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REPORT FROM THE WORKING GROUP ON SCHOLARSHIP

Implementation Task Force on Curriculum Renewal

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Introduction

The Working Group on Scholarship used the report produced by the previous Working Group on Core Curriculum and Scholarly Interest as a foundation for our work. The recommendations elaborated by this group serve us well during our discussions, namely to:

1. Establish a scholarly project requirement at UBC for the MD degree;
2. Create adequate time in the curriculum for students to pursue their project throughout the four years of the program;
3. Broaden the definition of scholarship to include not only the scholarship of discovery, but also the scholarship of application, integration and teaching;
4. Establish rigorous criteria for the planning, mentoring and assessment of scholarly projects;
5. Develop capacity for mentorship, both at the faculty and peer level, to support students through the program; and
6. Provide the resources to build and maintain a vigorous and vital scholarly program for undergraduate MD students.

The group agreed with the definition and criteria proposed previously, namely that scholarship includes “the scholarship of discovery [the traditional research paradigm], the scholarship of integration, the scholarship of application, and the scholarship of teaching” (Boyer, 1990), and that research projects would use different research methods (e.g., quantitative, qualitative, community-based research, and clinical trials). The essential elements for scholarly activities would contain those proposed by Glassick and colleagues (1997): clearly formulated goals; adequate preparation of a good foundation for the project (e.g., literature review, situational analysis, etc.); use of appropriate methods to conduct the research; achievement of significant results; effective communication through the dissemination of ideas and findings; and reflective critique, including mentorship and peer review.

The areas of scholarly concentrations would be based on CIHR’s four pillars of health research:

- Biomedical
- Clinical
- Social, Cultural, Environmental and Population Health
- Health Systems Services

In addition, we would add:

- Medical Education



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The overarching goal of our model:

To prepare all students to become scholarly practitioners

The guiding principles as articulated by the Working Group on Scholarship within our program are:

- All students will be involved
- In order to respect the diversity of our student body, students may participate in *scholarship* in different ways
- Participation in scholarship will be equitable across all sites
- Participation will be flexible and continuous

The specific goals for our model apply to students, faculty and the institution, namely:

- To harness motivation for exploration and learning
- To develop meta skills (e.g., critical thinking, creativity, team work)
- To enhance self-efficacy
- To develop capacity for scholarship

The following were identified as key objectives for the development of the model:

- To allow for the integration of theory and practice by applying knowledge in particular contexts
- To foster skills that prepare students for CanMEDS competencies in post-graduate training and practice
- To prepare students for roles as scholars and leaders across the full trajectory of a medical career
- To provide opportunities for inter-professional learning
- To help physicians contribute to society through community engagement and scholarship
- To create a significant opportunity to foster mentorship between faculty and students
- To give students some control over their own learning and thereby foster their active participation in curriculum planning, implementation and evaluation
- To create an opportunity for UBC to become a distinctive leader in Canadian medical education

Process

The first working group's list of medical schools that had a form of scholarly concentration was divided among the members to review and obtain information to answer the following questions:

- What does the scholarship program look like?
- Is the program required or an elective?
- What is the size of the medical school?



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- Are there distributed sites?
- What are challenges and success factors?

The schools reviewed were:

Table 1

Brown University	Stanford University	University of Pittsburgh
Cambridge University	University of California San Francisco	University of South Florida
Duke University	University of Chicago	University of Tennessee
Harvard University	University of Cincinnati	University of Texas
Mount Sinai School of Medicine (NYU)	University of Colorado	University of Toronto
Penn State College of Medicine (Hershey)	University of New Mexico	University of Western Ontario
Queens University	University of North Carolina at Chapel Hill	
Rochester School of Medicine	University of Pennsylvania	

After reviewing and discussing each school’s program, the group retained four that were deemed to reflect the definition and scope of our discussions: **The University of Chicago, University of Colorado, Stanford University, and Rochester School of Medicine**. These were researched in more detail to inform the development of the proposed model.

The Working Group on Scholarship also benefitted from the summary prepared by Dr. Joanna Bates who attended a number of Association of American Medical Colleges (AAMC) sessions on scholarly concentrations (Appendix 1). Dr. Bates was invited to one of the group’s meetings to offer comments as the model was developed.

In order to better understand the scholarship opportunities within the current curriculum, the following sources were used: the report from the previous working group that outlines specific areas within the existing courses (e.g., DPAS), a more in-depth review of current opportunities at UBC and a curriculum



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mapping carried out by Marc Broudo that identified areas in the curriculum that focus on *Critical Appraisal, Ethics, Program Evaluation, Journal Clubs* (Appendix 2).

This last exploration confirmed that topics related to scholarship are being taught throughout the four years but are not necessarily grounded in a context that allows students to understand core principles. This perception was affirmed by the student representative on our group.

In addition, we worked closely with the Exit Competencies Working Group, identifying the specific competencies that were relevant for our work. Beyond the competencies listed under *the Scholar* which speak to evidence-based practice, lifelong learning, and the role of educator, there are others under *the Professional* and *the Health Advocate* which are reflected in our proposal. As well, we were guided by the *Social Accountability and Responsibility* framework that was produced.

A member of the Working Group on Scholarship (Dr. Sharon Salloum) drafted a model based on the group's discussions and findings that served as a "straw dog" for more group discussions. After multiple deliberations and revisions, the scholarship model proposed by our working group is described in the next section.

Additional consultations were held with Drs. Gary Poole, Associate Professor, School of Population and Public Health, UBC, Jane Buxton, Associate Professor, School of Population and Public Health, UBC and Vincent Duronio, Professor and Program Director of Experimental Medicine, UBC.

Scholarship at UBC – A Proposal

The model for scholarship that is being proposed runs throughout the four-year curriculum with a hiatus during clerkship, though it is expected that the work of Years 1 and 2 will inform the clinical practice of Year 3. Ultimately, every graduating medical student at UBC will be prepared as a *scholarly practitioner*. However, this model takes into consideration the diversity of UBC's medical students – diversity in academic background, life circumstances and career aspirations. This model also reflects the Curriculum Renewal goals of flexibility and continuity. There are at least three groups of students, (and probably more), who should be considered as the scholarship model is developed.

- The group wishes to support all students in achieving success in the MD Undergraduate Program and in fulfilling the other responsibilities they have in their lives; to their partners, children, and sometimes to elderly or ill parents. Not all students can reasonably be expected to take on significant scholarly projects, but all need some background in the field in order to practice good evidence-based medicine and to critically reflect on their future practice.
- Some students, with little background in scholarly inquiry, are introduced to exciting clinical or social questions in medical school. Or, they may become interested in educational initiatives in medicine, medicine and the humanities, or psycho-social projects, etc.; these may be experiences students wish to explore in depth.
- Some of our students have a strong background in scholarly inquiry, and want to explore new areas of interest using the skills they have developed in their previous academic or professional lives.

Furthermore, some students from each of these groups may be actively pursuing competitive residency programs and wish to pursue scholarly work as a way to achieve their career goals.



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Given the one-school model for medical education in BC, to some extent the working group members would like to try to be all things to all students and provide variety and flexibility within the program. One possible model for the scholarship program is to have a *Foundations of Scholarship* (FoS) course, and three scholarship streams. The FoS course would form a part of all four years of the program, it would include basic knowledge and skills and just-in-time learning as students' projects progressed. All students would complete the mandatory aspects of the FoS course, and also would choose one of three streams. Each of the three streams, starting in Year 2, would offer a different but valuable approach to scholarship. Students would have protected time in Years 1, 2 and 4, to pursue their scholarly work. It is also hoped that the information contained in the FoS course would be integrated into other courses and activities within the new curriculum and inform the clinical experiences of Year 3. This would prevent 'siloing' and help reinforce the idea that the scholarly practitioner uses these skills throughout their academic and clinical careers.

Foundations of Scholarship Course – The contents of the FoS course could be described as *Scholarship Demystified* or *Scholarship – the Big Picture* or *Everything You Absolutely Need to Know About Scholarship to Practice Medicine* or *The Scholarly Practitioner*. The FoS course would be core to the scholarship curriculum, and would contain some mandatory activities/resources for all students, and some activities/resources that would support student projects in a just-in-time fashion.

In addition to the specific topics discussed in this foundations course, an overarching goal will be to incorporate discussion and reflection on developing an understanding of how scholarship in medical education is foundational to students developing their identity as a physician. This would allow reframing questions like *How do students engage in scholarly activities?* to *How do physicians-in-training incorporate scholarly inquiry into their identity as a physician?* Such a reframing would allow us to, for example, reorient questions of physician training from issues of whether we can assess a trainee's minimum level of performance necessary to be competent, toward an understanding of how scholarship is interrelated to what it means to be a physician.

Particular pedagogical approaches are required to achieve goals related to identity formation, whether that identity is concerned with professionalism, scholarship, community-mindedness, or a myriad of other dimensions. In *Educating Physicians*, Cooke and colleagues (2010) refer to "pedagogies that can facilitate development of these commitments to inquiry and improvement" (p. 97). For example, the first year of the Foundations of Scholarship course, and its subsequent streams, will acknowledge the "inextricability of learning from doing" (Cooke, Irby, & O'Brien, 2010, p. 56). Identities related to scholarly inquiry are formed, in part, from the experience of pursuing such inquiry and reflecting upon it. They are also influenced by being exposed to practitioners who model this identity.

Specific objectives for the Foundations of Scholarship course flow from the development of the *physician as lifelong scholar* identity. These objectives would include such things as: (1) students will develop an understanding for the importance of scholarly inquiry in practice and for the ways such inquiry enriches practice; (2) students will learn to develop clear questions related to their own curiosities about health and health care; and (3) students will begin to see themselves as lifelong scholars as they develop their identity as physicians.

The following streams present options by which students in all sites can actively pursue these and other objectives. All students will complete the FoS course, and all students will participate in a *scholarly project*. The definition of scholarly project will be very broad, in keeping with the elements described by the CIHR



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pillars with the addition of medical education, as articulated in the introduction above.

Students will identify their projects during the latter part of Year 1, and be prepared to formulate their question and complete their Ethics application(s), if necessary, early in Year 2. Some students will work on their projects between Years 1 and 2, as well as during Year 2 but would not be expected to do so during Year 3. Students will complete their projects by the end of Year 4. Students will have the option to take a scholarly elective (2-4 weeks) during Year 4, to finish their project, and prepare it for publication if desired. It is anticipated that all would present their work at an end-of-year Scholarship Day. This should be incorporated into some of the existing white space in the new curriculum design.

Stream 1 – All students in Stream 1 will choose activities from a menu, which will allow them the flexibility to tailor the stream to their interests, goals, and life circumstances. It will also address the issue of some students being more interested in being thoughtful and wise consumers of scholarly work and others also being interested in being creators of scholarly work. As the design of Stream 1 is developed over the coming months, menu items will be created and added—which will allow students to choose large or small scholarly activities, in addition to other activities which will further their development as scholarly practitioners.

The scholarly projects could be case reports or literature reviews, or could be modeled on the existing *Doctor Patient and Society* (DPAS) projects, Summer Student Research Program (SSRP) projects, Summer Student Internship Program (SSIP) projects, global health initiatives or projects involving the arts and humanities in medicine. Some projects may be large in terms of scope and time commitment and may have a single investigator/author or may involve a group. Others will be less demanding and require a smaller time commitment. Students who opt for the latter will be required to choose other menu items which will enhance their growth as a scholarly practitioner—for example, participation in a journal group. It is hoped that all of these project options can be expanded and better supported than they are now.

Stream 2 - The number of students accepted into Stream 2 would be limited, possibly up to 20 people. Students would apply during Year 1 and would be chosen at the end of Year 1, based on their previous background and their academic performance at the end of Year 1.

Stream 2 will be an intensive scholarly program that uses the basic and enhanced elements of the FoS course, and will culminate with a research year away from the program between Years 2 and 3. Once the required FoS course is determined, students at any site could move through the mandatory and discretionary modules (virtually housed at the Scholarship Office), or video-conferenced, at their own speed. The Scholarship Director and the Scholarship Office would also ensure that students had access to projects/supervisors/mentors, etc.

Stream 2 is not intended to offer a combined degree, but would allow students to work on a specialized area of scholarly inquiry, for example as a research assistant (preferably with associated stipend).

Stream 3 – This stream would offer a small number of students (max 10?) the opportunity to pursue a combined degree here at UBC, or at another recognized and approved school in Canada, the US or possibly internationally, between Years 2 and 3. This would result in students achieving a combined degree, and could be an MD/MPH, MD/MA, or MD/MSc. (It might be possible to offer a combined MD/MSc here at UBC but because the MSc at UBC is a two-year program, this would require negotiation with the Faculty of Graduate Studies.) Students would submit an application to participate in these programs, and permission



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would depend upon their academic success in Year 1.

All students would receive credit for the work they accomplish in their chosen stream.

It will be important to maintain a great deal of flexibility around this model. For example, a student who hopes to enter Stream 2, but who experiences academic difficulty near the end of Year 1 may not be able to pursue her/his identified stream and instead need to remain in Stream 1. However, should s/he catch up in Year 2, it might be possible for her/him to move into Stream 2 with special assistance. Similar scenarios can be envisaged for changing between the streams, understanding that time and resources available will dictate outcomes.

This model was approved in principle by the Implementation Task Force for Curriculum Renewal. The remaining challenge is the integration of the various elements into the new curriculum that is being proposed. This is being discussed with the Curriculum Design Working Group and the Working Group Chairs. In addition, a smaller working group made up of members from the Scholarship Working Group and others with specific expertise is elaborating the core content of the FoS course and identifying current resources that could be utilized or built upon. Leaders from the DPAS course will be involved to assist in this task. Stream 1 will be developed first followed by discussions with relevant partners for the elaboration of Streams 2 and 3.

Figure 1: Scholarship Streams



- The *Foundations of Scholarship* will occur over the course of medical training. The first two years will include mandatory foundational topics and also optional topics/resources that will support the students' projects. During students' clerkship year, they will not be expected to engage in the Foundations of Scholarship work, though it is hoped that the work done in Years 1 and 2 will inform and enrich the students' clinical experiences in Year 3. Resuming in Year 4, the Foundations of Scholarship will be developed to provide more individual support for completion of student projects.
- The **blue lines** denote the possible trajectories students could take. For example, over Year 1 all students will participate in the mandatory parts of Foundations of Scholarship course. But in Year 2



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students will be expected to choose from the different streams available. Therefore by Year 4 there is an expectation that all students will satisfy the objective outline, but they may arrive at different end-points (e.g. – thesis, project, literature review, etc.).

- The **burgundy figures** represent decision points where students will be expected to choose a stream or complete their proposed scholarship projects.



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Figure 2: Curriculum Timing

Year 1

SUMMER

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun/Jul/Aug
					Application to Stream 2	Application to Stream 3			ID project for Stream 1, work on Research Ethics Board application(s)
					Foundations of Scholarship (FoS)				

Year 2

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Stream 1 + Project								
Stream 2								
Stream 3								
Foundations of Scholarship (FoS)								

Year 3 (Scholarship)

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Stream 2								
Stream 3								
Foundations of Scholarship (FoS)								



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Year 3 (Clerkship)

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Work on any scholarship stream is not mandatory or expected during the clerkship year								
Foundations of Scholarship (FoS)								

Year 4

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
						2-4 week elective (Stream 1,2,3)	2-4 week elective (Stream 1,2,3)	
Foundations of Scholarship (FoS)								

Resources/Infrastructure

To achieve success with this model of scholarship would require a significant and well-funded infrastructure.

The Scholarship Director would, among his/her other responsibilities, help determine eligible projects, monitor student progress and support students in their scholarly work. The Scholarship Director would recruit and develop a group of Project Directors who would help students formulate their questions, before they embark on one of the streams. If UBC moves to an Academic Learning Communities model, it is expected that there would be good support for scholarship activities at a local level.

This model would also require a Scholarship Office, and adequate funding to serve the needs of the undergraduate and postgraduate programs. The Scholarship Office would be the place to go, in person, online, or onto its extensive website, for students and faculty.

In addition to the Director, the Office would have a Coordinator. Depending upon funding, the job description could be basic or quite demanding. The ideal person would be someone who would run the



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office, but also travel to the three distributed sites to encourage student and faculty participation. Students could go to the office to learn about ongoing projects, potential mentors/supervisors, and also to access just-in-time information. For example, they could be directed to online modules/resources regarding how to write an abstract, what constitutes a good poster, etc. A toll-free telephone helpline would also be useful.

Finally, students would need funding for the expenses associated with their projects (surveys, application/access fees, etc.), and also for travel to conferences to present their work.

Next Steps

1. Identify the content for the Foundations of Scholarship course*
2. Identify teaching methods for this program*
3. Elaborate the content and approaches for each stream
4. Elaborate a faculty development program for mentors
5. Develop evaluation methods for each component part
6. Determine infrastructure and resources needed

*A subgroup of the Scholarship Working Group, comprising members who are interested in continuing to address these two items and including invited content experts, has been identified.



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List of Appendices

1. Association of American Medical Colleges (AAMC) sessions on scholarly concentrations prepared by Johanna Bates.
2. Opportunities within the current curriculum
 - 2.1. Appendix 2.1 UBC UG Critical Appraisal Teaching_2010-11
 - 2.2. Appendix 2.2 UBC UG Research Ethics Teaching 2010-11
 - 2.3. Appendix 2.3 UBC UG Program Evaluation and Quality Improvement Teaching 2010-11
 - 2.4. Appendix 2.4 UBC UG Journal Club as Educational Method 2010-11
3. Draft Proposed Topics of Foundations of Scholarship Course
4. Exit outcomes and competencies to be met by the proposed FoS course

Appendix 1: AAMC 2010 Sessions on Scholarly Concentrations

SCHOLARLY CONCENTRATIONS (SC) COLLABORATIVE

Report on meetings at AAMC RIME in Washington DC, November 2010

Joanna Bates

Introduction and background

A good number of medical schools in the USA either have or are developing programs of scholarly concentrations (SC). These medical schools have formed a special interest group within the Group on Educational Affairs (GEA) of AA MC, named the Scholarly Concentrations Collaborative. The Scholarly Concentrations Collaborative was started several years ago and is lead by UCSF and Alpert University. This group held four one-hour meetings during the AAMC RIME conference in November 2010. The sessions focused on SC program issues (development of concentration areas; interactions with other degree programs; evaluation of student progress); mentor recruitment, training and evaluation; and program evaluation- outcomes and impact. I attended all sessions on behalf of the Scholarship Working Group, took extensive notes with our UBC MD undergraduate program in mind, collected any material that was available, and also signed up for the SC listserv which is run out of Alpert University and provides a forum for discussion of SC program issues. The following report is based on the discussions of SC programs across the USA. I have chosen to group the notes based on questions that may be arising within the Scholarly Concentrations Working Group.

Are programs elective or required?

The majority of programs across the USA are elective. Two universities have a required program [Duke and Stanford] but at both faculties this adds a year to the MD undergraduate curriculum. At both schools, the program is long-standing and has become part of the institutional culture of the faculty. A regional campus of another university, which is intended to produce clinician researchers has a required program that also adds an additional year to the four-year curriculum of medical school; and one university is moving from an elective program to a required program because approximately 97% of students are choosing to take the program, while several others are contemplating a similar move to a requirement for all students. Those schools that are moving to requiring a scholarship concentration of all students have a very flexible definition of the required project. In some schools that are moving to a requirement, for example a community-based advocacy project or a literature review serves as the project.

Scholarship Concentration directors were unanimous in their advice that starting with an elective program was by far the easiest. As well, those schools with a social mission which lead to the admission of students who might struggle to complete the requirements of the basic curriculum felt strongly that an elective scholarly concentration program allowed the gifted students room to grow while not disadvantaging those students who were struggling. This was particularly true for schools that had admissions policies related to underrepresented minorities such as aboriginal students.

Maintaining the program as an elective program also allows programs to insist that students who take the elective are in good standing academically. As an elective, the program can insist on high quality. The high quality of the program attracts more students over time. One new school which is rural and community-based felt that having a scholarship elective attracted applicant of high quality who otherwise would go to more conventional schools.

Implication for UBC: Given the size of the class and the diversity of the students, an elective program sounds reasonable.

How do programs start?

Virtually all programs have started as an elective stream that link existing opportunities together into a thread that weaves through the four years of the medical school. The opportunities that were used as a foundation to build the scholarly concentration programs included [almost universally] the NIH funded student research scholarships for students between first and second year [this would be the equivalent of the SSRP program that many of our students take advantage of], elective time in third year, elective time in fourth year, as well as the continuation of research projects that many students start in first year and continue through first and second year. The involvement of students in research projects during their first and second years prior to the development of the formal SC programs was driven entirely by the students, informal, often continues from a summer job, is usual only in high-performing students, and is often used by students as a way to differentiate themselves and prepare for the application to highly competitive specialties. However, programs had no way to acknowledge the work that the students were engaged in, this was a driver for the development of a more formal program for many schools.

Implication for UBC: We know that many students do the SSRP and the self directed DPAS project. Also an examination of student CV's at graduation shows that many are involved in scholarship and research throughout their four years. UBC could start by linking SSRP and DPAS as a base for a program.

How do programs define scholarship?

Most programs use Glasick's criteria for scholarship and build this into the application process. Glasick's criteria allows a wide definition of scholarship which includes for example community service with reflection. Other schools include (for example) global health as a common area of scholarly concentration. Only two schools (Yale and Arizona) require a hypothesis driven project. One school developed a consensus conference on scholarship in order to develop a stream of scholarly concentration on medical education; however the consensus that developed is now being used across all areas of scholarship.

Directors agreed that clarity around definitions, and a common language is absolutely necessary for an effective program development. They warned of a divisive hidden curriculum that can arise if some forms of scholarship appear to be more accepted by the faculty than others.

Implication for UBC: It is not clear how acceptable the use of Glasick's criteria would be to the faculty as a whole.

How do programs organize themselves administratively?

Virtually all programs organize their Scholarly Concentrations into defined tracks that are named and defined by the faculty, led by a director, and formalized through formal curriculum and common seminars. The only schools in which individual students define their own area and find their own mentor [two schools in total] are schools in which the total student population is less than 60 per year, and the total number of students doing a scholarly concentration is less than 10 per year. In a discussion about this, a couple of schools have tried leaving students to define their own area and find a mentor that this led to failures of the students (enthusiasm unsupported by learning) and quick burnout of mentors faced with relatively inexperienced students and a requirement to teach one on one.

Those schools that define their scholarly concentrations have between three and 15 areas of concentration. Areas of concentration are organized around existing concentrations of interest within the faculty. In some schools scholarly concentrations are built around existing masters programs to lessen the burden of teaching and supervision. In others, scholarly concentrations are built around interdisciplinary research groups, centers or institutes. The number of students who can be admitted to a scholarly concentration is dependent on the number of mentors available and on available funds.

Some schools include clinical research or basic science research as scholarly concentrations. In these tracks, the student defines their area and is allocated or finds their mentor with the help of the SC director. This appears to be closer to the MD PhD model.

The director of the area of scholarly concentration is usually formally appointed and receives some funding. They have clear job descriptions which include selection of students, selection of mentors, matching of students to mentors, implementation of a formal assessment program; development of curriculum, administration of funds, and identification of and remediation of students in difficulty.

Implication for UBC: Given the experience of other schools, UBC may wish to identify research groups, centers, institutes, masters programs, and basic science and clinical research teams to determine interest and capacity.

What are the missions or intended deliverables of the scholarship concentration programs?

Directors agreed that it was important to be clear about the mission of the scholarship program, and if possible define intended outcomes so that formal evaluation can be structured. Programs described their differing intended deliverables:

- students individuate and pursue a passion
- students learn leadership as well as research for example leadership in their area of interest
- to create clinicians and investigators
- to create specific behaviors and expertise during medical school residency and practice
- to change students way of thinking

Implication for UBC: UBC faculty would need to agree on the mission of the SC program.

What is the application process?

Most schools have an online showcase to showcase the areas of scholarly concentrations. Admissions is pushing for this because it appears to be a recruiting tool for high-quality students. This allows students to think about areas of scholarly concentration (and whether they are interested) at the time of application and admission.

For most schools, students apply in first year, usually towards the end of the first semester. They must be in good academic standing and they apply to a specific area of concentration. This can disadvantage mature students, or students from non science backgrounds. Their application is considered and decided by the director of the SC stream, and by any committee that they choose to put in place.

Most schools don't let students switch their area of concentration formally during the four years. They can enter late or switch informally but then they are in then no longer identified as in the scholarly concentrations program and don't get the academic credit. They are allowed to use all elective time for their scholarly concentration but if they haven't been in the concentration from the start and been part of the basic series of seminars then they cannot be acknowledged formally as "a concentrator" .

Most schools find ways to support scholarly work even if it is not within a concentration program, so that students who want to do some scholarship, or who discover an interest later than first year can develop their skills. Most schools, even those with large concentration programs, feel that this is required, and that to have the scholarly concentration students and the non-scholarly students with no flow back and forth is a negative divider in the class. For example, all students should be eligible for the summer research program funding whether they are part of an area of scholarly concentration or not.

Those students who are enrolled in or completing a graduate degree or combined degree such as an M.D. PhD) are not eligible for the scholarly concentration program. However some schools register the courses in the scholarly concentration area as graduate courses so that students who wish to can go on to complete a graduate degree.

Implication for UBC:

How are students assessed?

Different schools use different assessment processes but all formally assess the students work. The assessment is the responsibility of the concentration director working with the mentors. Some schools for which the scholarly concentration is an elective program have chosen not to grade so that there is no penalty for stepping forward in trying. This is a philosophical stance of the program. One school for which the SC is a selective grade on a pass fail basis. They feel the grades add robustness to the program and that according to their policy, assessment allows it to be included in the Dean's letter.

One school requires a specific hours commitment [180 hours] and the hours that the student spends is tracked rigorously.

Some schools use traditional examinations to examine the development of expertise in research and scholarship. Others evaluate students on seminar presentations, literature reviews;

conceptualize station of the project, and other products. Alpert uses an electronic student portfolio available through One45 (a program which UBC currently uses).

A few schools allow team-based projects, but insist that students define their specific roles and are evaluated separately on their defined roles and commitments. Those schools with significant longitudinal opportunity for students to engage over the four years are requiring more rigor and output from the students in the scholarly concentration program.

At another university where the program is required of all students it is graded on pass fail. The program includes required classes, i.e. for seminars on scholarship; a literature review; a reflective exercise in first year. There may be a small amount of curriculum in addition to this and a dedicated time at the end of second year [5 weeks] that requires a progress report from the mentor. For example, at this university, the SC program looks like: course 1A: seminar and reflection; course 1B: epidemiology and biostatistics [this material is already in the curriculum that is relabeled as a separate course for the purpose of the scholarship track]; course 1C: elective; the student starts the research project, or can complete an elective within the track.

For the required programs, there is careful attention that the students have met all the benchmarks across the years before the submission of the final product to ensure that very few students fail the final product.

For those programs that are not required, there is attrition because of stringent assessment at the benchmarks; however most programs feel that this ensures the quality of the program. Most students must also submit their all ongoing marks in the regular curriculum and are not allowed to continue if they are not in good standing. This is universal for all of the nonrequired programs. All schools agreed that ongoing progress needs to be monitored carefully by the mentor and the SC stream director and that early intervention is required if there are signs of a struggle.

One school requires progress reports to six months signed by the mentor. One school learned the hard way to set up a research chair for the research thesis to monitor progress and that this individual needs to be someone who is not tied to the student as an advocate [i.e. not their “mentor”].

Several schools require presentation of the final product at a senior scientific session, and practice presentations in front of the students in the track to ensure completion. Students occasionally have no data, but do present the conceptual framework, the why, and how, and talk about future plans and barriers.

Virtually all programs have a final poster session or an oral session or a mix and that this is a required part of the program and students are marked on this.

One program that started with the poster session realized that students didn't know how to behave and no one came to the poster session. They set up a process where pairs of students were assigned to go to each poster and evaluate the poster using criteria and a checklist. They also have to talk to the poster presenter. This required the students to go outside of their own area of expertise and for the presenter to be able to talk about his or her area of concentration, and worked well. An ice cream social afterwards gave a celebration air to the process.

Several programs facilitate a shift to students teaching their own peers. For example as an assignment for the scholarly concentration students, they may give a seminar in their area of interested first-year students who must evaluate both the content and the teaching quality.

In general, in order to decrease the burden on mentors, students must produce a product of value to the community of the scholarly concentration. It is expected that this would lead to publication.

Implication for UBC:

How are the scholarly concentrations programs integrated into the curriculum?

Most scholarly concentration programs start during first year, usually in January. Most attempt to be a full four-year program, however all identified student drop-off during the intense clinical third-year. Involvement of the students with their scholarship concentration is dependent on their rotation. Some schools have instituted a third-year elective in order to accommodate the scholarly concentration. Students usually complete their project during elective time in fourth year.

Scholarly concentration directors feel that committed students work outside the curriculum time, and must be smart enough to meet curricular objectives as well as work on the scholarly concentration. Some feel that training for academic positions should help the student get used to working outside formal work hours and curricular time.

To counter third-year attrition, schools ensure incentives for completion, including incorporation in the Dean's letter, acknowledgment at graduation, and a letter of recommendation from their mentor. All schools try to ensure completion of all students as attrition wastes the project funding and the faculty's time.

All schools agree that some self learning time within the curriculum is an important resource for the scholarly concentrations. It is important that this self learning time is consistent across years and across sites as much as possible so that the students involved in a single scholarly concentration can come together at that time for instruction, seminars, and presentation, as well as for individual work. One school has an immersion period up front during first year and between years one and two and then continuity throughout the rest of the curriculum.

One school has students within a scholarly concentration formed as a stable PBL group, and their small group cases are different from the norm. They have an added flavor of their track which is built into their PBL case and into their learning objectives. Several schools assign students in the same concentration to small group work to enable an enhancement of the work in the regular curriculum based on their area of scholarly concentration.

Implication for UBC:

How are students rewarded?

Some programs do something at graduation, when the parents are around. One school has a gathering for an hour and a half with graduating students presenting posters of their scholarly concentration work and with their parents there. This event is mixed with the awards. The school finds that parents often donate when they see what the students are doing. It is packed, and a great "capstone" for the students.

If the scholarly concentration is an elective program, it usually does not appear on the transcript because it is not a required course. Instead it is featured in the medical student performance record (MSPE) that is forwarded to all Postgraduate programs that the student is applying to. The narrative in the MSPE includes the title of the project, the description, and the mentor or supervisor also writes paragraph for this letter. The list of abstracts and publications is in the research section of the MSPE.

Several schools reward outstanding effort and performance in the scholarly concentration. For example outstanding performance is awarded an oral presentation rather than a poster. The awards are proposed by the concentrations directors and decided upon by a team across concentrations. One school has one oral presentation for each pathway. The runners-up are eligible for a poster award. One school has a senior scientific session held the second week of May. First and second year students attend this and it gives the first-year students ideas of the concentrations. Other rewards for students include:

- a pin specific to the program
- a framed certificate
- recognition at the start of the concentration and at the end of medical school
- participation in an end of your event with a poster/oral presentation that goes on the CV
- a framed photograph of the student with their mentor
- a Mentor award that students vote on for mentor
- A bound copy of the student's project that they give to the mentor.

Implication for UBC:

What infrastructure is needed?

Programs agreed that they require identified time in the curriculum to bring students together. Some programs have little stable resources, and funding goes from year-to-year. Others have achieved some stability of funding [an endowed medical scholars program; summer research program funding partly endowed by NIH; generous donor funding].

All programs except the two in which students select their own topic and mentor identify an SC director for each area of concentration. Most programs give a modest stipend based on the number of students. For example one school stipends the concentration director at \$5000 for 3 to 5 students. Some schools give a traveling research stipend either individually to students or to the concentration director to award to students.

In the larger programs, there is a halftime overall director and halftime administrator as well as the individual concentration directors. There is consensus that passion and love only go so far and then there is a need for institutional reward for mentorship activities. One school is working to change tenure and promotion documents to award faculty who participate in the program.

Some schools have awards for students, but all agreed that funding for students is the most challenging area. One program has \$1500 per student for their project, but the student must apply for the funding. This program found the funding from a foundation. Most programs started with no money. If departmental chairs buy-in then some schools can access departmental funding but

this is not seen as sustainable. Some examples of administrative costs from different schools include:

1. An administrative coordinator and three pathways directors;
2. Five tracks with co-to track leaders per track each receiving 5% salary recovery. Students receive \$500 for conference travel each year but must be a presenter.
3. A full-time coordinator who also acts as registrar, evaluation, creates forms, and gets documentation

Some schools identified IT resources as important, both websites to describe areas of concentration and attract students, as well as SharePoint sites, wikis, or other ways to connect students and faculty within an area. This was particularly true for programs that were distributed and where students might participate in a scholarly concentration from multiple sites.

Implication for UBC:

How are mentors identified?

Most schools require that the director of the scholarly concentration stream identifies the mentors and recruits them. The rationale is that the directors know the individuals best and can police the mentorship. Problems with mentors do arise: the most common problems are the expectation that “the student should be more ready”; and from the student's point of view that the mentor is not available enough. Most schools have had to manage expectations from both the students and the mentors. Most schools have now formalized a student mentor contract to clarify expectations.

Most schools do not allow primary mentors from outside the medical school. They found that mentors outside the medical school are not realistic about the workload of medical students and created significant stress for the students and often have a different understanding of what scholarly activity is. This may create difficulties for the student between their mentor's expectations and the expectations of the director of the scholarly track, However one school, U Michigan, creates a thesis committee for each student: the chair of the committee is always the faculty member, but thesis committee members may be drawn from the community, from other faculties, or from public health.

Mentors sometimes move or leave: sometimes they continue to mentor the student by teleconference; alternatively they should indicate who should take the student over. Of course, this commonly happens during a PhD, and many schools use a similar mechanism to determine whether the mentorship continues or is reassigned.

In general, mentors are not paid. It is assumed that if they are effective in their mentorship, they will have the rewards of scholarly productivity which helps the faculty with tenure and promotion. However, most schools also have a mentorship award which is awarded across the scholarship tracks as recognition. Most schools have found that mentors require some faculty development to develop an approach to working with undergraduate medical students. Most faculty development is done with supervisors and directors of the track and they pass this information and expectation on to the mentors within their track.

Most scholarly concentration started with leadership from research concentrations. This appeared to be the easiest recruitment because they take graduate students and PhD's. For other

concentrations, once the director was identified, the recruitment of mentors was based on the who do you know system. Several schools have created rewards for the mentors by establishing official course numbers for the scholarship program so that the mentors get teaching credit. This requires a definition of the expected number of hours. In some schools the scholarly concentrations curriculum goes through the curriculum committee and must be approved. The number of hours of work over four years is defined and is created as an official course that is an elective for students and again gives directors and mentors teaching credit for their CVs.

Implication for UBC:

How will is the program evaluated?

Programs are evaluated against their mission. For example if the aim is to create clinician investigators in the long-term the more specific short-term aim may be to create specific behaviors and expertise during medical school, residency, and practice. This helps to define what data to collect where and when. A logic model for the intended outcomes of the scholarship concentration is helpful in determining program evaluation.

Most schools do exit interviews of students at graduation, gather feedback from faculty, and feedback from students in terms of (for example) research self-efficacy. One school benchmarks against AAMC markers. One school uses social networks and network theory to develop an outcome model: i.e. not gaps or numbers of outcomes but diversity.

Scholarship concentration programs are looking at long-term outcomes at 5 to 10 years. One student at one school did a research project on how to evaluate the program. Schools are looking at the community academic profile, looking for long-term productivity through pub med. Others are examining the academic career overall rather than evidence of the faculty appointment. The estimated ROI is at age 45, so some short term outcomes need to be defined and examined. The program needs to define what constitutes success: one program identified this as individuation of students who are able to pursue a passion. One program looks for leadership not just research skills. Most programs initially use descriptive data: who chose to do a scholarly concentration and what residencies are they likely to match to. Most programs are doing structured interviews at the time of completion and graduation and also into residency: questions in residency are: "have they continued in their area of passion?" Are they taking on leadership roles? Are there mentorship relationships still in place? In these interviews the programs are seeking to identify changes in the students way inking, and to get at their reflective and synthesis of how their thinking has changed because of the scholarly concentration.

Implication for UBC:

What are some examples of scholarly concentration streams?

Every school had defined themes beyond traditional research. Schools were adding themes as the SC programs took hold and proved their value to students and faculty. One small school had 3 themes, one large school had 14, most sat in the 4-6 themes area. Examples of themes included global health; inner city medicine; technology innovation; medical education; traditional research; community health; health and society; quality and safety; leadership; health disparities; contemplative studies; business of medicine boot camp (BOMB); advocacy;

Implication for UBC:

How can we find out more?

There is a listserv for the SCC, and I have added myself to it. You would be welcome also, and I can forward the information to you.

Appendix 2.1: Critical Appraisal Teaching: UBC UG Program

2010-11 Academic Year
26-11-10 Draft Marc Broudo (broudo@exchange.ubc.ca)

Academic Year / Term	Course Name in which Session Occurs/Course Director	Session Name	Instructor(s)	Education Method	Instr. Hrs.	Session Specific Objectives ¹
Year 1, Term 1	Orientation to Medical School (ORNT 400) Dr. Karen Joughin	Learning in Small Groups	Drs. Leandra Best and C.A. Courneya	Demonstration	1.5 hrs.	This session introduces students to the learning associated with working in small groups. This is a major part of how students will be learning in both the Doctor, Patient and Society (DPAS) and the Problem Based Learning (PBL) tutorials in the Basic Science courses. This introductory session demonstrates how PBL works by involving third year students in a real PBL case. This is followed by a question and answer period which provides students with an opportunity to ask questions of the students about this form of learning.
Year 1, Term 1	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Building Blocks of DPAS: Introduction to Evidence Based Medicine – Part I	Drs. B. Conway, and J. Kong	Plenary and Tutorial	3 hrs.	GOAL: In this first session of two sessions, we will give an overview of why Evidence Based Medicine (EBM) and critical thinking is relevant to you, as a medical student and future physician. We will introduce an approach to critically appraising medical literature - from abstracts, journal articles, to websites. This is the first of 2 weeks in Sept giving an introduction to Clinical epidemiology & EBM. We will go into more detail in a 5 week block in the winter term and in second year DPAS. <ol style="list-style-type: none"> 1 To be able to define Evidence Based Medicine in your own words, and be able to explain it simply to a friend, a colleague, or even a patient. 2 To become familiar with the process of critically appraising the medical literature. 3 To begin to apply your skills in critical appraisal of medical literature and online resources.
Year 1, Term 1	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Building Blocks of DPAS: Introduction to Evidence Based Medicine – Part II	Drs. C. Bryce, B. Conway, J. Kong	Plenary and Tutorial	3 hrs.	GOAL: In this second of two sessions, we will use the example of breast cancer screening to demonstrate how Evidence Based Medicine (EBM) changes clinical guidelines and practice. We will introduce basic clinical epidemiology in the process of diagnostic test selection, interpretation of results, and how it influences the physician's course of treatment through an interactive plenary and tutorial. We will also address the CanMEDS role of communicator as a physician will need to discuss the appropriateness and limitations of diagnostic tests. We will go into more detail in a 5 week block in the Winter Term and in 2nd year DPAS. <ol style="list-style-type: none"> 1 In your own words, to be able to define prevalence, sensitivity, specificity, positive predictive value, negative predictive value and pre- and post-test probability. 2 To develop an understanding of how these concepts can be applied to the development of clinical guidelines for the use of diagnostic tests. 3 To begin to develop an approach to applying these concepts in clinical practice.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Clinical Epidemiology: Assessment of Therapy I – Understanding Bias and Random Error	Drs. C. Bajdik, C. Bryce, B. Conway, and J. Singer	Plenary and Tutorial	3 hrs.	This week we will introduce you to the design of studies, emphasizing the reasons that you need to think rigorously about two specific threats to the validity of all studies: bias and sampling error. <ol style="list-style-type: none"> 1 To understand the basics of study design 2 To understand the importance of bias in study design 3 To understand the importance of sampling error in study design 4 Ascertain how biases might lead to incorrect conclusions about evidence 5 Ascertain how random error might lead to incorrect conclusions about evidence 6 Understand what constitutes a Type I error or a Type II error

¹ Please note that only those sessions that included critical appraisal *teaching* are included in this report. Sessions that may require the application of critical appraisal skills, e.g., Family Practice Continuum (FMPR 401 and 42)) Office Visits, clerkship clinical experiences with patients, Senior (4th Year) Electives that did not include formal teaching of these skills, were NOT included in this report.

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Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Clinical Epidemiology: Assessment of Therapy II – Evaluating Diagnostic Tests	Drs. C. Bajdik, B. Conway, and H. Wong	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 To understand and apply methodological criteria for the proper selection of a diagnostic test. 2 To understand and apply the concepts of sensitivity, specificity, positive producing value, negative producing value. 3 To understand and apply the concepts of pre- and post-test probability of disease. 4 To become familiar with the criteria that must be applied before a test can be recommended for use in clinical practice.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Clinical Epidemiology: Causation I	Drs. B. Conway, A. Harris, J. Singer, and K. Teschke	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 To be able to differentiate "association" from "causation" as it relates to a medical condition in clinical practice. 2 To develop an approach to the determination of causation and the degree of certainty required to establish it in clinical practice.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	AMIR: Evidence Based Addiction Medicine – Physicians and Substance Abuse Disorders	Drs. Ray Baker and Paul Farman	Plenary and Tutorial	3 hrs.	<p>To review available evidence on the effectiveness of screening tools, along with pharmacological & psychotherapeutic interventions in the treatment of substance use disorders. Students will gain an understanding of the Physician Health Program of BC, learn the red flags for physician incapacity and your role and responsibility in obtaining assistance.</p> <ol style="list-style-type: none"> 1 Describe the role of primary care physicians in screening and brief intervention for substance use disorders. 2 Compare and contrast various modalities of treatment for alcohol dependence. 3 Discuss the concept of patient placement criteria in deciding intensity and setting of treatment. 4 Outline a method by which screening, assessment, referral and relapse prevention might be incorporated into a busy primary care physician's office practice. 5 Identify the Physician Health Program of B.C. and resources available to health care professionals <ol style="list-style-type: none"> 1 Appreciate some of the strengths & Limitations of the medical evidence & clinical practice guidelines when it comes to common conditions in Primary Care. 2 Be able to use evidence in practice via a shared-informed decision making process. 3 To be able to incorporate the relevant evidence into shared-informed decision making for common conditions seen in primary care. 4 Understand the responsibility of health professionals to incorporate patient values into the decision making process.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	AMIR: Harm Reduction – The Great Debate	Drs. Alex Chan, Brian Conway, and Launette Rieb	Plenary and Tutorial	3 hrs.	<p>Explore the principles of harm reduction and the controversies associated with such approaches. At the end of the Lecture, the tutor and student should be able to:</p> <ol style="list-style-type: none"> 1 Explain the concept of harm reduction. 2 Converse on hazards, pitfalls and strengths of this approach. 3 Discuss the NAOMI trial and SAFER further in the tutorial.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield,	AMIR: Harm Reduction – Medical Marijuana and	Drs. Alex Chan and Launette Rieb	Plenary and Tutorial	3 hrs.	<p>The students will identify the role that scientific research, economics, social policy and public opinion have in the categorization of drugs as medications, recreational drugs or drugs of abuse. Understand the impact of tobacco products on health and how social policies impact initiation, use patterns and dependence. Gain an understanding of the neurophysiology of tobacco dependence and its treatment.</p>

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	Brian Conway, Richard Lazenby	Smoking Cessation				<ol style="list-style-type: none"> 1 Discuss the current level of knowledge regarding the possible medical indications for marijuana. 2 Discuss the controversies over medicalization, decriminalization, and legalization of marijuana. 3 Review information of tobacco vs nicotine dependence and perpetuating factors. 4 List the medications that can be used for smoking (and smokeless tobacco) cessation, their contraindications, advantages and disadvantages.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	AMIR: The Human Face of Addiction	Drs. Alex Chan, Paul Farman, and Launette Rieb	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 Identify individual and societal consequences of alcohol and other drugs. 2 Explore one's own attitude towards patients with substance use, abuse, and dependence. 3 Understand the basic concepts of the neurophysiology of addiction in a bio-psycho-social-spiritual framework. 4 Explore the roles physician may play in prevention, identification and treatment of substance use disorders. 5 Identify expectations and recommendations which patients and service advisors have for physicians in the health care system. 6 Identify the role that scientific research, economics, social policy and public opinion have in the categorization of drugs as medications, recreational drugs, drugs of abuse. 7 Use personal encounters and community visits to appreciate positive and negative experiences the patients with substance use disorders experience with health care system. <p>Goal: Students will discuss individual and societal consequences of addictions and explore their own attitudes towards patients with substance use, abuse and dependence.</p> <ol style="list-style-type: none"> 1 List negative consequences of substance use disorders on individuals, families and society. 2 Explore personal attitudes towards drug use and treatment of patients with substance use disorders (SUD). 3 Outline the role of health professionals in identification, intervention, treatment and relapse prevention of patients' SUD. 4 Describe the role of mutual support groups in the treatment of substance use disorders. 5 Identify the physician Health Program of BC and resources available to health care professionals. 6 Become aware of warning signs in yourself and colleagues for SUD. Outline a plan of what to do.
Year 1, Term 1	Family Practice Continuum (FMPR 401) Drs. Ian Scott, Lys Fonger, Gerrard Prigmore	Introduction to Clinical Care: Health Promotion	Dr. Ian Scott	Lecture	3 hrs.	<ol style="list-style-type: none"> 1 What is the CTFPHE 2 Levels of recommendation 3 Levels of evidence 4 Three broad categories of interventions 5 What is screening? 6 Why screen? 7 Issues surrounding screening 8 The Canadian Task Force and its recommendations
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton,	Complementary and Alternative Medicine: CAM Paradigms	Drs. Jason Boxtart and Jane Buxton	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 To discuss who uses CAM and why 2 To understand patient decision making process 3 To determine how to maximize benefits while minimizing risks 4 To understand how to talk to patients about CAM 5 To identify credible information sources

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	Richard Lazenby					6 To understand the relationship between alternative medicine practitioners and physicians 7 Case example: naturopathic medicine a. Diet as an example of a similar intervention.
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Complementary and Alternative Medicine: Good Medicine, Bad Medicine – Equitable Standards of Evidence for Health Care Providers	Drs. Richard Mathias and Jeffrey Quon	Plenary and Tutorial	3 hrs.	1 To review systems of scientifically appraising levels of evidence (and levels of evidence-based recommendations) in biomedicine. 2 To review criteria for assessing causal associations in biomedicine with a focus on biological plausibility and the challenges of applying such criteria to the assessment of CAM interventions. 3 To learn some of the reasons why patients (become disenchanted with allopathic medicine and consequently) seek out practitioners and modalities taught outside of conventional medical education. 4 To learn about some of the more promising and widely utilized CAM modalities in North America that are somewhat evidence based. 5 To understand how familiarization with CAM, as well as patients' individual preferences and fixed health beliefs, potentially improves health outcomes by enhancing the delivery of patient-centred care.
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Complementary and Alternative Medicine: CAM Practitioner Interview Assignment		Tutorial	3 hrs.	
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Determinants of Aboriginal Health: The Benefits of Traditional Style Diets	Dr. Jay Wortman	Plenary and Tutorial	3 hrs.	1 To demonstrate the extreme example of diet is an Inuit diet 2 My Big Fat Diet (www.mybigfatdiet.net) (http://www.cbc.ca/thelens/bigfatdiet/video.html) 3 What are the implications of a low CHO diet for First Nations and for the general public? 4 What public health policies would you put into place based on this information? Is exercise the answer?
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Developing The Evidence Base for Practice: A Strategy for Synthesizing the Evidence Base in Medicine	Drs. Najib Ayas, J. Mark Fitzgerald	Plenary and Tutorial	3 hrs.	1. How to come up with best practice guidelines a. Should I use them in my practice? Why do many not use them? 2. How can I use the Cochrane Collaboration to best inform my practice? 3. What is the methodology that goes into a systematic review? How does that compare to meta-analysis?
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Developing The Evidence Base for Practice: Analytic Epidemiology Including Study Designs	Dr. Martin Schechter	Plenary and Tutorial	3 hrs.	1 How do you match the questions and the designs? 2 What is the range of designs that can be used in epidemiologic and clinical research and why do we sometimes get it so wrong?
Year 2, Term 2	Doctor, Patient and Society	Developing The Evidence Base	Dr. Richard Mathias	Plenary and Tutorial	3 hrs.	1. Why did low fat diets become the accepted paradigm for intervention in many chronic diseases? 2. Using FiLCHeRS, does the evidence require a change in practice?

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	(DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	for Practice: Clinical Application of EBM Principles – Perspectives on Diet				<ol style="list-style-type: none"> a. How am I going to explain his to my partner or my mother? 3. What is confirmation bias and do I have it? 4. How would changing from low fat to low CHO change the food industry?
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Psychoactive Drugs: Alcohol – The Work in Progress	Dr. Tim Stockwell	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 What are the benefits of drinking? What are the harms of drinking? Is the issue Frequency of consumption? Amount consumed? Both? 2 Who is at risk of the adverse effects of alcohol? 3 What are the regulatory and health promotion frameworks for reducing harm?
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Psychoactive Drugs: Public Health Framework for Psychoactive Drugs – The Failure	Drs. Richard Mathias, Brian Emerson	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 To reinforce that psychoactive substances are widely used in societies around the world. 2 To understand the pharmacology of illicit drugs including benefits, toxicity (acute and chronic), and the specifics of where the benefits/harms occur in the life course of people. 3 To understand why prohibition was ineffective for alcohol and is ineffective and resulting in many harms in relation to currently designated illegal drugs. 4 To understand why there needs to be a balanced approach that recognizes the individual choices and the public harms recognizing that there will be individual harms. 5 To understand why a legal or free market approach is not as acceptable an option compared to a public health framework for psychoactive drugs. 6 How can people hold diametrically opposed concepts at the same time? - cognitive dissonance 7 Should moral grounds ever be the basis for public policy? 8 How would you organize a drug safe Olympics?
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Psychoactive Drugs: Public Health Public Health Response to Tobacco – The Success	Drs. C. Gotay, C. Lovato, D. McLean	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 To review primary, secondary, and tertiary prevention of cancer. 2 To explore regulatory efforts to reduce cancer incidence. 3 To explore health promotion activities to reduce cancer through reducing smoking.
Year 2, Term 2	Clinical Skills and Systems II (INDE 420) Dr. C. Bryce	Bedside Teaching: Case Write-Up Review	Dr. Cicely Bryce	Lecture	1 hr.	
Year 3, Term 1	Professional Dimensions in Medicine (INDE 430) Dr. Janette McMillan	Clinical Reasoning – How to Learn in the Clerkships	Dr. S. Kelleher	Seminar	2 hrs.	<ol style="list-style-type: none"> 1 Help put your preclinical learning into context in terms of your clinical experience 2 To develop a way of thinking about clinical experiences 3 To have an opportunity to present a clinical case, showing your reasoning 4 To learn ways to manage the stress of showing your clinical reasoning (what you know and how)
Year 4, Term 1	Preparation for Medical Practice (INDE 453)/Dr.	Child Health: Critical Appraisal	Dr. Rebecca Sherlock	Lecture	1.5 hrs.	<ol style="list-style-type: none"> 1. To learn a method for clinical appraisal <ol style="list-style-type: none"> a. For diagnostic tests b. For therapeutic interventions

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	Linlea Armstrong					<ol style="list-style-type: none"> 2. To feel confident critiquing a journal article and evaluating the evidence with a view to application of the evidence to clinical practice 3. To understand the following concepts related to the clinical evaluation of therapies and interventions: <ol style="list-style-type: none"> a. Magnitude of a treatment effect <ol style="list-style-type: none"> i. Relative risk reduction ii. Absolute risk reduction iii. Number needed to treat 4. To understand the application of information into clinical practice, balancing clinical benefit , clinical harm and costs. 5. To understand the Cost-benefit analysis
Year 4, Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Child Health: Diagnostic Tests and Therapeutic Interventions	Dr. Rebecca Sherlock	Lecture	1 hr.	<ol style="list-style-type: none"> 1 To learn a method for clinical appraisal <ol style="list-style-type: none"> a. For diagnostic tests b. For therapeutic intervention 2. To understand the following concepts related to the clinical evaluation of therapies and interventions: <ol style="list-style-type: none"> a. Magnitude of a treatment effect <ol style="list-style-type: none"> i. Relative risk reduction ii. Absolute risk reduction iii. Number needed to treat. b. Cost-benefit
Year 4, Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Child Health: Evidence Based Medicine	Dr. Rebecca Sherlock	Lecture	2 hrs.	<ol style="list-style-type: none"> 1. To learn a method for clinical appraisal <ol style="list-style-type: none"> a. For diagnostic tests b. For therapeutic interventions 2. To feel confident critiquing a journal article and evaluating the evidence with a view to application of the evidence to clinical practice 3. To understand the following concepts related to the clinical evaluation of therapies and interventions: <ol style="list-style-type: none"> a. Magnitude of a treatment effect <ol style="list-style-type: none"> i. Relative risk reduction ii. Absolute risk reduction iii. Number needed to treat 4. To review the hierarchy of evidence through the use of study design, limitations, advantages and summary measures of effect. 5. To understand the Cost-benefit analysis 6. To understand the application of information into clinical practice, balancing clinical benefit ,clinical harm and costs.
Year 4, Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Child Health: Informatics Tutorial with Focus on Searches for Projects	K. McDavid	Lecture	.5 hr.	<ol style="list-style-type: none"> 1. Acquire an approach to using the literature when faced with various types of clinical dilemmas <ol style="list-style-type: none"> a. Formulate a focused, answerable clinical question (PICO) and determining the kind of information (study) needed to answer it. 2. Understand search techniques including Boolean operators, limits, publication types, subheadings, key study methodologie
Year 4, Term 1	Preparation for	Child Health:	K. McDavid	Small Groups	1.5 hrs.	Informatics tutor meets with student project interest groups.

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	Medical Practice (INDE 453)/Dr. Linlea Armstrong	Student Project Informatics Tutorial				<ol style="list-style-type: none"> 1 Understand search techniques including Boolean operators, limits, publication types, subheadings, key study methodologies 2 Acquire an approach to using the literature when faced with various types of clinical dilemmas <ol style="list-style-type: none"> a. Formulate a focused, answerable clinical question (PICO) b. Determine the kind of information (study) needed to answer it
Year 4, Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Child Health: Research Review	Dr. Rebecca Sherlock	Lecture	.75 hr.	<ol style="list-style-type: none"> 1 To learn a method for clinical appraisal <ol style="list-style-type: none"> a. For diagnostic tests b. For therapeutic intervention 2. To understand the following concepts related to the clinical evaluation of therapies and interventions: <ol style="list-style-type: none"> a. Magnitude of a treatment effect <ol style="list-style-type: none"> i. Relative risk reduction ii. Absolute risk reduction iii. Number needed to treat. 3. To review the hierarchy of evidence through the use of study design, limitations, advantages and summary measures of effect. 4. To feel confident critiquing a journal article and evaluating the evidence with a view to application of the evidence to clinical practice 5. To understand Cost-benefit analysis
Year 4, Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Common Mid Life Issues: The Adult Periodic Exam	Drs. L. Armstrong, F. Black, and K. Closson	Small Groups	2 hrs.	<ol style="list-style-type: none"> 1. To become aware of the scope, use, and appropriate sources of current and evidence based recommendations as they relate to preventative health practice for the adult patient 2. To become generally familiar with current and evidence based recommendations with respect to selected topics: <ol style="list-style-type: none"> a. diabetes screening b. hormone replacement therapy and menopausal symptoms c. breast cancer screening d. colorectal cancer screening e. cervical cancer screening and prevention f. prostate cancer screening g. cardiovascular screening and prevention 3. To discuss medical information and provide advice using language and communication skills in such a way that an individual with a —non-medical background could understand
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Clinical Decision Making Towards the End-of-Life: Formulating Goals of Care and	Dr. Linlea Armstrong, Fraser Black, and Kerri Closson	Lecture	.25 hr.	<ol style="list-style-type: none"> 1 Understand that by competently applying treatments consistent with current goals of care, the physician is delivering ethically sound, high quality care. 2 Be able to effectively discuss with patient and/or family/substitute-decision-maker (SDM), what the student has ascertained as 'medical expert' (see above). 3 Be able to carefully and competently assess the physical status of patients with incurable, advanced diseases (cancer and non-cancer) along their illness trajectory. Be able to prognosticate and know limitations of prognostication in certain diseases. 4 Be able to evaluate information pertaining to various diseases along the illness trajectories and appropriately apply this information as medical expert. Understand the importance of dissemination of this knowledge to the patient and others.

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		Treatment Plans in Seriously Ill and Dying Patients				<ol style="list-style-type: none"> 5 Understanding the importance of shared decision-making (if desired by the patient/ family/SDM) in determining goals of care and treatment in advanced illness. 6 Collaborating with physicians from other specialties (e.g. oncology, respirology, nephrology) when appropriate as well as other involved members of the interdisciplinary team. 7 Ensure the documentation of and oversee the carrying out of the treatment plan based on current goals of care. 8 Be able to help facilitate the determination of a mutually agreeable treatment plan based on current goals of care, working together not only with the patient/family/SDM, but also with involved physicians, e.g. GP, most involved specialist(s), and members. 9 To understand there may be different models of approaches to discussing information with different patients/family members/SDMs.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Dialysis Outcomes	Dr. Linlea Armstrong, Fraser Black, N. Zalunardo, and Kerri Closson	Small Groups	1.25 hrs.	<ol style="list-style-type: none"> 1. Students are expected to develop competency at analyzing data in the PICO format.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Caring for Patients with Chronic Life-Threatening Non-Cancer Illnesses	Dr. Romaine Gallagher	Lecture	.75 hr.	<ol style="list-style-type: none"> 1. Be aware of what palliative services can help patients with advanced non-cancer illness. 2. Being able to communicate with patients and families about what is happening. 3. Name opioids that are better choice in patients with renal failure or frailty. 4. Be open to seeing palliative care as part of chronic disease management. 5. Be aware of criteria that help define advanced illness and recall important criteria 6. Being able to recognize advanced illness in non-cancer diseases and to know what palliative care can do to help patients with these illnesses. 7. Being able to know when to consult palliative care expertise.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: End-of-Life Pain and Other Symptom Management (last hours to days) Part 1	Dr. Alan Nixon	Lecture	.5 hr.	<ol style="list-style-type: none"> 1. Discuss routes of administration of opioids. 2. Describe the role of the patient, family and interdisciplinary care team in monitoring end of life treatment plans. 3. Demonstrate a patient and family centered and interdisciplinary approach to the assessment of pain in patients with advanced progressive illness. 4. Assist in monitoring the efficacy of treatment plans of pain and symptoms. 5. Assess pain and symptoms effectively via a pain history, appropriate physical exam and relevant investigations. 6. Describe the specific issues in pharmacokinetics & pharmacodynamics in choosing opioids in patients at end-of-life. 7. Describe appropriate approaches to opioid titration 8. Discuss the issues in assessing pain and symptoms in patients at the end of life whose cognition or communication may be impaired.

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						9. Propose evidence-based opioid therapies, including effective prescribing, titration, breakthrough dosing and prevention of side effects.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Maintaining a Healing Approach as a Physician	Dr. David Kuhl	Lecture	.75 hr.	<ol style="list-style-type: none"> 1. Describe a supportive approach to dealing with the suffering of a palliative care patient. 2. Describe the elements of suffering in end-of-life care for patients, families and caregivers. 3. Define the issues leading to suffering in palliative and end-of-life care patients. 4. Demonstrate self-awareness and self care in caring for terminally ill patients. 5. Identify and demonstrate use of effective stress coping strategies while caring for the dying. 6. Identify common triggers of personal and professional stress in care of the dying. 7. Describe societal issues of dying and death.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Physician Assisted Suicide vs. Euthanasia vs. Palliative Sedation	Drs. Alister Browne, Michael Downing, and Mr Wm.Sullivan	Lecture	1 hr.	<ol style="list-style-type: none"> 1. Distinguish between physician assisted suicide and euthanasia and terminal sedation. 2. Discuss the role of terminal or palliative sedation and its ethical implications. 3. Identify why patients at the end-of-life may request euthanasia and/or physician assisted suicide. 4. Discuss some of the legal, moral, cultural and biological issues raised when euthanasia and/or physician assisted suicide is requested or advocated.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis:End-of-Life Pain and Other Symptom Management (last hours to days) Part 2	Dr.Alan Nixon	Lecture	.75 hr.	<ol style="list-style-type: none"> 1. Apply techniques for assessing symptoms on a regular basis and modify the management strategy based on patient choice, effectiveness, side-effects and the disease's stage. 2. Assist in monitoring the efficacy of treatment plans of pain and symptoms. 3. Describe the prevalence and impact of major symptoms in terminally-ill patients. 4. Recommend evidence-based plans for other symptoms including dyspnea and delirium. 5. Describe the role of the patient, family and interdisciplinary care team in monitoring end of life non-pain symptom treatment plans. 6. Systematically assess symptoms present in a terminally ill patient and participate in the evidence based holistic and interdisciplinary management of these symptoms.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis:End-of-Life Pain and Other Symptom Management (last	Dr. Alan Nixon	Lecture	.75 hr	<ol style="list-style-type: none"> 1. Apply techniques for assessing symptoms on a regular basis and modify the management strategy based on patient choice, effectiveness, side-effects and the disease's stage. 2. Assist in monitoring the efficacy of treatment plans of pain and symptoms. 3. Describe the prevalence and impact of major symptoms in terminally-ill patients. 4. Recommend evidence-based plans for other symptoms including dyspnea and delirium. 5. Describe the role of the patient, family and interdisciplinary care team in monitoring end of life non-pain symptom treatment plans. 6. Systematically assess symptoms present in a terminally ill patient and participate in the evidence based holistic and interdisciplinary management of these symptoms

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		hours to days) Part 3				
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Finding Community-Based Supports for Patients and Families	Drs. Linlea Armstrong, Fraser Black, Keri Closson	Panel	1 hr.	<ol style="list-style-type: none"> 1. Discuss interprofessional collaboration in palliative and end-of-life care as a fundamental concept. 2. Able to collaborate as a member of an interdisciplinary team 3. Demonstrates the ability to communicate the physician's disciplinary perspective and elicits those of other professionals while administering palliative and end-of-life care. 4. Discuss the importance of routine, interdisciplinary monitoring of the care plan for palliative care and end-of-life patients. 5. Demonstrate appropriate referral, consultation and communication with the other disciplines and professionals involved in hospice palliative and end-of life care. 6. Demonstrate an interdisciplinary case approach with formal and informal teams. 7. Describe the key roles of other professionals in caring for a person at end-of-life. 8. Describe models of end-of-life care. 9. Describe the principles and models of hospice palliative care. 10. Define the components of an education process for palliative care patients and their families. 11. Assist in the education of patients and family about end-of-life care issues and pain and symptom management. 12. Able to communicate effectively with patients, families and other caregivers 13. Discuss the important supporting role the physician has in the management of dying patients and their families in community care 14. Describe local resources in hospice palliative care and participate in the appropriate utilization of these resources. 15. Describe the role of the physician in providing end-of-life care. 16. Describe the complementary roles of physicians and other formal caregivers in end-of-life care.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Drug Use in Older Adults Parts I and II	Dr. Roger Wong	Lecture	1.5 hrs.	<ol style="list-style-type: none"> 1. To list effects of aging changes on drug use. 2. To apply an evidence-based approach in the rational management of polypharmacy. 3. To appreciate treatment-risk paradox in older adults. 4. To identify drug-drug and drug-disease interactions, and to avoid prescribing cascades in older adults. 5. To understand atypical presentation of adverse drug events in older adults.
Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Review of Renal Physiology and Pathology in the Elderly	Dr. S. Singh	Lecture	.75 hr.	<ol style="list-style-type: none"> 1. To review practical renal physiology and pathology in the elderly. 2. To review how to work up, follow and manage the elderly patient with renal insufficiency. 3. To apply an evidence-based approach in the diagnosis and management of renal insufficiency in the elderly. 4. To know when to refer an elderly patient with renal insufficiency to a nephrologist.

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Year 4; Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Older Woman with Iatrogenic Acute Renal Failure Who Declines Dialysis: Review of the Cardiac Assessment in the Elderly	Dr. P. Lee	Lecture	1 hr.	<ol style="list-style-type: none"> To list the common causes of cardiac disease in older adults To review the age-related physiological changes in the cardiac system To develop a systematic approach in the cardiac assessment in older adults To apply an evidence-based approach in the diagnosis of cardiac disease in older adults.
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: Palliative Care Emergencies	Dr. Alan Nixon	Lecture	15 hrs	<ol style="list-style-type: none"> Describe the role of the patient, family and interdisciplinary care team in monitoring treatment plans. Demonstrate an ability to describe general principles and specifics on how to manage various emergencies. Apply techniques for assessing pain and symptoms on a regular basis and modify the management strategy based on patient choice, effectiveness, side-effects and the disease's stage. Assist in monitoring the efficacy of treatment plans for pain and symptoms. Systematically assess symptoms present in a terminally ill patient and participate in the evidence based holistic and interdisciplinary management of these symptoms. Describe the prevalence and impact of major symptoms in terminally-ill patients. Recommend evidenced-based plans for pain and other symptoms. Recognize that palliative care emergencies exist and that appropriate management can have impact on quality of life.
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: Review of Assignment 4: Cases in Cancer Pain Management	Drs. Linlea Armstrong, Fraser Black, Keri Closson	Small Group	2 hrs	<ol style="list-style-type: none"> Understand the importance of dissemination of this knowledge to the patient and others. Be able to evaluate information pertaining to other symptom management and appropriately apply it to specific cases. Demonstrate an advanced understanding of the interdisciplinary care of patients with palliative issues. This includes collaborating with physicians from other specialties (e.g. oncology) when appropriate. Understand that by demonstrating competent symptom management using ethical practice, the physician is delivering high quality of care. Understand the importance of effective cancer pain to the patient and to society as a whole. Understand the importance of striving for equal care for all. Demonstrate an understanding that effective cancer pain management contributes to an effective and efficient health-care system Assess and classify different types of cancer pain. Do a comprehensive pain assessment. Understand the pharmacology of drugs used in pain management and demonstrate ability to manage pain effectively.
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: Review of Assignments 5: Cases in	Drs. Linlea Armstrong, Fraser Black, Keri Closson	Small Group	1.5 hrs	<ol style="list-style-type: none"> Be able to evaluate information pertaining to other symptom management and appropriately apply it to specific cases. Understand that by demonstrating competent symptom management using ethical practice, the physician is delivering high quality of care. Understand the importance of dissemination of this knowledge to the patient and others.

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		Symptom Management				<ol style="list-style-type: none"> 4. Understand the importance of effective symptom management to the patient and to society as a whole. 5. Understand the importance of striving for equal care for all. 6. Demonstrate an understanding that effective symptom management contributes to an effective and efficient healthcare system. 7. Demonstrate an advanced understanding of the interdisciplinary care of patients with palliative issues. This includes collaborating with physicians from other specialties (e.g. oncology) when appropriate. 8. Be able to articulate the rationale behind a mutually agreeable treatment plan based on goals of care 9. Assess and manage other symptoms, besides pain, experienced by patients with advanced illnesses. 10. Communicate understanding of the patient's experience of other symptoms
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: The Pain Assessment	Dr. Pam Squire	Lecture	1 hr	<ol style="list-style-type: none"> 1. Assess and classify different types of cancer pain. 2. Do a comprehensive pain assessment. 3. Understand the pharmacology of drugs used in pain management and demonstrate ability to manage pain effectively. 4. Communicate understanding of the patient's experience of pain. 5. Be able to articulate the rationale behind a mutually agreeable treatment plan based on goals of care. 6. Demonstrate an advanced understanding of the interdisciplinary care of patients with palliative issues. This includes collaborating with physicians from other specialties (e.g. oncology) when appropriate. 7. Demonstrate an understanding that effective cancer pain management contributes to an effective and efficient healthcare system. 8. Understand the importance of effective cancer pain to the patient and to society as a whole. Understand the importance of striving for equal care for all. 9. Be able to evaluate information pertaining to cancer pain management and appropriately apply it to specific cases. 10. Understand the importance of dissemination of this knowledge to the patient and others. 11. Understand that by demonstrating competent pain and management using ethical practice, the physician is delivering high quality of care
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: Environmental Health	Dr. Richard Mathias	Lecture	.5 hr	<ol style="list-style-type: none"> 1. Recognize the implications of environmental hazards at both the individual and population level. 2. Respond to the patients concerns through appropriate information gathering and treatment. 3. Work collaboratively with local, provincial and national agencies/governments as appropriate to address the concerns at a population level. 4. Make appropriate recommendations for patients and exposed populations so as to minimize their health risks and maximize their overall function.
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: Assessing and Measuring Health Status	Dr. Richard Mathias	Lecture	.5 hr	<ol style="list-style-type: none"> 1. Apply the principles of epidemiology in analyzing common office and community health situations 2. Describe criteria for assessing causation 3. Understand the appropriate use of different graphical presentations of data. 4. Demonstrate an ability to use practice-based health information systems to monitor the health of patients and to identify unmet health needs. 5. Analyze population health data using appropriate measures 6. Demonstrate an ability to critically appraise and incorporate research findings with particular reference to the following elements: <ol style="list-style-type: none"> A. characteristics of study designs (RCT, cohort, case-control, cross sectional);

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						<p>B. measurement issues (validity, sensibility)</p> <p>7. Know how to access and collect health information to describe the health of a population:</p> <p>8. Discuss different measures of association including relative risk, odds ratios, attributable risk and correlations.</p> <p>9. Describe the concepts of, and be able to calculate, incidence, prevalence, attack rates, case fatality rates and to understand the principles of standardization.</p> <p>10. Apply the principles of epidemiology by accurately discussing the implications of the measures.</p> <p>11. Interpret and present the analysis of health status indicators:</p> <p>12. Critically evaluate possible sources of data to describe the health of a population including the importance of accurate coding and recording of health information.</p> <p>13. Describe the types of data and common components (both qualitative and quantitative) used in creating a community health needs assessment.</p> <p>14. Measure and record the factors that affect the health status of a population with respect to the principles of causation.</p> <p>15. Describe the health status of a defined population.</p> <p>16. Understand surveillance systems and the role of physicians and public health in reporting and responding to disease.</p>
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: How We Treat Pain	Dr, Philippa Hawley	Lecture	1 hr	
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: What is Pain?	Drs. Linlea Armstrong, Fraser Black, Keri Closson	Lecture	1 hr	
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: When New Drug Therapy Evidence Changes Old Beliefs – Let It!	Drs. James McCormack and Robert Rangno	Lecture	1.5 hrs	<ol style="list-style-type: none"> 1. Appreciate some of the strengths & Limitations of the medical evidence & clinical practice guidelines when it comes to common conditions in Primary Care. 2. Be able to use evidence in practice via a shared-informed decision making process. 3. To be able to incorporate the relevant evidence into shared-informed decision making for common conditions seen in primary care. 4. Understand the responsibility of health professionals to incorporate patient values into the decision making process.

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Academic Year / Term	Course Name in which Session Occurs/Course Director	Session Name	Instructor(s)	Education Method	Instr. Hrs.	Session Specific Objectives
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Clinical Epidemiology: Assessment of Therapy I – Understanding Bias and Random Error	Drs. C. Bajdik, C. Bryce, B. Conway, and J. Singer	Plenary and Tutorial	3 hrs.	This week we will introduce you to the design of studies, emphasizing the reasons that you need to think rigorously about two specific threats to the validity of all studies: bias and sampling error. <ol style="list-style-type: none"> 1 To understand the basics of study design 2 To understand the importance of bias in study design 3 To understand the importance of sampling error in study design 4 Ascertain how biases might lead to incorrect conclusions about evidence 5 Ascertain how random error might lead to incorrect conclusions about evidence 6 Understand what constitutes a Type I error or a Type II error
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Clinical Epidemiology: Assessment of Therapy II – Evaluating Diagnostic Tests	Drs. C. Bajdik, B. Conway, and H. Wong	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 To understand and apply methodological criteria for the proper selection of a diagnostic test. 2 To understand and apply the concepts of sensitivity, specificity, positive producing value, negative producing value. 3 To understand and apply the concepts of pre- and post-test probability of disease. 4 To become familiar with the criteria that must be applied before a test can be recommended for use in clinical practice.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Clinical Epidemiology: Assessment of Therapy III – Controversies in Pharmaceutical Research	Drs. B. Conway, Larry Lynd, David Melnychuk, and Barbara Mintzes	Plenary and Tutorial	3 hrs.	In this last week, we will look at some controversies in evidence-based medicine: the concerns that have been raised about research published by the pharmaceutical industry and research supported by the pharmaceutical industry. We will begin by discussing the nature, purpose, and extent of pharmaceutical industry research and clinical trial funding. After discussing some of the controversies that have arisen, we will look at some of the ways that these controversies are currently being addressed. <ol style="list-style-type: none"> 1 To understand the nature, purpose, and extent of pharmaceutical research. 2 To understand the nature of the controversies about therapy research published by or supported by the pharmaceutical industry.
Year 1, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Mike Whitfield, Brian Conway, Richard Lazenby	Clinical Epidemiology: Causation I	Drs. B. Conway, A. Harris, J. Singer, and K. Teschke	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 To be able to differentiate "association" from "causation" as it relates to a medical condition in clinical practice. 2 To develop an approach to the determination of causation and the degree of certainty required to establish it in clinical practice.
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Developing The Evidence Base for Practice: A Strategy for Synthesizing the Evidence Base in Medicine	Drs. Najib Ayas, J. Mark Fitzgerald	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1. How to come up with best practice guidelines <ol style="list-style-type: none"> a. Should I use them in my practice? Why do many not use them? 2. How can I use the Cochrane Collaboration to best inform my practice? 3. What is the methodology that goes into a systematic review? How does that compare to meta-analysis?
Year 2, Term 2	Doctor, Patient and Society	Developing The Evidence Base	Dr. Martin Schecter	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 How do you match the questions and the designs? 2 What is the range of designs that can be used in epidemiologic and clinical research and why do we

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	(DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	for Practice: Analytic Epidemiology Including Study Designs				sometimes get it so wrong?
Year 2, Term 2	Doctor, Patient and Society (DPAS 410) Drs. Marjon Blouw, Jane Buxton, Richard Lazenby	Developing The Evidence Base for Practice: Analytic Epidemiology Including Study Designs	Dr. Ricar Mathias	Plenary and Tutorial	3 hrs.	<ol style="list-style-type: none"> 1 Why did low fat diets become the accepted paradigm for intervention in many chronic diseases? 2 Using FiLCHeRS, does the evidence require a change in practice? <ol style="list-style-type: none"> a. How am I going to explain his to my partner or my mother? 3 What is confirmation bias and do I have it? 4 How would changing from low fat to low CHO change the food industry?
Year 4	Senior Clerkship (INDE 440) Dr. Cindy Ann Lucky	Emergency Medicine Rotation – Research (Vancouver General Hospital)	Dr. Jeff Brubacher	Senior Clerkship Elective	4 weeks	<ol style="list-style-type: none"> 5 To have an understanding of the research process from formulating a research question, reviewing the literature, designing a protocol, applying for funding and ethics approval, patient enrollment and consent, data management and report writing. 6 To have a detailed understanding of the background, ethical issues and research design employed in the specific study they are working on. 7 To develop an understanding of the day to day logistics of performing the specific study they are working on through participation. 8 To review and understand the Emergency Medicine research reading material. 9 To review and understand the reading package prepared for this course. 10 To follow the Ten Steps to Emergency Medicine Research handout and devise a research question on a topic of importance to emergency Medicine and then perform a literature review.
Year 4	Senior Clerkship (INDE 440) Dr. Cindy Ann Lucky	Emergency Medicine Rotation – Research (St. Paul’s Hospital)	Dr. Rob Stenstrom	Senior Clerkship Elective	4 weeks	<ol style="list-style-type: none"> 1 To have an understanding of the research process from formulating a research question, reviewing the literature, designing a protocol, applying for funding and ethics approval, patient enrollment and consent, data management and report writing. 2 To have a detailed understanding of the background, ethical issues and research design employed in the specific study they are working on. 3 To develop an understanding of the day to day logistics of performing the specific study they are working on through participation. 4 To review and understand the Emergency Medicine research reading material. 5 To review and understand the reading package prepared for this course. 6 To follow the Ten Steps to Emergency Medicine Research handout and devise a research question on a topic of importance to emergency Medicine and then perform a literature review.
Year 4, Term 1	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Child Health: Research Review	Dr. Rebecca Sherlock	Lecture	.75 hr.	<ol style="list-style-type: none"> 1 To learn a method for clinical appraisal <ol style="list-style-type: none"> a. For diagnostic tests b. For therapeutic intervention 2. To understand the following concepts related to the clinical evaluation of therapies and interventions: <ol style="list-style-type: none"> a. Magnitude of a treatment effect <ol style="list-style-type: none"> i. Relative risk reduction ii. Absolute risk reduction

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						<ul style="list-style-type: none"> iii. Number needed to treat. 3. To review the hierarchy of evidence through the use of study design, limitations, advantages and summary measures of effect. 4. To feel confident critiquing a journal article and evaluating the evidence with a view to application of the evidence to clinical practice 5. To understand Cost-benefit analysis
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: Assessing and Measuring Health Status	Dr. Richard Mathias	Lecture	.5 hr	<ul style="list-style-type: none"> 1. Apply the principles of epidemiology in analyzing common office and community health situations 2. Describe criteria for assessing causation 3. Understand the appropriate use of different graphical presentations of data. 4. Demonstrate an ability to use practice-based health information systems to monitor the health of patients and to identify unmet health needs. 5. Analyze population health data using appropriate measures 6. Demonstrate an ability to critically appraise and incorporate research findings with particular reference to the following elements: <ul style="list-style-type: none"> A. characteristics of study designs (RCT, cohort, case-control, cross sectional); B. measurement issues (validity, sensibility) 7. Know how to access and collect health information to describe the health of a population: 8. Discuss different measures of association including relative risk, odds ratios, attributable risk and correlations. 9. Describe the concepts of, and be able to calculate, incidence, prevalence, attack rates, case fatality rates and to understand the principles of standardization. 10. Apply the principles of epidemiology by accurately discussing the implications of the measures. 11. Interpret and present the analysis of health status indicators: 12. Critically evaluate possible sources of data to describe the health of a population including the importance of accurate coding and recording of health information. 13. Describe the types of data and common components (both qualitative and quantitative) used in creating a community health needs assessment. 14. Measure and record the factors that affect the health status of a population with respect to the principles of causation. 15. Describe the health status of a defined population. 16. Understand surveillance systems and the role of physicians and public health in reporting and responding to disease.
Year 4, Term 2	Preparation for Medical Practice (INDE 453)/Dr. Linlea Armstrong	Review of Online Assignment Topics: When New Drug Therapy Evidence Changes Old Beliefs – Let It!	Drs. James McCormack and Robert Rangno	Lecture	1.5 hrs	<ul style="list-style-type: none"> 1. Appreciate some of the strengths & Limitations of the medical evidence & clinical practice guidelines when it comes to common conditions in Primary Care. 2. Be able to use evidence in practice via a shared-informed decision making process. 3. To be able to incorporate the relevant evidence into shared-informed decision making for common conditions seen in primary care. 4. Understand the responsibility of health professionals to incorporate patient values into the decision making process.

Appendix 2.3: UBC UG TEACHING IN PROGRAM EVALUATION / QUALITY IMPROVEMENT

Marc Broudo, Curriculum Management 1-12-10

Course Name	Year of Study	Session Name	Session Objectives	Session Administrator Instructor Name	Hrs. of Instruction
Doctor/Dentist, Patient, & Society II	2	ORGANIZATION: Improving Health Care: Challenges and Approaches	<ol style="list-style-type: none"> 1. Review evidence on quality of care and patient safety 2. Consider current factors that influence quality of care patients receive 3. What strategies can be used to improve quality and safety? 4. How is the task of improving medical care currently being addressed within Canada? 5. How could improvement strategies be more effectively used within the Canadian context? 	Black, Charlyn	3 hrs.
Doctor/Dentist, Patient, & Society II	2	ORGANIZATION: Benefits, Costs and Allocating Resources to Fund Medical Care: Should we seek to control costs?	<p>To understand:</p> <ol style="list-style-type: none"> 1. Why do costs keep increasing in health care? What are some of the factors that contribute to this phenomenon? 2. Why is it important to consider costs if we want to maximize patient benefit? 3. What approaches have been used in Canada and other countries to control costs? 4. What are some of the tools and approaches that are used for these processes. 	Black, Charlyn Altow, Debbie	3 hrs.
Doctor/Dentist, Patient, & Society II	2	ORGANIZATION: Improving Health Care: Challenges and Approaches	<ol style="list-style-type: none"> 1. Review evidence on quality of care and patient safety 2. Consider current factors that influence quality of care patients receive 3. What strategies can be used to improve quality and safety? 4. How is the task of improving medical care currently being addressed within Canada? 5. How could improvement strategies be more effectively used within the Canadian context? 	Black, Charlyn	3 hrs.
Doctor/Dentist, Patient, & Society II	2	ORGANIZATION: Overview of Public Health Functions	<ol style="list-style-type: none"> 1. To know what public health programs are in place and their contribution to community health <ol style="list-style-type: none"> a. Great achievements in public health 2. To learn the components of a public health framework - e.g. strategies, functions 3. To understand the organization of Federal and Provincial programs 4. To discuss the evaluation of public health strategies 	Hancock, Trevor; Mathias, Richard	3 hrs.
Doctor/Dentist, Patient, & Society II	2	MONEY AND MEDICINE: Patient Care: What is the Bottom Line?	<ol style="list-style-type: none"> 1. To consider a physician's duty to allocate health care resources effectively <ol style="list-style-type: none"> a. Utilize all health resources (human, diagnostic, and therapeutic) prudently b. Utilize all health resources equitably and without bias and discrimination c. Manage scarce health care resources in an ethical and informed manner, balancing individual and societal needs. 2. To identify, respond to, and resolve conflicts between ethical, legal, and professional issues, including economic restraints and commercialization of health 	Dr. C. Black and D. Johannesen	3 hrs.

			<p>care and scientific advances</p> <ol style="list-style-type: none"> 3. To consider what is contributing to the rising costs of health care 4. To consider the current factors that influence quality of care patients receive 5. To discuss what strategies can be used to improve quality and safety 		
Doctor/Dentist, Patient, & Society II	2	FROM PERSON TO POPULATION: How Public Health Works for You and Your Patients	<ol style="list-style-type: none"> 1. To become aware of core programs and strategies that attempt to strengthen the link between public health, primary care, and chronic disease management 2. To become aware of when and where public health and primary care intersect 3. To become aware of great achievements in public health and to consider their impact, and to ponder what public health may achieve in the future 4. To become aware of Federal and Provincial reporting agencies and understand which ones are responsible for different issues that may arise in practice and in the community 5. To understand how physicians go through the process of identifying and reporting a communicable disease 	Drs. M. Blouw, J. Buxton, Richard Mathias	3 hrs.
Senior Clerkship (Elective)	4	Quality Improvement Processes in Psychiatry	<ol style="list-style-type: none"> 1. To take on and complete a small QI project. 2. To understand the QI process as it relates to psychiatry, including the review of critical incidents and adverse events. 3. To understand the legislation around the protection of information arising from a QI review. 	Chan, Peter	1 hr.
Preparation for Medical Practice	4	Public Health and Epidemiology: Assessing and Measuring Health Status	<ol style="list-style-type: none"> 1. Apply the principles of epidemiology in analyzing common office and community health situations 2. Describe criteria for assessing causation 3. Understand the appropriate use of different graphical presentations of data. 4. Demonstrate an ability to use practice-based health information systems to monitor the health of patients and to identify unmet health needs. 5. Analyze population health data using appropriate measures 6. Demonstrate an ability to critically appraise and incorporate research findings with particular reference to the following elements: <ul style="list-style-type: none"> A. characteristics of study designs (RCT, cohort, case-control, cross sectional); B. measurement issues (validity, sensibility) 7. Know how to access and collect health information to describe the health of a population: 8. Discuss different measures of association including relative risk, odds ratios, attributable risk and correlations. 9. Describe the concepts of, and be able to calculate, incidence, prevalence, attack rates, case fatality rates and to understand the principles of standardization. 10. Apply the principles of epidemiology by accurately discussing the implications of the measures. 11. Interpret and present the analysis of health status indicators: 12. Critically evaluate possible sources of data to describe the health of a population including the importance of accurate coding and recording of health information. 13. Describe the types of data and common components (both qualitative and 	Mathias, Richard	.5 hr.

			<p>quantitative) used in creating a community health needs assessment.</p> <p>14. Measure and record the factors that affect the health status of a population with respect to the principles of causation.</p> <p>15. Describe the health status of a defined population.</p> <p>16. Understand surveillance systems and the role of physicians and public health in reporting and responding to disease.</p>		
Preparation for Medical Practice	4	Public Health and Epidemiology: Public Administration	<p>1. Know and understand the pertinent history, structure and operations of the Canadian health care system.</p> <p>2. Be familiar with economic evaluations such as cost-benefit / cost effectiveness analyses as well as issues involved with resource allocation.</p> <p>3. Describe the approaches to assessing quality of care and methods of quality improvement.</p> <p>1. Describe at a basic level:</p> <ul style="list-style-type: none"> a. methods of regulation of the health professions and health care institutions; b. supply, distribution and projections of health human resources; c. health resource allocation; d. organization of the Public Health system; and e. the role of complementary delivery systems such as voluntary organizations and community health centres. <p>4. Describe the role of regulated and non-regulated health care providers and demonstrate how to work effectively with them.</p> <p>5. Outline the principles of and approaches to cost containment and economic evaluation.</p> <p>6. Describe the main functions of public health related to population health assessment, health surveillance, disease and injury prevention, health promotion and health protection.</p> <p>7. Demonstrate an understanding of ethical issues involved in resource allocation.</p> <p>8. Define the concepts of efficacy, effectiveness, efficiency, coverage and compliance and discuss their relationship to the overall effectiveness of a population health program.</p> <p>9. Be able to recognize the need to adjust programs in order to meet the needs of special populations such as new immigrants or persons at increased risk.</p> <p>10. Participate effectively in and with health organizations, ranging from individual clinical practices to provincial organizations, exerting a positive influence on clinical practice and policy-making.</p> <p>11. Define quality improvement and related terms: quality assurance, quality control, continuous quality improvement, quality management, total quality management; audit.</p> <p>12. Describe and understand the multiple dimensions of quality in health care, i.e. what can and should be improved.</p>	Mathias, Richard	.5 hr.

Appendix 2.4: Journal Club Educational Method: UBC UG Program

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Academic Year / Term	Course Name in which Session Occurs/Course Director	Session Name	Instructor(s)	Education Method	Instr. Hrs.	Session Specific Objectives¹
Year 4	Senior Clerkship (INDE 440) Dr. Cindy-Ann Lucky	Community Family Medicine - Hazelton	Dr. James Wiens	Clinical Rotation	4 weeks	Case Conferences, Public Health Rounds, Hospital Rounds, Journal Club - one presentation at Journal Club during rotation.

¹ Please note that only those sessions that included journal club as a *teaching method* are included in this report. Please see the “Critical Appraisal Report” for a listing of teaching sessions that may be applied when using *journal club* as a method of teaching.

Appendix 3: Proposed Topics of FoS Course

FoS Topic	Year of Study			Mode of Topic Delivery		
	1	2	4	Lecture	Workshop	Online
I: Understanding the importance of scholarly inquiry in practice						
Introduction Lecture	√			√		
Responsible Conduct of Research	√			?		?
Critical thinking and critical evaluation of evidence						
General Overview of Evidence-based Learning	√					√
Journal Club		√			√	
Ethics						
Ethics Application		√			?	√
Medical Ethics	√				√	√
Ethics of working with communities		?				?
Global Health Initiative	√					√
II: Developing clear questions related to curiosities about health and health care						
Research Questions and Hypotheses Generation	√	√				√
Literature review	√	√			?	√
Study Design, Data Collection and Analysis	√	√				√
Communication and Knowledge Translation						
Communication with patients	√		√		√	
Observation of clinical presentations		√			√	
Clinical Practise Guidelines			?			√

Report writing formats and conventions		√				√
Poster Presentation		√			?	√
Successful grant writing		√	√		√	√
III. Becoming lifelong scholars as students develop identity as physicians:						
Time-Management						
Project Timeline		√				√
Time and life balance as a scholarly physician			√	√		
Leadership						
Management Essentials of Leadership			√		√	
Emotional Intelligence in Leadership			√		√	
Building Career Momentum			√		√	√

Appendix 4: Exit Outcomes and Competencies to be Met by the Proposed FoS Course

Exit Outcomes and Competencies - Scholar Role

Key and enabling competencies
Apply a scholarly inquiry approach to learning and patient care
o Apply evidenced-based medicine analysis to clinical practice
o Retrieve information from appropriate sources
o Critically evaluate the validity and applicability of information sources and apply this appropriately to clinical practice
o Integrate retrieved information into clinical practice
o Accept complexity, uncertainty and ambiguity as part of clinical practice
Discuss the ethical principles of clinical and translational research, including the ways in which such research is conducted, evaluated, explained to patients, and applied to patient care.
Develop and implement a plan for continual personal learning
o Describe the principles of maintaining competence
o Use self-awareness in assessing competence, including reflection on personal practice
o Evaluate personal learning outcomes (seek feedback from teachers, other health care professionals, patients and other sources)
o Document progress toward identified personal learning goals
Facilitate the learning of others as part of professional responsibility (patients, health professionals, society)
o Be a lifelong scholar by contributing to the creation, dissemination, application and translation of medical knowledge into practice
o Demonstrate the ability to effectively use educational materials to teach colleagues, patients, the patient's supporters, other health care professionals, and populations as appropriate.