health Services		***Section 3.01 MSRTP/RUOP***		***Section 3.02 Int'l Health***

(a) ***Student Information***

Name	
(i)Entry Year	
(ii)**Street Address**	
(iii)**City, State, Zip**	
(iv)**Email Address**	
(v)First Year Site	

Section 3.03 Sponsor 1 Information

(i)Name & Title	
(ii)Degree (e.g., M.D.)	
Institution & Department	
(iii)UW Box Number (if applicable)	
(iv)Street Address	
(v)City, State, Zip	
(vi)Email Address	

Section 3.04

Section 3.05 <u>Sponsor 2 Information (if applicable)</u>

(i)Name & Title	
(ii)Degree (e.g., M.D.)	
Institution & Department	
(iii)UW Box Number (if applicable)	
(iv)Street Address	
(v)City, State, Zip	
(vi)Email Address	

Proposed Dates for Research (Must total 10 weeks during Summer 2006.)

Start Date (mo/day/yr)	
End Date (mo/day/yr)	

Section 3.06 <u>Description of Project</u>

The next portion of the application should be completed by the **<u>student applicant</u>** using the space available on the following two pages.

Be as explicit as possible in your description, as funding is based on an evaluation of your proposal. Be sure to include the following in your outline of the project, and distinguish the heading of each section with boldface type.

1. The goal of the research. **The hypothesis to be tested should be clearly stated.**
2. The experimental design of the project (what you plan to do and how you intend to test the hypothesis).
3. The expected significance of the results.
4. A brief list of relevant references (5-10).

Your application will be considered <u>incomplete</u> if these four items are not included. Do <u>not</u> exceed the available space (approximately 1 1/2 pages, as blocked).

Project Description (May not exceed one-and-a-half pages in length.)

Total Stipend Level: $3,500/10 weeks

If I receive a traineeship, I will devote my full time and energy to this 10-week summer research project, and I will not be enrolled in courses. I understand that participation in this program requires submission of a final paper summarizing my work, which has been reviewed by my sponsor, and participation in the School's poster session held in September.

(i) Signature of Student	
Signature of Sponsor	
Printed Name & Title of Sponsor	

UNIVERSITY OF WASHINGTON
MEDICAL STUDENT RESEARCH TRAINING PROGRAM (MSRTP) SUMMER 2006

1) Sponsor Statement

Article IV.

a) Student Name	
Sponsor Name	
Sponsor Email	

Article V. Below or on a separate sheet of paper, please indicate: 1) your willingness to sponsor the student, 2) how much of the application the student wrote, 3) the role the student will play in the project (attach outline of agreed upon work schedule**), and 4) your evaluation of the student's ability to carry out the work. The application will be considered incomplete if this information is not included.**

Are any other departments, labs, or clinics involved in the student's research project?
(If yes, please include information on the involvement and who the contact person will be.)

Section 5.01 HUMAN AND ANIMAL SUBJECTS

Section 5.02 ***Please note**: It is the **responsibility of the faculty sponsor(s) to assist students with submission of UW and other pertinent Human Subjects and Animal Care Protocol applications** by **March 31, 2006.***

	Yes	***No***
Section 5.04 _ Are human subjects involved in the proposed project?		
i) If yes, has project been approved by the Human Subjects Committee?		
*If no, has application been made? *Date submitted / to be submitted:*		
Article VI. __ Are experiments with vertebrate animals involved?		
If yes, has the animal protocol been approved by the appropriate Animal Use and Care Committee?		
a. If no, has application been made? *Date submitted / to be submitted:		

Section 6.02

Section 6.03 Sponsor Support

Every effort is made to insure that all deserving applicants to the program receive a stipend. Funds for the program are limited and for this reason faculty sponsors are asked to assist in funding the student's stipend from their own research, training grants, or departmental resources where possible. Even partial support of one-half or one-third of the $3,500 stipend from these sources will allow additional qualified students to participate in the program.

Article VII.

Section 7.01 Can you commit funds for support of this student?		***Sections***		***Section***
i. If yes, amount you can support:	$ .00			
Source of support funds:				
*UW budget # (if applicable):**				

**** Please confirm with department administrator or Grants & Contracts that this budget/grant can be used for a student stipend.***

Name of Administrator to Contact (if applicable)
_____

Phone _____ Email _____

Signature of Sponsor _____

Recommendations of the III Approval Committee:
Approved:
Approved w/ Provisioins:
No Approved:

Proposal for Selective 2
Systematic Literature Review Proposal Coversheet

1.Name E20

Email address Telephone

2.Title of Project:

3. In **NARRATIVE** form, describe the plan for the review to be conducted. Whenever appropriate, please include the following information in your description:

A. Background and rationale

B. Research question. Does the question match the scope of the literature?

C. Hypothesis to be investigated

D. Search Strategy

i. Databases to be searched
ii. Keywords to search
iii. Dates of publication
iv. Study population(s)
v. Criteria for assessing the quality of a study

E. Describe a strategy for synthesizing the data

i. Outline an Evidence Table
ii. Define how you will summarize the information in the studies

F. Timetable for completing your project

G. Preliminary Literature Search (10 References Minimum)

- Attach a reference list of at least 10 studies that address your research question. Please do not attach the complete abstract.

H. Make a statement there is not a systematic review already published which answers this specific question.

Student Name: _____

4. COMMENTS FROM FACULTY ADVISOR

Please include a brief statement indicating the degree to which you will have regularly scheduled meetings with the student for discussion of methodology and principles appropriate to the student's project. It is important that you discuss your expectations in terms of time and commitment with the student.

_____

_____

_____

_____

Faculty Advisor signature _____ Date _____

Please print or type _____

Department _____ Box number _____

Telephone _____ E-mail _____

5. APPROVAL AND COMMENTS OF DEPARTMENTAL III COORDINATOR:

(NOTE: This section must be completed. If you or your sponsor do not know the name of the III Departmental Coordinator, please contact Marcie Buckner at 206 543-5562.

_____

_____

_____

Departmental Coordinator Signature _____

_____ **Department Box Number** _____

Please print or type name

6. ☐ The proposal should be sent or delivered to the School of Medicine Curriculum Office (A300, Box 356340) for processing and review by the III Approval Committee. Administrative questions should be directed to Marcie Buckner A-300, (206) 543-5562, mbuckner@u.washington.edu . Methodological questions should be directed to Mary Walls, Research Advisor, Student Resource Center (T557), (206) 616-3047, mwalls@u.washington.edu.

III Selective 2 - Critical Review of the Literature
Guidelines

A critical review of the literature (also called Systematic Literature Review) poses an unresolved scientific question relevant to the practice of clinical medicine, and attempts to answer that question from evidence published in the medical literature. A critical review can take other forms as well, such as the analysis of an issue in health policy or biomedical ethics or an historical investigation. The research may be initiated by you or by the sponsoring faculty member, as long as you make an intellectual contribution to the project.

A. Key Steps

a) Identify a specific unresolved scientific question relevant to the practice of clinical medicine, its scientific base, or the administration, regulation, or financing of medical care.

b) Conduct a comprehensive, systematic search to identify the existing literature.

c) Critically review this literature with particular attention to methodological strengths and weaknesses in the publications.

d) Summarize the status of this question with particular attention to areas of uncertainty; in most cases, produce one or more tables called Evidence Tables, demonstrating the evidence that addresses your research question.

e) Recommend a logical next step for research. A hypothesis to test and suggested experimental approaches would be appropriate.

B. Faculty Advisor You will work on your research with guidance from a faculty advisor. Any regular or clinical faculty member in any department at any WWAMI university is eligible to be a faculty advisor. The advisor's role is to help you plan your study, to meet with you as necessary during the execution of the project, and to read and provide feedback on your final paper. Your advisor must sign and approve your research proposal, your fourth year status report, and your final paper.

The faculty advisor you choose and the relationship you build will be among the most important considerations in making this experience successful, enjoyable and valuable. Faculty advisors need to be:

- Interested in your topic (though not necessarily expert in it)
- Familiar with systematic literature reviews
- Available to you through phone, email and scheduled meetings

The ideal faculty advisor will also be:

- A role model for qualities you seek to emulate in your professional development
- Enthusiastic about working with you
- Experienced with the clinical problem, scientific question or policy issue you will be studying
- Someone with skills and knowledge that complement those you bring to the project

In your search for your faculty advisor, start first with the III Departmental Coordinator (list on page). A faculty member from each department has been designated III Departmental Coordinator. You may ask the departmental coordinator for suggestions of faculty who may be interested in serving as faculty advisor for your III project. Other good sources are people you know: professors, guest lecturers, residents, fellows, other students, and preceptors. You might also consult departmental websites and faculty interest databases such as the Community of Science (COS), http://www.cos.com/. When you first contact a potential faculty advisor, be

prepared to explain something about the III requirement as not all faculty members are familiar with III.

C. <u>Proposal.</u> A written proposal describing your plan must be submitted to the III Approval Committee for review. Proposals may be turned in at any time prior to the deadline for presentation to the III Approval Committee. The Committee will: approve your proposal, ask for further information, or ask that you meet individually with the Research Advisor or a Committee member. Your will receive notice in writing once your proposal has been reviewed.

A successful literature review begins with a clear, concise problem statement. This problem (purpose) should be reflected in each of the components of the study described below, which will dictate which databases to search, which articles to select and what information to use from the articles you read.

The proposal should be brief; generally, 1-2 typed pages, but should provide enough information to give the committee a good idea of what you plan to do. If additional information can be presented in non-narrative form, such as a graph, bulleted list, or flow diagram, etc., please include that as well.

Below are guidelines for what should be included in your proposal.

Background and Rationale. Provide a brief introduction to the problem you are investigating. This might include:

- What is the medical-health problem?
    - Describe the who, what, when, why, where and how as appropriate.
- Why is the problem important? Use real data to back your claims whenever possible.
    - Are a lot of people affected by the problem?
    - Are the consequences of not addressing the problem severe?
    - Is this problem costly?
    - What is the public health or societal impact of this problem?
- How will your study contribute to this field of knowledge?
    - What have previous reviews and meta-analyses covered?
    - How does your approach differ?

Research Question and Hypothesis to be investigated. The specificity of the research question should be tailored to the quantity of literature available, as described below under "Selection Criteria." A hypothesis is a testable assertion about the relationship between variables in your study. Provide a preliminary estimate of the number of articles available that address your research question.

Methods:

Search Strategy. A good search strategy contains details on the databases to be searched, key terms to be used, publication dates considered and information on other strategies used to locate articles. Other items that may be included in a search strategy are descriptions of any limits used (e.g. only humans, only articles with abstracts) and any special functions used (e.g. Related Articles or Clinical Queries in PubMed).

Selection Criteria. All selection criteria should consider the following elements:

<u>*Study Design*</u> – What types of study designs will be included? Only clinical trials? Would case series be included? Would animal studies be considered? If your question concerns the quality of life following two surgical treatments for a certain cancer, will you only include studies

comparing the procedures head-to-head, or will you also include case series that describe outcomes for each procedure alone?

Study Population – What characteristics do the subjects need to have? Do they need to be a certain age, gender, race or ethnicity? Do animals need to be a certain breed? Should subjects be healthy or have a pre-existing disease? Are non-English speakers included?

Sample Size – How many subjects does a study need to have in order to be included? What range of follow-up times will you include?

Outcome Assessment – Are there requirements for how outcomes can be measured? Do all outcomes need to be assessed with a specific diagnostic test, such as a CT scan? Do all studies need to use a certain quality of life questionnaire? Do outcomes need to be assessed at a particular time? Will you only use studies that use the same definition of a stroke?

Confounding Variables - Will studies be included that don't take into consideration confounding factors such as patient age or disease severity?

Publication Dates – Were there any changes in measurement, reporting or technology that would affect the interpretation of studies published before a certain date? Will you only include studies published after a certain date when there was a significant change in how one of the procedures was performed?

Your answers to such questions will depend, in part, on the amount of literature available. If there is a large amount of literature, i.e. over 100 articles, you should focus your question to a subset of studies homogeneous with respect to population, study design, and other research methods. If the body of literature is small, you will have to use studies that are more heterogeneous.

Variables. Indicate how, for purposes of the review, you will define the exposures and outcomes of interest and how the outcomes are measured. If there are important confounding variables, describe these as well. Your definitions should be reasonably consistent with definitions used in the studies included in your evidence table.

Strategy for Data Synthesis. Describe how you will integrate information across studies to answer the research question. You do *not* need to perform a meta-analysis or mathematically pool data across studies.

D. Timetable. As best you can, lay out a realistic timetable for completing the key steps of the project, paying attention to the deadlines described below.

E. Preliminary Literature Review. Demonstrate that there are enough published studies that address your question to proceed with your review. Attach a list of a minimum of 10 published studies to your proposal. The III Approval Committee will not consider your proposal without this.

F. Due dates are deadlines:

First Year	April 15th	Declaration of intention to pursue Selective 2
Second Year	1st day of winter quarter	III proposal due in Curriculum Office.
Fourth Year	1st day of fourth year	Status Report due in Curriculum Office. *Your clinical schedule may be adjusted if you do not demonstrate satisfactory progress.*
	1st day of winter quarter	Final paper due in Curriculum Office

G. Final paper.

The Title should be brief and narrowly focused. It will become a permanent part of your curriculum vitae, so give it considerable thought. It does not need to be identical to the title on your proposal.

The Abstract is a succinct summary of the paper's methods and results, usually about 250 words.

The Introduction provides a rationale for why the study was done. Think of the introduction as a funnel. It can begin with a broad introduction to the issues, but quickly narrows its focus to the specific research problem being investigated. It should convince the reader that an important research problem has been addressed in the literature and now calls for systematic review. It should include data on the public health impact (e.g. incidence rate, mortality rate, costs) of the problem whenever possible. By the end of the introduction, the reader should understand what your study will be about and why it is an important study to do.

The Methods section ought to contain enough detail to enable another investigator to replicate your study. This section must describe:

- How articles were selected (your search strategy)
- Why articles were included or excluded (your selection criteria including all elements described above)
- How you created your evidence table(s) and may include:
    - Definitions of important variables
    - Descriptions of any calculations you made

The Results section is the meat of the paper. Typically, the first results presented describe the sample of articles on which the remaining results are based. Describe the studies in your evidence table in general. How many articles with a specific study design were found? How many head-to-head comparisons were found? How many with a particular type of study population? How many studies used a certain type of outcome assessment? You may want to create a table summarizing this information.

Example Summary Table

Summary of Study Designs Reviewed

Study Design	# of Studies
Clinical Trial	
Cohort Study	
Case Series	

After you have described the studies in general, describe the studies in detail in an evidence table. At a minimum, you should touch upon some of the elements listed in the selection criteria and give the main results of the paper. The text should refer to the tables and graphs but should not reiterate the information contained in them. The text can, however, guide the reader toward the message contained in the table or graph: *"Table 2 shows that the treatment and control groups had similar hospital lengths of stay within studies, although length of stay varied considerably among the studies."*

An example evidence table for a best clinical practices or an etiology study is presented below. In the table, you would list the first author, year, and study design and write a short description of the study population. For example, if we were studying the effect of hormone replacement therapy on stroke, you might have a study that included "post-menopausal women aged 50-85." Under therapy or exposure, you might write "cyclic hormone therapy." For outcomes, you might have results for any stroke, ischemic stroke and hemorrhagic stroke. Depending on the purpose of our review, you could include all three types or just one or two. For outcome, you could report odds ratios, relative risks, incidence or other measures. The purpose of the review would guide you as to which to select. The comment column would be used for information that affects interpretation of the results. For example, were results adjusted for age?

Example Outline of an Evidence Table

First Author	Year	Study Design	Study Population	Therapy or Exposure	Outcome	Results	Comments

The Discussion should be an interpretation of the results. Begin by providing an answer to the research question posed earlier. Discuss the weaknesses of the studies reviewed and how those weaknesses could influence the results of the individual studies and the results of your review. Comment on the generalizability of your review. After taking the weaknesses into consideration, what is the meaning of the study for the field of medicine? What questions has your review resolved? What questions or directions for future research has your review generated?

The following guidelines are given to reviewers for Selective 2:

Section	Required Criteria	Criteria of Excellence
Question	Important *or* interesting/creative, somewhat focused in terms of population, intervention/exposure and outcome; no fatal flaws in question.	Important *and* interesting/creative, clearly focused in terms of population, intervention/exposure and outcome.
Method	Describes strategy for literature search, study inclusion criteria and methods of data synthesis.	Clearly describes excellent strategy for literature search, study inclusion criteria and methods of data synthesis.
Results	Demonstrates general understanding of relevant concepts. Results described appropriately (i.e., reviewed studies relevant to research question; not missing important studies; not drawing inappropriate conclusions or going beyond the data, enough detail provided to understand conclusions without just listing studies, results are related specifically back to question)	Demonstrates clear understanding of relevant concepts and thorough literature review. Well-articulated and makes interesting or creative points. Results well articulated, appropriate use of tables and figures. Appropriate synthesis of results across studies, with attention to methodological heterogeneity and quality.
Discussion/ Conclusions	Demonstrates adequate understanding of the results in relation to the question. Articulates limitations of the review.	Draws interesting implications, strong understanding of the results in relation to the literature, clearly articulates the limitations of the review and future directions suggested by it.
Presentation	Reasonable organization and readability, formatted in style for refereed journal, few spelling or grammatical errors.	Well-organized, readable, clear, style appropriate for refereed medical journal, almost no spelling or grammatical errors.

H. Key Personnel

Susan G. Marshall, M.D. ***Associate Dean for Curriculum*** ***smarsh@u.washington.edu***	***Marcie Buckner*** ***III Curriculum Office*** ***mbuckner@u.washington.edu*** ***206-543-0922***	***Mary Walls, MPH, CHES*** ***Research Advisor*** ***mwalls@u.washington.edu***

III Selective 3 – Experience Driven Inquiry
R/UOP, IHOP or CHAP

The Independent Investigate Inquiry Selective 3 offers students a chance to augment their usual R/UOP, IHOP, or CHAP field experience with a community medicine project. Students learn about the process of Community-Oriented Primary Care. They use these concepts to develop and implement a community medicine project during summer field experience allowing students an opportunity to complete independent investigative inquiry requirement in year one along with a community medicine experience.

Rural/Urban Opportunities Program (R/UOP-III 3)

Applications will be available on the RUOP website by mid December. Check website for specific information regarding due dates: www.fammed.washington.edu/predoctoral/ruop***.***

Students attend a III-3 training during spring quarter, where they receive a detailed syllabus, reading list, and learn about Community–Oriented Primary Care (COPC). Students must complete all III-3 assignments throughout the summer & early fall. A key assignment is to devise and execute a community medicine project during the summer field experience. When the student returns to the UW campus in the fall, he/she presents an academic poster describing the project.

There a several components to the actual experience:

1. Before the field experience, create a community profile including the sociodemographics and health care resources for the host community and complete readings. Students may spend up to 2 week on this assignment.

2. Early in your community experience, select a III-3 topic to explore in depth. You may consult with Seattle campus staff during this process.

3. Develop and execute a project. Examples include: designing patient education materials, giving community talks, participating in health fairs. You must leave something behind for the community when you leave.

4. Throughout the experience, journal via internet with RUOP faculty. Also, complete a literature search about a selected topic

5. In September, prepare and present a poster for the Student Poster Session describing your project. Prepare an abstract for the Western Student Medical Research Forum (WSMRF) if you are interested in attending.

Community Health Advancement Program (CHAP)

CHAP sponsors student-initiated and directed, extracurricular community direct service projects, educational programs and a seminar series addressing the health needs of underserved communities. Students design, plan, implement, staff and evaluate these programs, with assistance, guidance and support from staff and faculty in the Department of Family Medicine and from community organizations. Opportunities in CHAP are limited to.

International Health Opportunities Program (IHOP)

A certain number of students are eligible to complete a III Selective 1 and 3 with the IHOP program. IHOP is an experiential immersion program in international health care settings and provides students the opportunity to learn more about international health care systems and basic public health. IHOP was designed by the UWSOM International Health Group for students between their first and second years of medical school at the University of Washington. Funding for these opportunities is provided by the Puget Sound Partners for Global Health, www.pspgh.org. Applications are available in early fall each year and decisions regarding placements are made in December.

Further information on IHOP may be obtained:

Daren Wade
206-616-1159
dwade@u.washington.edu
website: www. depts.washington.edu/ihg/ihop.htm

STATUS REPORT
INDEPENDENT INVESTIGATIVE INQUIRY (III)

NAME OF STUDENT_____

Expected date of graduation:_____

STATUS OF III PROJECT:

in progress	completed	not applicable	
___	___	___	Background information collection
___	___	___	UW Human Subjects approval
___	___	___	Data collection
___	___	___	Data analysis
___	___	___	Literature review
___	___	___	First draft
___	___	___	Abstract prepared or presented
___	___	___	Final paper

Estimated date of completion _____(The final paper is due no later than the first day of class in January of your 4th year.)

NOTE: If your project is not near completion, when during this year are you scheduled to work on it?

_____

Student's Signature_____

SPONSOR'S STATEMENT:

The student is making satisfactory progress ___

The student is not making satisfactory progress ___

I do not know the status of the student's project ___

Additional comments:_____

Sponsor's Signature _____

Please Print or Type _____

Telephone_____ Date _____

Please return an original signed copy to the Marcie Buckner, Box 356340, A-300 Health Science Building. This status report is due the fourth Tuesday in July of your 4th year. Thank you.

III Final Paper

FACULTY SPONSOR/ADVISOR STATEMENT

NOTE: This form is to accompany the final III paper for Selective 1 and Selective 2. It is the student's responsibility to insure the sponsor form and final paper reach the Curriculum Office by the deadline.

Name of Student: _____

Title of Paper: _____

_____

I have read the attached III paper and am submitting it for final approval. I would rate the student's paper as:

1. Meets the required criteria _____
2. Does not meet Criteria _____

_____
(Signature) (Date)

_____
(Please print or type)

_____
(Department)

_____ _____
(Box Number) (Telephone)

Please provide summary comments on your student's performance on this III project and final paper. These comments may be included in the Medical Students Performance Evaluation (formerly the Dean's Letter), which is sent to the residency programs to which the student applies.

_____

_____

_____

_____

_____

_____

_____

Please return to: Marcie Buckner
Curriculum Office, A-300
Box 356340
Seattle, WA 98195-6340
Phone: 206-543-0922
Fax: 206-543-3639

Final Paper Review Criteria for Selective 1

Section	Required Criteria	Criteria of Excellence
Introduction	Demonstrates general understanding of relevant concepts and adequate literature review (i.e., reviewed studies relevant to research question; not missing important studies; not drawing inappropriate conclusions).	Demonstrates clear understanding of relevant concepts and thorough literature review which is well-articulated and makes interesting or creative points.
Question	Important *or* interesting/creative	Important *and* interesting/creative
Method	Generally appropriate to the question with no fatal flaws.	Appropriate design which is clearly articulated**,** power addressed, clear description of measures and procedures.
Results	Results accurate but (a) not particularly well articulated/illustrated, (b) showing small misunderstandings of the data or design, or (c) missing details expected in a published article	Results accurate and well-articulated; appropriate use of statistics, tables and figures; inclusion of treatment effects, not just p-values.
Discussion/Conclusions	Demonstrates adequate understanding of the results and the relation of the results to the literature. Articulates limitations of the study.	Draws interesting implications, strong understanding of the results in relation to the literature, clearly articulates both the limitations of the study (including threats to internal validity and generalizability) and the future directions suggested by the study.
Presentation	Reasonable organization and readability, formatted in style for refereed journal, few spelling or grammatical errors.	Well-organized, readable, clear, style appropriate for refereed medical journal, almost no spelling or grammatical errors.

NOTE: An acceptable paper must meet all **6** required criteria.

Final Paper Review Criteria for Selective 2

Section	Required Criteria	Criteria of Excellence
Question	Important *or* interesting/creative, somewhat focused in terms of population, intervention/exposure and outcome; no fatal flaws in question.	Important *and* interesting/creative, clearly focused in terms of population, intervention/exposure and outcome.
Method	Describes strategy for literature search, study inclusion criteria and methods of data synthesis.	Clearly describes excellent strategy for literature search, study inclusion criteria and methods of data synthesis.
Results	Demonstrates general understanding of relevant concepts. Results described appropriately (i.e., reviewed studies relevant to research question; not missing important studies; not drawing inappropriate conclusions or going beyond the data, enough detail provided to understand conclusions without just listing studies, results are related specifically back to question)	Demonstrates clear understanding of relevant concepts and thorough literature review. Well-articulated and makes interesting or creative points. Results well-articulated, appropriate use of tables and figures. Appropriate synthesis of results across studies, with attention to methodological heterogeneity and quality.
Discussion/Conclusions	Demonstrates adequate understanding of the results in relation to the question. Articulates limitations of the review.	Draws interesting implications, strong understanding of the results in relation to the literature, clearly articulates the limitations of the review and future directions suggested by it.
Presentation	Reasonable organization and readability, formatted in style for refereed journal, few spelling or grammatical errors.	Well-organized, readable, clear, style appropriate for refereed medical journal, almost no spelling or grammatical errors.

NOTE: An acceptable paper must meet all **5** required criteria

APPENDIX – TEMPLATES

I. III Departmental Coordinators
II. Declaration of Intent Letter
III. Status Report Letter
IV. MSRTP Award Letter
V. MSRTP Application

III Departmental Coordinators

Department	First Name	Last Name	Email	Phone
Anethesiology	Murali	Sivarajan	murali@u.washington.edu	764-2574
Biochemistry	Alan	Weiner	amweiner@u.washington.edu	543-1768
Bioengineering	Yongmin	Kim	ykim@u.washington.edu	685-2002
Biological Structure	Stevan	Broderson	broderso@u.washington.edu	543-8295
Comparative Medicine	Denny	Liggit	dliggitt@u.washington.edu	685-3256
Family Medicine	Bill	Phillips	bphillips@fammed.washington.edu	543-9425
Immunology	Chris	Wilson	cbwilson@u.washington.edu	685-3956
Medical Education	Douglas	Schaad	schaad@u.washington.edu	543-3952
Medical History and Ethics	Jack	Berryman	berryman@u.washington.edu	543-9123
Medicine	Henry	Rosen	hgr@u.washington.edu	543-3238
Microbiology	Stephen	Moseley	moseley@u.washington.edu	543-2820
Neurological Surgery	John	Loeser	jdloeser@u.washington.edu	543-3570
Neurology	Robert	Fern	bobfern@u.washington.edu	616-7207
OB/GYN	Robert	Steiner	steiner@u.washington.edu	543-8712
Office of Multicultural Affairs	David	Acosta	acosta@u.washington.edu	685-2489
Ophthalmology	James	Kinyoun	lovgren@u.washington.edu	543-7489
Orthopaedics	David	Eyre	deyre@u.washington.edu	543-4700
Otolaryngology	Edwin	Rubel	rubel@u.washington.edu	543-8360
Pathology	Peter	Byers	pbyers@u.washington.edu	543-4206
Pediatrics	William	Robertson	mryuk@wapc.org	517-2356
Pharmacology	Stan	McKnight	mcknight@u.washington.edu	616-4237
Physiology/Biophysics	Mark	Binder	mdbinder@u.washington.edu	543-2509
Psychiatry	Zoran	Brkanac	zbrkanac@u.washington.edu	543-9573
Radiation Oncology	James	Douglas	drjay@u.washington.edu	598-4115
Radiology				
Rehab Medicine	Majorie	Anderston	andemar@u.washington.edu	543-7030
Surgery	Raymond	Yeung	ryeung@u.washington.edu	616-6408
Health Services (SPHCM)	Mark	Oberle	moberle@u.washington.edu	616-2930
International Health (SPHCM)	Steve	Gloyd	gloyd@u.washington.edu	616-2992

SPHCM = School of Public Health and Community Medicine