FORM 2

COVER SHEET
NEW DEGREE PROGRAM PROPOSAL

Program Information

Program Name: PhD in Global Health: Metrics and Implementation Science

Institution Name: University of Washington

Degree Granting Unit: Department of Global Health. Schools of Public Health and Medicine
(e.g. College of Arts & Sciences)

Degree: PhD   Level: Doctor   Type: (of) Philosophy
     (e.g. B.S. Chemistry)   *(e.g. Bachelor)*   *(e.g. Science)*

Major: Metrics and Implementation Science   CIP Code: 51.2210
     (e.g. Chemistry)

Minor: _____
     (if required for major)

Concentration(s):   _____
     (if applicable)

Proposed Start Date: *Autumn 2012*

Projected Enrollment (FTE) in Year One: *3-5*   At Full Enrollment by Year: *4* ; *12-16*
     (#FTE)   *(# FTE)*

Proposed New Funding: *$100,000.00*

Funding Source: ☒ State FTE   ☐ Self Support   ☐ Other

Mode of Delivery / Locations

☒ Campus Delivery   Seattle
     (enter locations)

☐ Off-site   _____
     (enter location(s))

☐ Distance Learning   _____
     (enter formats)

☐ Other

Note: If the program is the first to be offered at a given site or location, the submission must also include the information required for the establishment of a new teaching site as outlined in section B.1 of the Program and Facility Approval Policy and Procedures.

Scheduling

☒ Day Classes   ☒ Evening Classes   ☐ Weekend Classes
☐ Other *(describe)*

Attendance Options

☒ Full-time
☐ Part-time
Total Credits _____   ☐ Quarter   ☐ Semester

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Vice Provost and Dean of the Graduate School

Endorsement by Chief Academic Officer   Date

PROPOSAL TO ESTABLISH THE DEGREE OF DOCTOR OF PHILOSOPHY IN

GLOBAL HEALTH: METRICS AND IMPLEMENTATION SCIENCE IN THE DEPARTMENT OF GLOBAL HEALTH

Submitted by the
Department of Global Health
School of Public Health and School of Medicine
University of Washington

August, 2011

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GENERAL INFORMATION

Persons to be Contacted During the Review Sequence

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Degree-Granting Unit

Department of Global Health
Schools of Public Health and Medicine

Proposed Starting Date of Program
Autumn Quarter (September), 2012

I. Relationship to Institutional Role, Mission and Program Priorities

Global health is one of the priority areas of the University of Washington. In his 2007 annual address to the University Community, then President Emmert said: "The fact is that global health can and will over the coming years become a centerpiece of interdisciplinary work across the entire institution and across our campuses. It holds remarkable promise for bringing faculty, staff, and students together to do very important work."

The Department of Global Health (DGH) was established jointly in the UW School of Medicine and the School of Public Health with a mandate to harness the extraordinary expertise, energy, and creativity of faculty and students across all UW schools and colleges to create one of the most comprehensive academic global health programs in the world. The department is not only located in an epicenter of global health, but is also becoming a leader in global health education, training and mentoring. DGH currently offers an MPH degree with four tracks, two fellowship programs, two graduate certificates in global health, and an undergraduate minor in Global Health. DGH also offers a Global Health Pathway which provides medical students with the information and experiences necessary to practice in underserved communities both in the US and abroad.

The creation of the Institute for Health Metrics and Evaluation (IHME) in the summer of 2007 was also a key development in establishing UW's leadership in global health. IHME was created with the explicit aim of expanding the quantitative evidence base for decision-making in population health. IHME represents a significant investment by the University to attract more faculty and to produce relevant, timely, and cutting edge information in the public domain. Over its first three and one half years, IHME has grown to nearly 110 staff, including more than forty research fellows who are working full-time on IHME team projects and producing articles, software, and tools that help to measure and understand health across the world. In a short period of time, IHME has become an international hub for multi-disciplinary quantitative research in health and has built a reputation for producing high quality and cutting edge results. The Institute has attracted positive attention for groundbreaking work in child mortality, maternal mortality, health financing, evaluations, and survey development, amongst other areas. IHME's early success and growth attest to two important things – 1) UW is able to attract a high caliber of interested researchers at both the post-undergraduate and post-doctoral levels to enrich its community and its academic work; and 2) success breeds demand, and UW would be well-served over the long-term to both provide an educational avenue for the fellows who receive master's degrees and are interested in further education, and for the post-doctoral fellows who can become a pipeline of talented and innovative thinkers for faculty positions.

As we document in more detail below, there is a clear demand and need for a PhD program in Global Health as well. This program would be unique in the country and would attract the best aspiring researchers from around the world to the University of Washington, thus strengthening the University's standing as one of the leading research universities in the nation. The goal of the program would be to train the next generation of global health leaders in health metrics and implementation science. The field of health metrics develops new methods and tools to measure the magnitude of major health problems across all countries and to track how well health systems are doing in delivering preventive and curative interventions to those who need them. The emerging field of implementation science systematically applies rigorous scientific methods to "promote the integration of new research findings, technologies and products, and evidence-based intervention into health care and public health policy and practice,"[1] to improve the speed, efficiency, quality, and effectiveness with which health interventions and programs are implemented and taken to sufficient scale to improve population health. Our graduates will have the passion and skills to advance these fields and accelerate progress in global health.

The PhD program in Global Health: Metrics and Implementation Science will directly contribute toward the goals of the School of Public Health and the School of Medicine. These goals are to educate innovative, effective, and culturally competent public health researchers, faculty, and medical practitioners; to advance knowledge in the public health and medical sciences through research and discovery, and to contribute to sound public health policies which will improve the health of the public. The PhD program is also well aligned with all the values of the schools, especially with the following two values: innovation and interdisciplinary approaches in solving local, national, and global public health problems; and scientifically rigorous evaluation of evidence to inform public health recommendations.

The proposed PhD program is also central to the mission of the Department of Global Health, and most of its centers, including IHME, the International Training & Education Center for Health (I-TECH), Health Alliance International (HAI), the Center for AIDS Research, and the new Center on Integrated Health of Women, Children, and Adolescents. All will be actively engaged in the program, as will several of the Department's other programs, including the Global Medicines program and the Injury Prevention Initiative. These centers and programs initially will provide the majority of opportunities for students enrolled in this program to become involved with global health research. The program will contribute to the success of these entities in achieving their stated goals, which refer to measuring, addressing the causes of, and helping provide solutions for, inequalities in health around the globe. The PhD program will

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[1] Schackman BR. Implementation science for the prevention and treatment of HIV/AIDS. J Acquir Immune Defic Syndr 2010:55, Suppl 1, S27-S31.

enhance our already strong ability to generate and disseminate knowledge in global health research. It will also help strengthen collaborations with other departments, colleges, and schools, and it will complete a comprehensive degree structure in Global Health, from the undergraduate minor, to a Master in Public Health (MPH) degree through to the PhD and to post-doctoral education. The introduction of PhD students in the department will also provide a more stimulating environment for students at all levels, from undergraduate to post-doctoral.

II. Documentation of Demand and Need for Program

Global demand and need

The total funding for global health has increased substantially over the past decade and it was estimated at $26.9 billion in 2010. [2] Despite the increase in global health resources, the discovery of effective health interventions continues to outpace their application. From this gap between knowledge generation and its translation into effective health care programs, was coined the term, "Know-Do gap." There are over 8 million preventable deaths annually due to several diseases including HIV/AIDS, tuberculosis, malaria and childhood infectious diseases[3] for which cost-effective interventions exist. The recent economic downturn has brought increased pressure to demonstrate the impact and cost-effectiveness of increased global health resources and to document which programs are delivering the greatest health gains.

The demand for researchers with the skills to measure health outcomes, the impact of health interventions, and to develop and study the most efficient and effective ways to implement evidence-based health interventions and programs is rapidly rising. As Dr. Jim Kim, President of Dartmouth University has noted, "…developing a science of implementation is very important at this point in the evolution of global health because the prospects for dramatically improving the health of poor people all over the world are better than ever."[4] The proposed PhD program will address this gap in advanced expertise.

In addition, there is an increasing perceived need for doctoral level technical leadership in non-governmental organizations and positions in ministries of health, academic institutions, and other public and private agencies throughout the world. A recent search of job postings in

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[2] Institute for Health Metrics and Evaluation. Financing Global Health 2010: Development Assistance and Country Spending in Economic Uncertainty. Seattle, WA: IHME, 2010.

[3] WHO commission on Macroeconomics and Health. Report. 2003

[4] Healthcare Delivery and Implementation Science: An interview with Prof Jim Yong Kim. SMA News. Volume 40(1), January 2008, Pg. 4.

commonly used global health websites revealed that of the over 1,000 jobs posted in 2010, about 12% required doctoral level training. Several organizations, including the Global Health Core Competency Development Project[5], and the Commission on Education of Health Professionals for the 21st Century[6], have expressed the need for educational advancement in global health. These groups are comprised of renowned researchers in the field of global health from universities across the world, and their endorsement of the need for advanced training is well-founded. Leading academics in the field have published on the need to "train analysts and researchers who embody the interdisciplinary nature of the field … and who can span methodological and substantive aspects of the field, while mastering the knowledge, skills and attitudes required to engage in team work across many disciplines, methods and content areas."[7]

National demand and need

The enrollment of students in graduate global health programs is increasing rapidly. According to the Association of Schools of Public Health the number of applications to global health programs doubled between 1995 and 2006, while the number of students graduating with master's degrees in international health increased by 69%.[8] In 2009, the Consortium of Universities in Global Health, of which the University of Washington is one of the founding members, said that enrollment in global health programs and courses at 37 universities in the US had more than doubled since 2006.[9] Despite this increased demand, across the world there exist only 11 PhD programs in the entire field of global health, of which only four are in the United States (none in the Pacific Northwest). None of the existing programs has a focus on metrics and implementation science.

As Dartmouth President Jim Kim summarizes, "most people do not know what programmatic scale up means, especially in medicine. In the field of academia, among researchers, or even medical doctors, we are definitely not taught how to scale things up. Engineers, and managers,

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[5] Association of Schools of Public Health. Global Health Core Competency Development Project. Washington, D.C.: ASPH, 2010. http://www.asph.org/document.cfm?page=1084http://www.asph.org/document.cfm?page=1084 (accessed 08,16, 2010).
[6] Education of Health Professional for the 21st Century: A Global Independent Commission. About EHP Global Independent Commission. Duxbury, MA: EHP, 2010. http://www.globalcommehp.com/index.php?option=com_content&view=article&id=1&Itemid=13http://www.globalcommehp.com/index.php?option=com_content&view=article&id=1&Itemid=13 (accessed 08,16,2010).
[7] Murray, C. J., & Frenk, J. (January 01, 2008). Health metrics and evaluation: strengthening the science. *Lancet, 371,* 9619, 1191-9.
[8] Mangan, K., Global-Health Programs on the Rise in the U.S. *The Chronicle of Higher Education*. 2007; 54(13):A25.
[9] *The Chronicle of Higher Education*., Enrollment in Global-Health Courses Doubled Over Past 3 Years. Washington, D.C: 2009. http://chronicle.com/article/Enrollment-in-Global-Health/48394/http://chronicle.com/article/Enrollment-in-Global-Health/48394/ (accessed 08, 20, 2010).

and operations specialists, these are the people who know how to scale up. Can we train a whole new cadre of people who can be just as good at scaling up health systems?"[10]

In addition to increased demand nationally for training opportunities in global health metrics and delivery, there is a growing interest from the US National Institutes of Health to support the field of global implementation science, evidenced by a significant increase in grant solicitations in this area and the organization of four annual "Conferences on the Science of Dissemination and Implementation." This has led to increased demand for individuals with doctoral level training in metrics and implementation science at private, public and non-governmental organizations in the area of global health.

Washington State demand and need

The most recent Washington State Needs Assessment report highlights that "substantial growth in the State's higher education system will be required to keep pace with student demand." The report lists a number of areas where this is particularly relevant and states that the "expansion of existing strategies in health care and the development of new programs and/or delivery mechanisms is recommended to meet employer and student demand."[11]

The findings of the report are consistent with those of other stakeholders as well. The State of Washington is a major epicenter for global health. The University of Washington is home to the Institute for Health Metrics and Evaluation, the only research institution in the US which focuses on exclusively independent, multi-disciplinary quantitative measurement of the magnitude of health problems and the performance of health systems around the world. Recognizing the significance of this task and the attention and resources it could bring to Washington state, the state government designated approximately $1.7 million annually to help support IHME's activities. IHME has utilized this promising base along with funding from the Bill and Melinda Gates Foundation and other funders to produce internationally renowned research and attract a growing number of applicants to its highly competitive post-bachelor and post-graduate fellowship programs. IHME's impact spans from the broadly international to intrinsically local decision-making. IHME's aim is always to produce information at the smallest possible available administrative unit in order to help facilitate better decision-making. As an example, IHME is currently involved in a pilot project with Public Health – Seattle & King County whereby it is collecting information to monitor disparities in chronic conditions amongst

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[10] Healthcare Delivery and Implementation Science: An interview with Prof Jim Yong Kim. SMA News. Volume 40(1), January 2008, Pg. 8.
[11] Washington Higher Education Coordinating Board. State and Regional Needs Assessment Report. 2005 http://www.hecb.wa.gov/research/Issues/NeedsAssessmentbychapters.asp2005 http://www.hecb.wa.gov/research/Issues/NeedsAssessmentbychapters.asp (accessed 10.15.2010).

different populations. Evidence is currently unavailable on the exact reasons (such as high blood pressure or high cholesterol) that dictate differences in chronic health outcomes amongst groups and how interventions can best be targeted to reduce these differences. IHME's project could help change that and then be easily scaled to other communities across the US. Another project focused in Washington state aims to analyze the effective coverage of interventions (and how they vary) across all 39 counties. If simple mechanisms can be developed to measure effective coverage of key interventions here, then many more local governments can be empowered to make better policy decisions and improve population health. Each of these projects has a direct impact upon the livelihood of those residing in Washington state, but equally each could have a much wider impact in the US and even have methods adapted for other settings internationally. Both depend intrinsically upon innovative thinking and high-caliber methodological development from driven and motivated researchers who can collectively bring their varied skills to bear on these challenging analytic problems.

Furthermore, the Department of Global Health and the University of Washington house other leading centers and programs active in global health implementation science. The International Training and Education Center for Health (I-TECH), was recently selected through a competitive federal grant application process for renewal by DHHS/HRSA, with a proposed budget of up to $60,000,000 annually for five years. I-TECH focuses on workforce capacity development, strengthening health systems, and clinical and public health programs in 20 countries in Africa, Asia, and the Caribbean. Seattle is home to Health Alliance International (HAI), a non-profit organization which focuses on improving the delivery of effective interventions to those who need them in Mozambique, Sudan, Cote d'Ivoire, and Timor Leste. The UW/FHCRC Center for AIDS Research Scientific Program on Health Systems and Strategies Research, led by Stephen Gloyd and Mark Micek, provides Operational Research Training. The CFAR Clinical Epidemiology and Health Services Research Core, led by Mari Kitahata and Heidi Crane, manages and utilizes the NA-ACCORD and C-NICS collective medical record data bases for learning HIV/AIDS Clinics and North America and observational clinical database that has guided revision and monitored implementation of HIV/AIDS treatment guidelines in the US and globally[12] (Kitahata, M, NEJM, 2009). The DGH International Clinical, Operational, and Health Services Research Training Awards – AIDS/TB (ICORHTA-AIDS/TB) is an NIH Fogarty Center Program involving Universidad Peruana Cayetano Heredia, and UW (King Holmes, US Principal Investigator), and University of Alabama, Birmingham on an expanding curriculum encompassing operations research, implementation science, and health systems research. The DGH Center for Integrated Health of Women, Children, and Adolescents, led by Grace John-Stewart, an interdisciplinary

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[12] Kitahata, MM et al. Effect of early versus deferred antiretroviral therapy for HIV survival. *New England Journal of Medicine.* 2009 Apr 30; 360(18): 1815-26.

collaboration between Departments of Global Health, Pediatrics, and Obstetrics and Gynecology, aims to leverage the greatly expanded access to pregnant women for preventing mother to child transmission of HIV infection throughout the world, to implement a wider range of services to reduce maternal non birth, and prevent morbidity, stillbirth, and neonatal and early childhood morbidity and non birth. Seattle Biomed partners closely with the DGH in basic science research and research training targeting new interventions, such as vaccines of global health importance. A new DGH Global Medicines Program, led by Andy Stergachis and Lou Garrison, offers a unique approach to implementation science in an important but greatly neglected area of global health. The DGH Initiative on Global Control of Injury and Violence will emphasize research and training for implementation of five stages of increasingly important course of mobility and disability; these stages include surveillance, prevention, acute pre-hospital care, hospital care, and rehabilitation.

In addition to these institutions which would be directly involved with the proposed PhD program, for many years, several other major organizations in global health such as Seattle BioMed, PATH and the Bill & Melinda Gates Foundation are based in our state. There are over 200 institutions that work together in Washington and form a regionally based, power alliance in the interest of global health. These organizations are responsible for, among others, 183 different projects focusing on emerging and epidemic diseases, and 105 vaccine and immunization programs. They work with 593 unique partners, including 44 foreign governments, 60 corporate partners and 245 hospitals and universities. It is estimated that global health supports 44,000 jobs statewide, provides more than $4 billion in business activities, and involves more than 190 nonprofit organizations. The global health industry is expected to add 2,400 more jobs locally by 2012. [13] The director of the Washington Global Health Alliance, an umbrella organization with 11 executive member organizations, including the UW, indicated that for Washington state to be considered the home of scientific leadership in global health "it is essential to support the efforts for education and training."[14]

The role of highly-skilled researchers trained in metrics and implementation science has also been highlighted by prominent figures in the field. Dr Tachi Yamada, President of Global Health at the Bill & Melinda Gates Foundation, in his speech to the first-ever graduates of DGH emphasized the need for a solid evidence base on what works and what does not work in global

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[13] Seattlepi. Global health seen as big business for Seattle. Seattle, WA: SPI, 2008. http://www.seattlepi.com/local/384753_healthbiz24.htmlhttp://www.seattlepi.com/local/384753_healthbiz24.html (accessed 08, 18, 2010).
[14] Puget Sound Business Journal. Seattle-area global health groups strive to ensure future work force. Seattle, WA:PSBJ, 2009. http://seattle.bizjournals.com/seattle/stories/2009/11/23/story10.html (accessed 08, 18, 2010).http://seattle.bizjournals.com/seattle/stories/2009/11/23/story10.html (accessed 08, 18, 2010).

health. "If you are not keeping score, you are just practicing," Dr. Yamada told the graduates.[15] The central role of good measurement has also been highlighted recently in other media. Hal Varian, chief economist at Google was quoted as saying "the sexy job in the next 10 years will be statisticians... the rising stature of statisticians, who can earn $125,000 at top companies in their first year after getting a doctorate, is a byproduct of the recent explosion of digital data."[16] Finally, Chris Elias, CEO of PATH, emphasized that "... partly because investment in public health has increased significantly, there's a lot more focus on monitoring and evaluation and understanding the metrics for measuring success. So there's a greater opportunity for bringing in skills related to monitoring and evaluation."

We anticipate that the proposed PhD program will draw highly qualified applicants from Washington State and the other states in the WWAMI region (Washington, Wyoming, Alaska, Montana and Idaho). We intend to actively advertise and encourage applications from residents of the WWAMI states. We expect that some students in the PhD program will study Native American tribes and other underserved populations, especially of rural areas, within the WWAMI region, to improve the health care delivery mechanisms and health outcomes for those populations.

The State and Regional Needs Assessment report also highlights that "despite roughly 40 percent of the local population holding a baccalaureate degree or higher, employers report difficulty in finding qualified applicants, especially in health care and high-tech occupations. This is especially problematic for health-related services as future demand greatly outpaces current training capabilities."[17] This is especially true for doctoral level training, where the existing training capacity is very limited.

Based upon national trends and the current status of the global health industry in Washington state, and the rapidly growing engagement of the private sector and of public-private partnerships in global health it is anticipated that the rate of growth of job opportunities for doctoral graduates in global health over the next decade will exceed the number of people with good training in the field. Hence, there is great promise for future jobs in Washington state for those with global health degrees, especially at the PhD level with special skills in metrics and implementation, two areas in which our state is the leader.

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[15]University of Washington, Department of Global Health Graduation Ceremony, Seattle, Washington, June 2008.
[16] The New York Times, For Today's Graduate, Just One Word: Statistics. New York, NY: NYT, 2009.
[17] State and Regional Needs Assessment Report. Washington Higher Education Coordinating Board. February 2006, Pg 65.

University of Washington demand and need

The University of Washington is fully prepared and equipped to face this demanding challenge and to take advantage of the international, national, state and regional trends in demand for global health professionals to create a doctoral program in Global Health: Metrics and Implementation Science.

Strong demand for degrees in global health has been documented in the University of Washington in recent years. The number of applications to the Master in Public Health degree in DGH has risen from 139 in 2007 to 236 in 2010. At the same time, the departments of Epidemiology and Health Services, which currently offer PhD programs, have seen increasing numbers of high-quality applicants with an interest in global health. Between 2008 and 2010, the proportion of highly qualified applicants to the PhD program in Health Services who declared a strong interest in global health rose from 22% to 34%; in Epidemiology the proportion rose from 2% to 11%. This implies that the University of Washington is already recognized as a strong academic institution in the area of global health and that demand for a PhD in global health is very strong. At the same time, the Department of Health Services primarily focuses on domestic issues and therefore, the DGH is stepping in to fill this gap by providing doctoral instruction in global health. Further evidence of the strong interest in graduate-level work in global health and our ability to recruit the best aspiring researchers in the field is provided by the number of applications to the IHME fellowship programs. The Post-Bachelor Fellowship program received 395 applications this year for 12 positions, while the Post-Graduate Fellowship program received 120 applications for 5 positions. These numbers represent significant increases over the four years that the DGH programs have been in existence.

Taken together, these statistics highlight that the University of Washington already has highly competitive graduate degree and fellowship programs and that the PhD program in DGH would receive a high number of qualified applications and would be a highly competitive and rigorous program.

In addition to the documented demand, the DGH convened an External Advisory Board in December 2009. The Board is comprised of academic and policy leaders in the field of global health. The Board strongly recommended that DGH offer a doctoral program in health metrics and implementation science to meet the future job market needs in this area. DGH also conducted an external curriculum review in September 2010. Members of the review committee included chairs of leading departments of global health from around the world. The report of the review committee also highlights the need for the department to create a doctoral program.

A doctoral degree is necessary to take full advantage of the current opportunities. This degree will not only produce highly skilled researchers to meet the current and future demand of the global health industry, but will also meet the need of the departments and university to grow global health research activities.

III. Relationship to Other Institutions

Duplication

Currently, a PhD degree program in Global Health: Metrics and Implementation Science is not offered by any of the public or private universities in the state of Washington. The proposed program will complement existing graduate programs in the School of Public Health and School of Medicine. Due to the interdisciplinary nature of the field, DGH has close collaborations with other departments in the School of Public Health and the School of Medicine, as well as several other colleges, schools and centers across the University of Washington, including the Schools of Nursing and Pharmacy, the College of the Environment, the Foster School of Business, the Evans School for Public Affairs, the Center for Statistics and the Social Sciences, and the Departments of Industrial & Systems Engineering, Economics, Statistics, Anthropology, Medicine, Epidemiology, Environmental Health, Health Services, Pediatrics, Obstetrics and Gynecology, and many others. Because of the interdisciplinary nature of global health research, this PhD program will provide enhanced opportunities for faculty and students to pursue innovative and collaborative approaches to challenges in global health metrics and implementation.

The main goals of existing doctoral programs at the University of Washington are quite distinct from the program newly proposed by DGH; therefore, we believe that there will be no duplication. Leaders in the development of this training program have spoken with the chairs, curriculum committees, and faculty of the existing programs, and have been reassured that this new program will not be duplicative, and will synergize but not overlap with existing programs. Specifically, within the School of Public Health, the Department of Epidemiology advances knowledge regarding the occurrence and distribution of disease in human populations. Biostatistics maintains a rigorous program developing new statistical methods for the biomedical and public health sciences. In addition, the Department of Health Services provides training on the determinants of population health and of the health care system, as well as on several theoretical frameworks for conceptualizing population health and the provision of health care in the US. While these programs are related to the proposed doctoral program in global health, they tend to focus on domestic health care issues rather than global challenges, and most of them approach problems primarily from within one discipline. Students in the

newly proposed PhD in Global Health: Metrics and Implementation Science, new to the state's public and private universities will approach global health issues from an inter-disciplinary perspective, and while the students will receive training in the fundamentals of epidemiology, biostatistics and health services, they will also become proficient in approaches from other fields, such as economics, industrial and systems engineering (operations research), business (systems analysis), dissemination and translational research, quality improvement, stakeholder and policy analysis, communications, impact evaluation, and statistics.

Uniqueness

There are currently no other PhD programs in Global Health: Metrics and Implementation Science in the world. While some universities have PhD programs in related fields, this program is unique in focusing on measurement and implementation in global health. The need for this has been well documented and in recent years the number of departments of global health has been rising quickly. It is therefore expected that while this program will be the pioneer doctoral program in the field, it will likely be copied by programs in other universities with global health academic programs, such as John Hopkins University, Tulane University, Emory University, San Diego State University, University of Liverpool, and Tokyo University.

Many of the current PhD programs in other universities focus on one aspect of health research, such as health policy, health economics, health services, health systems or operational research. Most of the existing PhD programs are primarily for students who are interested in domestic health issues and are housed by departments outside of global health. The fact that this program will be the only one in a growing global field means that if implemented in a timely manner, it will have the potential to attract the best doctoral degree students from the nation and the world, and will place the University of Washington in a leading role in the training of the next generation of leaders in global health.

In the field of implementation science, the only other existing program is a recently launched Master of Health Care Delivery Science degree program at Dartmouth, jointly offered by the Tuck School of Business at Dartmouth and The Dartmouth Institute for Health Policy and Clinical Practice. This program is aimed at working managers and professionals in health care organizations. In the field of metrics, the only other existing program is a concentration of Harvard University's PhD in Health Policy which focuses on Evaluation Science and Statistics. This program, however, is primarily aimed at students with interests in domestic health issues.

Therefore, the proposed PhD in Global Health: Metrics and Implementation Science will be in a unique position to attract students who wish to pursue doctoral level training in global health and who wish to study ways to address the challenges of measuring the health of populations and to determine the most efficient ways to improve health outcomes.

IV. Program Description

Goals Objectives, Student Learning Outcomes

The overall goal of the Doctor of Philosophy Program in Global Health: Metrics and Implementation Science is to train global health researchers for careers in academic institutions, international organizations, national agencies such as Ministries of Health, foundations, non-governmental organizations, and the private sector. Our objective is to train these professionals through a combination of didactic courses, seminars and research activities both at the University of Washington and in the field. Highly qualified individuals will be provided with advanced knowledge and research skills as they gain the competencies necessary for independent investigation and critical analysis of the challenges in global health metrics and implementation.

The PhD program is comprised of a core curriculum and two areas of emphasis. All students will complete the core curriculum (described in more detail below). In addition, prior to admission students will be asked to declare which of the two areas of emphasis they would like to focus on: Metrics or Implementation Science.

Upon satisfactory completion of the PhD program, all students should achieve the following core learning objectives:

- conceive, develop, and conduct original research leading to significant advances in the measurement of health conditions, impact of programs and interventions and determinants of success of programs and interventions;
- design and implement data collection, quality control and data management procedures for a global health study;
- analyze and interpret the results of global health research, taking into account the cultural, ethical and political context of their work;
- develop a fundamental understanding of advanced methodologies used in research projects in global health and develop new research methods to address current challenges;
- acquire the skills to evaluate complex global health programs and initiatives;
- communicate research findings to scientific and policy audiences through publications and oral presentations;
- integrate theories and methods from a variety of disciplines, including metrics and implementation science but also economics, evaluation, cultural anthropology, politics, philosophy and governance, to study a global health research question;
- understand and articulate the policy implications of global health research at the local, national and global levels;

- apply the major theoretical perspectives of organizational and management theory to health systems.

In addition, those students who choose to focus on Metrics should achieve the following learning objectives:

- develop a fundamental understanding of advanced quantitative methods and impact evaluation techniques from a variety of disciplines;
- identify, collate and synthesize all available data on a global health problem and arrive at reliable and valid estimates of its magnitude over time and across countries;
- design and implement impact evaluation studies in complex settings, including in settings of limited financial resources, limited access to high-quality information, political and ethical constraints;
- acquire skills in translating evidence into effective policies and communicating results from advanced quantitative methods to a non-technical knowledge.

In addition to the core learning objectives, those students who choose to focus on Implementation Science should achieve the following learning objectives:
- formulate, design, develop, conduct, implement, analyze, transform, disseminate and scale up coverage of cost-effective interdisciplinary complex/multi-component interventions to improve global health;
- foster effective collaborations between program implementers and implementation scientists;
- develop a fundamental understanding of implementation science methods, including impact evaluation designs and simulation models to study feasibility, efficiency, and cost-effectiveness, among others;
- acquire skills of decision analysis, operations research, health economics, health systems research, policy analysis, organization and management science, finance and ethics.

Mentoring

As in all degree programs in the Department of Global Health, faculty members are committed to developing strong mentoring relationships with all students for the purpose of enhancing educational experiences and supporting student retention.

Each student will be assigned to a mentor from the time that he/she is accepted into the program. The initial mentor will be selected by the Steering Committee of the PhD program, which will aim to pair each student with a faculty member with related interests. During the first quarter of the program we expect that mentors will meet with their students on a weekly

basis with a focus on building a relationship and supporting the student's success in the program by guiding them in their course selection and use of available resources. Thereafter, we expect that the meetings will happen at least twice per quarter, or with a greater frequency determined by the needs of each student.

It is expected that during the second year in the program each student will begin to identify faculty members with similar research interests who can serve as their dissertation mentor and chair of their dissertation committee. Once a chair of a committee has been identified, this faculty member will assume the mentorship role for the student. Typically at the end of the second year in the program, students will petition the Graduate School to establish their doctoral supervisory committee. This Committee consists of at least four members, of whom two must have primary, joint or adjunct appointments in the Department of Global Health. All committees must include a Graduate School Representative (GSR) who is a productive scholar in his or her own research area that may differ from that of the student's dissertation project. The remaining member must be a productive scholar in the student's major field and/or subfields. If a student wishes to have as a committee member an individual who is not a faculty member at the University of Washington, the Steering Committee of the PhD Program will determine whether this individual can serve on a doctoral committee based on their academic credentials and potential to be a contributing member to a doctoral committee.

The doctoral committee will oversee the student's progress and evaluate performance and conduct all examinations. It is expected that the chair of the committee will play the strongest mentorship role, but all members will meet with the student regularly and contribute to the strong mentorship environment that the PhD program will foster. The committee will be expected to meet every six months and provide the PhD Steering Committee a written summary of the committee's assessment of progress and recommendations.

Requirements for Admission

We plan to attract diverse, highly motivated students from Washington state, the Pacific Northwest, the rest of the US, and abroad into our PhD program. The program will be advertised locally, nationally and internationally in ways that are similar to those used in our current MPH and post-graduate fellowship programs, which have been very successful. Our existing programs receive a significant number of extremely qualified applicants from graduating students at the University of Washington and individuals who are working in the field of global health in a Washington-state based organization. Because of the strong reputation of our department and the stature of our faculty, we anticipate that the PhD program will attract strong candidates from the region, nation and globally.

We anticipate that students with Master of Public Health and Master of Science degrees in global health or related fields, such as Epidemiology, Health Services, and Economics will apply

to the PhD program. We also expect that medical students at the University of Washington who wish to pursue a PhD in global health will apply. The University of Washington has a combined MD/PhD program, the Medical Scientist Training Program, which provides students with full funding for the length of the program.

Candidates for admission to the PhD program must meet the requirements of the Graduate School of the University of Washington, as well as additional requirements of the Department of Global Health. These requirements include a Bachelor's degree from an accredited college or university in this country or its equivalent from a foreign institution. Preference will be given to students who have prior Master-level training or have a minimum of two years of experience working in the global health field, ideally in a low-resource setting. Admission priority will be given to applicants who have graduated with high academic standing. A minimum cumulative grade point average of 3.3 in previous undergraduate and graduate degrees will be required (although we expect those admitted to have GPAs of 3.5 or higher). We will also require high scores in the Graduate Record Examination (GRE), normally greater than 700 in the quantitative section. For students who have not completed a degree in an institution where English is the primary language of instruction, results from the Test of English as a Foreign Language (TOEFL) will also be required to demonstrate proficiency in the English language.

Selection of applicants will also be based on a statement of personal goals consistent with the program and three strong letters of support from individuals familiar with the applicant's work and academic potential. After an initial review of the applications, the strongest 10 candidates will be invited to interview with faculty from the PhD program's Admissions Committee (more details provided under "Program Governance"). After consideration of each applicant's academic record, scores on the GRE, work experience, goal statement, letter of references, and performance during the in-person interviews, the committee will recommend to the Graduate Program Director the names of applicants who are considered to be qualified for admission.

Diversity
The Department of Global Health is committed to the recruitment and retention of an excellent and diverse cohort of doctoral students. The recruitment of diverse candidates is not only a University of Washington priority, but also driven by national organizations that specifically focus on identifying and recruiting ethnic minorities within science fields. The program will actively promote within a number of organizations, including Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) and the national Annual Biomedical Research Conference for Minority Students (ABRCMS) and the National Name Exchange program. The National Name Exchange is a consortium of fifty-five universities, of which the University of Washington is a member, which annually collect and exchange the names of their talented underrepresented ethnic minority students who are in their sophomore, junior or

senior year of undergraduate education. The purpose of the consortium is to increase the enrollment of traditionally underrepresented peoples in graduate education.

Our faculty members within the School of Public Health include 19.5% from underrepresented populations who come from diverse backgrounds. They are committed to developing strong mentoring relationships with all students for the purpose of enhancing their educational experience and improving student retention. We will work with the Graduate Opportunities and Minority Achievement Program (GO-MAP) and staff in the Graduate School to ensure that we are making all possible efforts to recruit students from under-represented groups. As we develop our recruitment strategies into a formal plan, we will meet with the SACNAS Graduate Representative, and with the Departments of Health Services and Epidemiology, which have implemented GO-MAP recruitment strategies within their programs. We also have plans to attend workshops to better understand how to tailor our program to the National Name Exchange, and attend conferences that appeal to minority groups within the science field. We will develop strategies to encourage such students to meet the prerequisites for admission, apply to the program, and ensure their success once admitted.

Requirements for Degree Completion
All students admitted to the doctoral program will be expected to complete a minimum of 96 credits. This includes a minimum of 27 dissertation credits, 37 credits in the core requirements, 16 credits in the area of emphasis and the remaining credits in elective courses. Other requirements for the PhD program include a written preliminary examination, a general written and oral examination, a dissertation defense and successful completion of a dissertation. We will expect our students to maintain a minimum cumulative and quarterly GPA of 3.3.

Our faculty have identified the key competencies in research methods, quantitative methods, evaluative methods and implementation science which our students should master (see Appendix A). These competencies will be covered by a combination of existing methods courses, a new proposed Global Health Doctoral Seminar course, and through research projects both in Seattle and in limited resource settings where projects are being implemented. Depending on the student's past course work, experience and proposed dissertation topic area, substitutions or exemptions may be made. Substitutions and exemptions will need to be approved by the student's primary mentor and the PhD Steering Committee. Syllabi for all courses in development or currently established are listed in Appendix B.

Core requirements (minimum 37 credits)
- Global Health Doctoral Seminar: Biology, Systems and Measurement – 8 credits: This is a new course that is being developed by DGH specifically for doctoral students in the department. The course is currently undergoing the approval process for new courses in DGH. A preliminary syllabus is included in Appendix B. The purpose of this course is to

provide a foundation from all disciplines in global health to all incoming doctoral students. This course will serve as the doctoral seminar for PhD students. The course will cover the current global health architecture and the cultural, political, ethical setting in which global health research is conducted. The course will also focus on the three main areas of expertise in the department: biomedical basis of diseases of global health significance; metrics and evaluation; and implementation science. The course is planned to be offered during Autumn and Spring, 2 credits per quarter, and will be required for 4 quarters during the first two years of doctoral training in Global Health. This course will contribute to the preparation of students for their preliminary examination.

- Quantitative methods – CS&SS 501/503 or equivalent– 8 credits minimum. All PhD students will be required to take a sequence of two or three courses to meet the quantitative methods core requirement. Students may substitute other courses offered at the University of Washington if they can demonstrate that the learning objectives and material covered are equivalent to the courses listed above.

- Epidemiology – EPI 512/513 – 8 credits. The two course sequence on epidemiologic methods is required of all students.

- Implementation Science Methods – GH 541 – 5 credits. This course will provide students with the foundation of the field of implementation science by outlining various methods that are applied to improving implementation (including applied engineering, management tools, health systems and policy research), and using experiential case studies from global health leaders. This course is already being offered at the Master's level as a 3-credit course. An additional teaching section of 2 hours per week will be added for doctoral students to focus on the methods that are presented in the lectures in class.

- Population Health Measurement – GH 533; or effective coverage course (to be developed for the PhD Program – 4 credits). This requirement will introduce students to the conceptual, methodological, and empirical basis for measuring levels of health and intervention coverage in individuals and populations. Students will learn about a range of different summary measures of health and health system performance, and develop an appreciation of the uses and limitations of different methods.

- Impact evaluation – course to be developed for the PhD program – 4 credits. This course will teach students the most appropriate quantitative methods in the field of impact evaluation in low-resource settings. This course will be taught by Emmanuela Gakidou and Stephen Lim and will be developed during Fiscal Year 2012 so that it can be offered during Winter or Spring quarter of 2013.

Requirements in Areas of Emphasis (minimum 16 credits)

Students will be required to choose an "area of emphasis" within the PhD program and take a minimum of 16 credits in this area. There are two areas of emphasis for the PhD program: metrics and implementation science. Students may fulfill the requirements by taking the courses listed as options below. Depending on the student's past course work, experience and proposed dissertation topic area, substitutions may be made. Substitutions will need to be approved by the student's primary mentor and the PhD Steering Committee.

1) Metrics
   - Advanced Quantitative Methods – 8 credits. Students can choose 8 credits from a selection of advanced quantitative methods courses, including but not limited to the following: BIOST 536: Categorical Data Analysis in Epidemiology; BIOST 540: Correlated Data for Epidemiology; CS&SS 503: Advanced Quantitative Political Methodology; CS&SS 510: Maximum Likelihood for the Social Sciences; CS&SS 527: Survey Research Methods; CS&SS 536: Analysis of Categorical and Count Data; CS&SS 560: Hierarchical Models for the Social Sciences; CS&SS 564: Bayesian Statistics for the Social Sciences; CSE 546: Machine Learning; STAT 566: Causal Modeling; CS&SS 544: Event History Analysis for the Social Sciences; CS&SS/ STAT 567: Statistical Analysis of Social Networks; CS&SS/BIOSTAT 529: Sample Survey Techniques.
   - Global Health Metrics – 4 credits. Students can choose among available courses Current offerings include GH533: Population Health Measurement, and GH590G: Integrated Health Information and Surveillance Systems, while courses in burden of disease, effective coverage of interventions, health economics and evaluation, and demographic methods, are currently under development at the Department of Global Health.
   - Leadership, Policy and Management (LPM) – 4 credits. Students can choose among the LPM courses listed below as requirements for implementation science, or other equivalent courses which will build skills in writing and managing grants and budgets, and project implementation.

2) Implementation Science
   - Advanced Health Systems Research Methods – 8 credits. Students will select from: GH 531/EPI 539: Research Methods for Developing Countries; GH 538/HSERV 521: Qualitative Methods in Health Services Research; GH590: Methods, Tools and Data in Health Metrics and Evaluation; HSERV 523: Advanced Health Services Research Methods I; HSERV 524: Advanced Health

Services Research Methods II; HSERV 525: Advanced Health Services Research Methods III; PHARM 534/HSERV 583: Economic Evaluation in Health and Medicine; PHARM 535/HSERV 583: Assessing Outcomes in Health and Medicine; PHARM 568: Health Economics.

- Operations Research/ Modeling and Simulations – 4 credits. A course on "Operations Research for Health Systems" is currently under development in the Department of Industrial and Systems Engineering.
- Leadership, Policy and Management – 4 credits. Students will choose among courses already being offered in this area including: GH 521: Global Program Management and Leadership; GH 522 Leadership Development for Global Health; GH 523 Organizational Management for Global Health; GH 524 Policy Development and Advocacy for Global Health; and GH 590E: Managing Global Health Programs for Success. All of these courses will include additional doctoral level skills and assignments.

Electives (minimum 16 credits)

Elective courses will be drawn from various departments and schools at the University of Washington, depending on the students' experience, area of work for their dissertation and career goals. Examples of elective courses include, among others, advanced quantitative methods courses offered through the department of Biostatistics and the Center for Statistics and the Social Sciences, qualitative methods courses, advanced research methods courses, health economics and economic evaluation courses, global health pharmacy courses, and courses in operations research, such as those offered through the Department of Industrial & Systems Engineering. In addition, other courses, such as PABIO 553: Survival Skills for Scientific Research, which teaches students critical skills such as writing grants and papers may be taken as electives. The primary advisor of each student will propose a list of potential courses that are best suited to the students' research and career interests.

The PhD steering committee will work closely with directors of the PhD programs in both the Departments of Health Services and Epidemiology to maximize synergies and minimize inappropriate overlap between courses. We hope to provide an array of courses that will also serve PhD students in other departments. Furthermore, Global Health PhD students will develop skills via selected courses in the Departments of Health Services and Epidemiology when appropriate.

Other training opportunities

In addition to formal coursework, students in the PhD program will have the opportunity to acquire further skills through a number of different options. In terms of developing teaching skills, we expect that PhD students will serve as Teaching Assistants for graduate level courses

in the Department of Global Health, as well as other departments, when appropriate. Since teaching is a critical skill for doctoral students to acquire before graduating from the PhD program, mentors will place special attention in ensuring that their students develop the skills necessary to become effective teachers, including learning how to set learning goals, develop syllabi and evaluate students.

We also anticipate that the doctoral students in the program will enhance their research skills by working on projects with their mentors. Faculty affiliated with several centers, including IHME, HAI, I-TECH, and CFAR, have expressed strong interest and commitment to providing research assistant opportunities to doctoral students in Global Health (see Appendix E – letters of support). These research assistant opportunities may involve research conducted at the University of Washington or in the field. Doctoral students will be strongly encouraged to acquire substantial experience in implementing projects and measuring and monitoring project outcomes in developing countries. This will enable students to acquire first-hand experience with the challenges and opportunities presented by working in low-resource settings, and it will provide students with invaluable skills in understanding the cultural, ethical and political context of their work.

Furthermore, doctoral students in Global Health will be able to take advantage of the numerous learning and training opportunities at the University of Washington, including attending seminars at research centers across campus and participating in short workshops on a number of diverse topics ranging from using geographic information systems to learning how to write grant proposals and papers.

Another training opportunity will involve students presenting their work and participating in international conferences in their field of expertise. The budget of the PhD program has a modest amount of funds reserved for doctoral students to travel to conferences where their work has been submitted and accepted for presentation. This opportunity will enhance the students' skills in communicating their research findings and their implications to appropriate academic, professional, policy, and lay audiences.

Finally, by being based in Seattle, one of the epicenters of global health, students will be encouraged to take advantage of the numerous international conferences and smaller meetings that take place throughout the year. These events attract leaders and influential actors from a variety of non-governmental organizations, multi-national agencies, foundations, and academic institutions, and will provide students with the opportunity to make connections and pursue collaborations with valuable partners.

Table 1 below summarizes the curriculum.

	Total Credits
Overall	**96**
Dissertation	**27**
Core Credits	**37**
Global Health Doctoral Seminar*	(8)
Quantitative Methods	(8)
Epidemiology	(8)
Implementation Science Methods	(5)
Population Health Measurement	(4)
Impact Evaluation*	(4)
Areas of Emphasis	**16**
Metrics:	
Advanced Quantitative Methods	(8)
Global Health Measurement	(4)
Leadership, Policy, Management	(4)
Implementation Science:	
Advanced Health System Research Methods	(8)
Operations Research/ Modeling	(4)
Leadership, Policy, Management	(4)
Electives	**16**
Advanced Research Methods	
Advanced Quantitative Methods	
Advanced Qualitative Methods	

* Course to be developed.

Enrollment and Time for Program Completion

Initially, we plan to admit 3-4 students per year. This number is appropriate given our current resources. When additional funding becomes available either through training grants or through fellowships, the number of students may increase slightly, although we would not want to have cohorts of larger than 6-8 students.

We expect that students in the Metrics area of emphasis will complete their degrees after 4 years on average, while students in the Implementation Science area of emphasis will complete

their degrees in 5 years, on average. The difference in the duration of the two areas relates to the fact that students focusing on Metrics will, for the most part, be using data that have already been collected, while students focusing on Implementation Science will, for the most part, be engaged in primary data collection. After approximately 5 years, we expect to have a steady-state of 15-16 total students.

Table 2 below shows projected enrollment, graduations and total number of students over the first six years of the PhD program.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Entering students	3	4	3	4	3	4
Graduating students	0	0	0	2	3	4
Total number of students	3	7	10	14	15	16

Program Governance

Oversight of the PhD Program will be via a Steering Committee. This committee will be composed of faculty with broad training experience, and strong research and teaching credentials. The intent is to have a focused working group, and so the committee will remain small and meet monthly or as needed. The members of the committee will include the DGH Associate Chair for Education and Curriculum, the coordinators of each area of emphasis, and three to four members from the core faculty, on a rotating basis. The Steering Committee will decide on core and associate faculty membership for the PhD program, and will appoint the working committees and task forces necessary for the program. In addition to the Steering Committee, we anticipate that the following four committees will be set in place: Admissions; Doctoral Student Advising (for course advising during the pre-dissertation part of the program), Curriculum, and Doctoral Student Affairs (Retreat, Research Symposium, etc.). These committees will report to the Steering Committee.

Steve Gloyd, Associate Chair for Education and Curriculum in DGH, will be proposed as the Graduate Program Director. Emmanuela Gakidou and Kenneth Sherr will be proposed as Deputy Graduate Program Coordinators, and will each spend 20% of their time administering the program and advising students, teaching in the Global Health Doctoral Seminar, and leading the two areas of emphasis. Emmanuela Gakidou will direct the Metrics area of emphasis and Kenneth Sherr will direct the Implementation Science area of emphasis. In addition, Judy Wasserheit, Vice Chair of the Department of Global Health, will spend 5% of her time being actively involved in all aspects of the PhD program and will serve on the Steering Committee. It is expected that the committees that will be part of the program governance, as outlined above, will be comprised of core faculty members.

V. Infrastructure Requirements

Facilities for graduate training will be provided by the Department of Global Health and affiliated institutions, primarily IHME, I-TECH, and HAI. Currently, Department of Global Health facilities include 40,000 square feet of office and classroom space and equipment in the Ninth and Jefferson Building adjacent to Harborview Medical Center. In addition, the School of Medicine has assigned and dedicated space to the Department of Global Health at the Harris Hydraulics building. This new space represents an institutional commitment to our field as it was specifically renovated for DGH. The new space on the UW campus includes 3 conference areas which can be booked for doctoral committee meetings and exams, and faculty seminars, as well as space for students to study and work together and offices where mentors can meet with their students. Space for students is available at the Ninth and Jefferson Building, Harris Hydraulics, IHME, HAI and I-TECH offices.

Library resources include the University of Washington's rich library system, including electronic access to journals, online databases and search engines, and reference materials. State-of-the art facilities include access to a broad range of statistical software packages, IT support, internal grants administrators, library, and conference space. The Department of Global Health and affiliated centers have their own servers, high speed internet access, and computing power to match the needs of ongoing and proposed work, as well as data storage capabilities and access to broader data storage through the University of Washington.

VI. Faculty

The Department of Global Health has among its faculty many distinguished figures in the field of metrics and implementation science, including several newly recruited faculty. The proposed doctoral program will involve faculty in two different ways. There will be the group of core faculty with primary responsibility for administering the program and teaching the core courses. This group will also be supported by a group of associate faculty, whose primary involvement will be through teaching some of the courses and by serving on dissertation committees. In addition to excelling in their academic work, faculty of the Department of Global Health have held high-level positions in ministries of health, have directed large programs in several low-resource countries, and have held leadership positions in national and international organizations such as the World Health Organization and the US Centers for Disease Control. These varied experiences complement the academic talents of the faculty and will contribute to the educational quality of the proposed doctoral program. The PhD program provides an opportunity to harness the expertise of new faculty in DGH.

Table 3 contains a list of Core Faculty, their titles and research interests/ areas of expertise. All Core Faculty are committed to participating actively in the program through teaching, primary

advising, potentially chairing dissertation committees, training and service. A review of this table demonstrates a breadth of knowledge and skills related to the main disciplines involved in global health metrics and implementation science. Brief biosketches of the core faculty are included in Appendix F.

Core Faculty	Primary Department	Title	Research Interest
Michael Chung, MD, MPH	Department of Allergy and Infectious Disease	Assistant Professor	Perinatal transmission of HIV-1 and delivery of HIV health services in resource-limited settings; health sector leadership and management
Lalit Dandona, MD, MPH	Department of Global Health	Professor	Evaluation of population health interventions; health information systems in less developed settings; HIV/AIDS; research capacity in less developed settings; visual impairment and blindness
Carey Farquhar, MD, MPH	International AIDS Research & Training Program	Associate Professor	AIDS epidemiology and HIV prevention in Africa; heterosexual and vertical HIV transmission
Abraham Flaxman, PhD	Department of Global Health	Assistant Professor	Algorithms; Combinatorics; Optimization; DisMod; Burden of Disease
Emmanuela Gakidou, PhD	Department of Global Health	Associate Professor	Impact evaluation studies; health systems reforms; health inequalities and health of the poor; measurement of adult mortality in developing countries
Stephen Gloyd, MD, MPH	Department of Global Health	Associate Chair for Education & Curriculum; Professor	Health systems research; political economy of health; impact and equity in health
Michael Hanlon, PhD	Department of Global Health	Lecturer	Household and labor economics; law and economics
Aaron Katz, CPH	Department of Health Services	Principal Lecturer	Health policy; health sector leadership; social/political determinants; health system market change; health care costs and access
Santosh Kumar, PhD	Department of Global Health	Lecturer	Health economics; health program evaluations
Stephen Lim, PhD	Department of Global Health	Associate Professor	Intervention effective coverage; cost-effectiveness analysis; burden of disease; health

			economics
Rafael Lozano, PhD	Department of Global Health	Professor	Health needs assessment, including causes of death analysis, validation of the quality of death certificates, verbal autopsies analysis, and national burden of diseases; national health information systems, including designing, monitoring, and evaluation; and health reform leadership, management, and policy, including health system performance assessment
Ali Mokdad, PhD	Department of Global Health	Professor	Survey methodology; health surveys; surveillance; chronic diseases; emergency and response
Lisa Manhart, MPH, PhD,	Department of Epidemiology	Associate Professor	Sexually transmitted infections (STI) and human immunodeficiency virus (HIV)
Diane Martin, PhD, MA	Department of Health Services	Professor	Health insurance and delivery systems
Christopher Murray, MD, DPhil	Department of Global Health	Professor	Health metrics and evaluation; mortality analysis and causes of death; life expectancy; health disparities; burden of disease assessment; injuries and risk factors; health economics; cost-effectiveness; health program evaluations; infectious disease epidemiology
Mohsen Naghavi, PhD, MD, MPH	Department of Global Health	Associate Professor	Health system expansion; management and integration of health programs; epidemiological study at the national level in developing countries; death registry system and cause of death data; epidemiology of intentional and unintentional injuries; program evaluation in horizontal health systems; health information systems in developing countries; burden of disease
James Pfeiffer PhD, MPH, MA	Department of Global Health	Associate Professor	Medical anthropology; international health

Kenneth Sherr, PhD, MPH	Department of Global Health	Assistant Professor	Primary health care; health systems research; human resources for health; program design and management
Haidong Wang, PhD	Department of Global Health	Assistant Professor	Formal demographic methods; mortality estimation and forecasting; population dynamics; population ageing; fertility estimation
Judith Wasserheit, MD, MPH	Department of Global Health	Vice Chair and Professor	Impact of HIV and other STDs on women and adolescents; STD/HIV interactions; HIV vaccine clinical trials; implementation science and program management

Represented among the core faculty are several different disciplines, including population health metrics, evaluation science, implementation science, survey methodology and implementation, demography, burden of disease, and statistics. The core faculty has extensive prior experience with education at the PhD level. Members of the core faculty have directed several graduate degree programs and have served as members and chairs of over 50 doctoral committees from a number of well-established departments and universities.

Table 4 shows the larger group of Associate Faculty who will have secondary responsibilities, serving as secondary advisers, contributing to teaching and participating on dissertation committees. Each of these individuals has expertise in areas pertinent to metrics and implementation science. The Associate Faculty will provide a rich array of possible areas for student research. This list is expected to grow as student projects are formulated and as the Department of Global Health grows. Brief biosketches of the Associate Faculty are presented in Appendix G.

Associate Faculty	Primary Department	Title	Research Interest
Bruce Avolio, PhD, MA	Foster Center for Leadership	Executive Director and Professor	Leadership assessment and designing Micro Development Interventions
Jared Baeten, MD, PhD	Departments of Global Health and Medicine	Assistant Professor	Epidemiologic and biologic risk factors for acquisition of HIV and sexually transmitted infections, and clinical trials of interventions to prevent HIV transmission
Scott Barnhart, MD, MPH	Department of Medicine	Professor	HIV/AIDS; Health systems and human resources
Anirban Basu, PhD	Department of Health Services	Associate Professor	Health economics; econometrics; cost-effectiveness
Stephen Bezruchka, MD, MPH, AM,	Department of Health Services	Senior Lecturer	Trends in health of populations around the world; development of a theory of global health to explain the immense scale of human health disparities around the world; and interacting with various audiences on factors that produce health in populations.
Elizabeth Bukusi, PhD, MPH	Department of Obstetrics and Gynecology	Research Associate Professor	HIV/AIDS; STDs ; Maternal Child Health
Lee Ann Campbell, PhD	Department of Epidemiology	Professor	Drug and vaccine development; infectious diseases (other than STDs); chronic disease (incl. cardiovascular, diabetes); pathobiology; pathogenic mechanisms of chlamydia pneumoniae and chlamydia tracthomatis
Corey Casper, MD, MPH	Department of Medicine	Associate Professor	Transmission; natural history; pathophysiology and treatment of human herpesvirus-8 (HHV-8) infection
Connie Celum, MD, MPH	International Clinical Research Center, and Departments of Medicine and Global Health	Professor	HIV prevention; microbicide; and vaccine trials with the objective to find effective strategies to reduce HIV acquisition and transmission
Lawrence Corey, MD	Departments of Laboratory Medicine and Medicine	Professor	Herpes viruses (HSV, CMV, and HHV-8), HIV and Hepatitis C

Ann Downer, EdD, MS	Department of Global Health	Senior Lecturer	Assessment; strategic planning; intervention design; implementation and evaluation of domestic and international HIV/AIDS/STI prevention; treatment and care programs; educational leadership and management
Ann Duerr, PhD, MD, MPH	Department of Epidemiology	Associate Director and Affiliate Professor	HIV infection; reproductive health; clinical epidemiology
Scott Emerson, MD, PhD	Department of Biostatistics	Professor	Clinical trials; sequential testing; survival analysis; categorical data; statistical consulting; computer intensive methods
Majid Ezzati, MA, PhD	Department of Global Health	Affiliate Associate Professor	Environmental health; risk assessment
Nicole Frahm, PhD, MS	Department of Global Health	Assistant Professor	Influence of HIV sequence diversity on its recognition by cytotoxic T lymphocytes, as well as the factors governing the recognition of sequence variants both in HIV-infected subjects and in vaccine trial participants; assessment of immune responses to viral vectors used as immunogens in HIV vaccine trials
Lou Garrison, PhD	Department of Pharmaceutics	Professor	Health economics
Virginia Gonzales, EdD, MPH, MSW	Department of Global Health	Senior Lecturer	Women's' health, national and international STD/HIV/AIDS prevention; prevention of mother-to-child transmission of HIV
David Grembowski, PhD, MA	Department of Health Services	Professor	Design and performance of health care systems; prevention; technology diffusion
Amy Hagopian, PhD, MHA	Department of Global Health	Assistant Professor	Health Systems and Human Resources; War, Conflict, and Peace Studies; Workforce
King Holmes, MD, PhD, AB	Departments of Global Health, Medicine, and Epidemiology	Chair and Professor	Global health, internal medicine, infectious diseases with research on HIV/AIDS and STDs; clinical epidemiology and microbiology. Clinical trials, HIV/STD prevention research

Larry Kessler, ScD	Department of Health Services	Chair and Professor	Cost-effectiveness and diagnostic value of medical technology in screening for cancer and other diseases
Grace Stewart, MD, PhD, MPH	Departments of Medicine and Global Health	Professor	HIV/AIDS; Maternal Child Health
Alan Lopez, MS, PhD	Department of Global Health	Affiliate Professor	Burden of disease assessment; mortality analysis and causes of death; tobacco epidemiology and the global tobacco epidemic; global descriptive epidemiology of major diseases, injuries, and risk factors; measurement of mortality and causes of death
Sheila Lukehart, PhD	Departments of Medicine and Global Health	Professor	Drug and Vaccine Development; STDs (other than HIV); Pathobiology; syphilis pathogenesis; antigenic variation; vaccine development
Robert Martin, DrPH, MPH	Department of Global Health	Professor	TB; Health Systems and Human Resources; Laboratory Strengthening
Mary Anne Mercer, MPH, DrPH	Department of Global Health	Senior Lecturer	International health; maternal and child health
Mark Micek, MD, MPH	Department of Global Health	Clinical Assistant Professor	Health Alliance International; clinical research in HIV/AIDS in Mozambique
Mark Oberle, MD, MPH	Department of Health Services	Associate Dean and Professor	Epidemiology; Informatics
Gabrielle O'Malley, PhD, MA	Department of Global Health	Assistant Professor	Program Evaluation; formative research; qualitative methods; medical anthropology; gender; economic development; health systems and network analysis
Julie Overbaugh, PhD	Department Microbiology and Fred Hutchinson Cancer Research Center	Associate Professor	HIV pathogenesis
Barbara Payne, PhD, MSC	Department of Medicine	Research Assistant Professor	HIV/AIDS; pathobiology; laboratory strengthening
Deepa Rao, PhD, MA	Department of Global Health	Research Assistant Professor	HIV/AIDS; mental health; chronic disease (incl. cardiovascular, diabetes); social justice and human rights

Steve Reed, PhD	Infectious Diseases Research Institute	Director, IDRI Affiliate Professor, Global Health	Vaccine development; adjuvants
Marla Salmon, MS, ScD	Psychosocial and Community Health	Dean and Professor	Community and public health nursing; health sciences policy and nursing leadership globally; nursing workforce policy
Carol Sibley	Department of Genome Sciences	Professor	Malaria genetics
Andy Stergachis, PhD, MS	Departments of Global Health, Epidemiology, and Pharmacy	Professor	Pharmacoepidemiology; global medicines safety, and public health systems research
Patricia Totten, PhD	Department of Medicine	Research Associate Professor	Pathogenesis; epidemiology; diagnostics of sexually transmitted infections (STI)
Dilys Walker, MD	Department of Obstetrics and Gynecology	Associate Professor	Maternal child health
Judd Walson, MD, MPH, MA	Department of Global Health and Medicine	Assistant Professor	Infectious disease; anti-helminthic therapy (treatment of intestinal worms) in adults with HIV; malaria parasitemia
Noel Weiss, MD, DrPH	Department of Epidemiology	Professor	Cancer epidemiology; epidemiologic methods; clinical epidemiology

VII. Accreditation

Specialized accreditation will not be required for the PhD degree program.

VIII. Program Assessment

The PhD program will undergo a comprehensive review by the UW Graduate School five years after its inception. In addition, the PhD program will be self-evaluated regularly focusing on both process and product. The process evaluation will focus on the scope, appropriateness and quality of the educational experiences offered. The product evaluation will focus on outcomes within the program and post-graduation. Focused evaluations will occur every two years. These will include evaluations of program administration (e.g. admissions statistics, examination policies), curriculum (relevance and quality of courses, topical gaps in course offerings), and placement of graduates. Furthermore, the PhD program will be regularly reviewed by the External Advisory Board of the Department of Global Health. This board is comprised of

distinguished individuals from the field of Global Health who will provide the program with a regular external assessment and outside perspective.

In terms of recruitment, the Admissions Committee in collaboration with the Steering Committee, the Graduate Opportunities and Minority Achievement Program (GO-MAP) in the Graduate School, and the Office of Multicultural Affairs in the School of Medicine, will develop materials and strategies for recruitment. This will ensure that a diverse pool of candidates are targeted during the advertising of the PhD program and that barriers do not exist in receiving applications from people on the basis of ethnicity, culture, gender, and disability. The diversity recruitment strategy will be revised based on annual performance and recommendations from GO-MAP. Input will also be sought from applicants and students within the program, and other programs which have successful strategies. In addition, we will collect data on the number of applications received each year, the number of students accepted, the number of offers made, and the number of those offers that were accepted.

Relative to the overall program quality, various metrics will be used. First, we will maintain data on progress of all students in the program (e.g. preliminary exams, written exam, dissertation proposal, graduation) and on relevant accomplishments of all students (e.g. presentations in regional, national and international conferences, publications in peer-reviewed journals, grants, teaching accomplishments, awards). The data will be summarized quarterly at the Steering Committee meetings. In addition, we will maintain a database of program graduates which will collect data on employment, publications, grants, leadership responsibilities, accomplishments and awards. This information will be collected at the time of graduation and follow-up will be through social networking sites and email surveys. Program graduates will be asked to provide a retrospective evaluation of the PhD program overall, with a special focus on the success of the program in terms of helping them achieve their career goals. These assessments will be conducted at graduation and at 5 and 10 years after graduation. The information collected will be summarized and reviewed annually and used to inform revisions to admissions criteria and the program overall. These evaluations will be comprehensive and will add to the UW Graduate School's review of the program five years after its inception.

The evaluation of the core courses will be done annually. Student and peer course evaluations are collected regularly for all courses in DGH and discussed at meetings of the Executive Education Committee and other relevant departmental committees. PhD program-specific courses, such as the doctoral seminar, will also be discussed in the Curriculum Committee and the Steering Committee of the PhD program. Annually, at the program retreat, we will evaluate the scope and sequencing of the core requirements by compiling and examining data from multiple sources, including student course evaluations, peer teaching evaluations, and faculty reflections.

Prior to the annual retreat of the program, all evaluation data collected during the previous year will be compiled and summarized and used as a basis for a comprehensive evaluation of the program. Both strengths and areas for improvement will be identified. Based on this, a specific action plan for program improvement will be designed. The Steering Committee will be responsible for the implementation of the improvement plan.

Table 5 below summarizes the program assessment objectives and evaluation strategies.

Program Objectives	Method of Evaluation-During the Program	Method of Evaluation-Post Graduation (Data Sources)
1. Recruit and retain of high quality students from diverse backgrounds.	• Feedback from the Admissions Committee and Steering Committee regarding recruitment materials and strategies to ensure diverse candidates are actively recruited. (annually with Go-MAP and SOM's Office of Multicultural Affairs) • Data on the number of applications, students accepted, diversity (bi-annually) • Data on the progress and retention of students • Feedback from applicants and successful methods from other programs (bi-annually)	• Exit survey at the time of graduation • Follow-up survey of graduates (5 years and 10 years)
2. Develop, implement, and evaluate core and track courses in metrics and implementation science.	• Course evaluations (annually) • Course and doctoral seminar reviews in the Executive Education Committee, Steering Committee and departmental committees (annually) • Program retreat to review scope and sequence of program (annually)	• Program specific exit survey (at time of graduation)
3. Facilitate collaboration of student progress and document the need for leaders in global health metrics and implementation science.	• Maintain data on progress of student's success (annually) • Document relevant accomplishments (e.g. presentations, conferences, publications in peer-reviewed journals,	• Follow-up survey of graduates' retrospective evaluation of the program (5 years and 10 years) • Use of social network sites to provide updates on student's continued success

	grants, teaching, etc.) (quarterly by Steering Committee)	• Database of professional publications and presentations of program graduates

IX. Student Assessment

Students in the PhD program will be assessed in a variety of ways throughout the program.

Student assessment against goals and objectives of PhD program

Academic and research performance of each student against the learning objectives and competencies of the PhD program will be assessed at the end of each year. In addition to the PhD Program's objectives and competencies, during the first quarter of the program each student will establish with their mentor a set of individual learning goals and experiences. The student, with the input of their mentor, will establish a plan and timeline for achieving the goals and experiences they set forth for themselves. The attainment of these individual targets will be self-assessed by the student and also assessed by their mentor annually. The results of both of these evaluations will be reported to the Steering Committee.

Didactic Coursework Evaluation

During the first two years of coursework, the primary faculty mentor and the Doctoral Student Advisory Committee will monitor students' performance during the coursework phase of the degree program. Satisfactory performance includes a minimum GPA of 3.3, demonstrated research ability and demonstrated ability to communicate effectively with peers and faculty. Unsatisfactory performance could result in a recommendation that the student discontinue graduate studies. We anticipate that unsatisfactory performance will be rare, as a result of a competitive admission process and close mentoring during the academic year.

Preliminary written examination

Doctoral students' performance will also be assessed through a sequence of written and oral examinations. The preliminary written examination will be given at the end of the second academic year in the program and will be intended to test the student's ability to apply the principles and methods presented in the core requirements. Faculty in the PhD program will be invited to submit questions with outlines of the desired answers for the preliminary examination to the Curriculum Committee. The committee will collate all items and select a set of questions to be used. The Curriculum Committee will designate faculty members within the program to grade the exam. Students who pass will be eligible to move on to the next phase, which includes establishing a doctoral committee and taking general examinations to advance to doctoral candidacy. A retake examination will be offered one year later for students who do not pass. Students who do not pass after two attempts will not be eligible to continue the

doctoral program and may be offered the opportunity to complete a Master in Public Health degree, as several of the courses in the PhD program would fulfill MPH degree requirements.

General examination

The general examination will be administered by the Doctoral Supervisory Committee and will consist of two parts, a written and an oral part. The examination will cover the student's chosen area of emphasis and the general topic of the dissertation. The exam will be designed to measure the students' ability to analyze and synthesize information, determine whether the student has significant breadth and depth of knowledge in the area of emphasis and the dissertation topic and evaluate whether the student has adequate knowledge of recent advances in methodological issues relevant to the area of interest. The written exam will concentrate on the student's proposed research area and the methods applicable to study their topic of interest. A student who does not pass the written portion of the exam may be re-examined, at the discretion of the committee. The committee members can require additional course work to remedy perceived deficiencies in any relevant area.

The oral portion of the general examination will include a defense of the dissertation proposal and may include questions in areas of academic weakness that are identified during the written examination. Students will make a presentation of his/her proposed research and the doctoral committee will ask questions on any aspect of the presentation of the dissertation proposal. At the end of this examination, the dissertation committee will recommend one of the following: 1) approval of the oral examination and admission to candidacy to the PhD degree; or 2) further work and repeat of the oral examination within six months of the first attempt. If a student fails a second time, the student's enrollment in the PhD program is terminated, per Graduate School policies and he/she may be offered an opportunity to complete a Master in Public Health degree program by taking additional courses to fulfill the requirements for the MPH degree.

Dissertation and final examination

Doctoral students are required to write a dissertation that addresses an issue of importance in the field of global health and significantly contributes to the advancement of the field of metrics and implementation science. The dissertation may take the format of a three-paper or a book-length dissertation. The topic of the dissertation will be chosen by the student, in consultation with the doctoral committee. The dissertation must demonstrate an understanding of the theory and methods related to the student's area of emphasis and must conform to departmental, school and university guidelines. The doctoral committee will review the dissertation and recommend revisions, as necessary.

The final examination for the PhD degree consists of a public defense of the student's dissertation orally before the doctoral committee. All doctoral committee members including the Chair, Graduate School Representative and additional Graduate Faculty members must be

present at the examination. Students must successfully defend their research for the degree to be granted. Students may repeat their defense if performance is unsatisfactory. It is expected that most students will complete their PhD degree within four years following admission to the program for students who are not involved in primary data collection and five years for students who are involved with primary data collection. Students may be able to complete the degree sooner, if they enter the program with master-level graduate studies in a relevant area.

X. Budget

Student Funding

We expect that students will be supported from a variety of sources. Funding of the PhD students is guaranteed through these sources and, therefore, the PhD program is not going to lead to new requests for funding for Research Assistant or Teaching Assistant positions. First, the Institute for Health Metrics and Evaluation (IHME) has committed to fund 2-3 Research Assistants (RAs) per year on faculty research grants. Second, Health Alliance International (HAI) has committed to funding 1-2 RAs per year on research grants. Third, other Seattle-based health organizations, including PATH and I-TECH have expressed interest in funding RAs and these opportunities are currently being formalized. In addition, funding opportunities for PhD students can potentially be created through collaborations with organizations such as the Center for AIDS and STDs, the International AIDS Research Training Fund, and the Medical Education Partnership Initiative. Fourth, MD/PhD students will be fully funded through the Medical Scientist Training Program at the University of Washington. Fifth, we expect that some students will be funded by training grants. In order to maximize the probability of being successful, we intend to apply for a training grant from the National Institutes of Health after the program has been established for two years. Other related programs at the School of Public Health, such as the PhD in Health Services, have been successful in receiving funding for doctoral students through training grants. Fifth, we hope to receive funding for international students from foundations. One example is the Carlos Slim Health Institute in Mexico. In recent conversations, the director of the fellowship programs there has expressed serious interest in funding one or two students per year from Latin American countries to pursue a doctoral degree in Global Health: Metrics and Implementation Science at the University of Washington. Once the PhD program is established, we will pursue opportunities such as this one more aggressively to increase funding opportunities for students.

Program Administration

The proposed program will be administered by the Department of Global Health. DGH has committed $100,000 per year to the PhD program. These funds will be allocated for program administration and operations and faculty support. We will appoint a .5 FTE staff to provide dedicated administrative support to the program. This person has been identified as Dane

Boog, currently an Education Program Manager at IHME. Mr. Boog will be responsible for publicizing the program, advertising and recruiting applicants, managing curriculum records, creating and maintaining a student database and records on student progress, preparing student orientation materials, monitoring the action plan of the PhD program assessment, creating a network of alumni and following-up with them over time, and planning the annual PhD program retreat.

In addition, other professional and support staff in the Department of Global Health, the Institute for Health Metrics and Evaluation and Health Alliance International will provide assistance to the program, as needed. Specifically, the staff of the Education and Curriculum office of DGH and IHME will be resources available to help when needed.

Faculty Salaries
The majority of courses in the proposed program curriculum are either already being taught at the University of Washington or are currently under development by newly recruited faculty. Therefore, there is no need to cover additional faculty salaries for the majority of the courses in the PhD curriculum. Part of the funds dedicated from DGH to the PhD program will support the salaries of the Program Director, Deputy Program Coordinators and the Instructors of the Global Health Doctoral Seminar course.

Anticipated program costs and sources of funding are shown in Form 7.

XI. External Evaluation of Proposal
The UW Graduate School coordinated an evaluation of the proposal by two faculty from other universities who have expertise in the areas of Global Health: Metrics and Implementation Science. Please see their evaluations and our response in Appendix H. The external reviewers were:

1) Thomas E. Novotny, MD, MPH
   Professor and Associate Director for Border and Global Health
   Graduate School of Public Health, San Diego State University
2) Kenji Shibuya, MD, DrPH
   Professor and Chair
   Department of Global Health Policy
   Graduate School of Medicine, University of Tokyo

FORM 5

ENROLLMENT AND GRADUATION TARGETS
Part I

Include this form with a new degree program proposal or a Notification of Intent to extend an existing program. Staff will post this information to the HECB Web site during the comment period.

Year	1	2	3	4	5
Headcount	3	7	10	14	15
FTE	3	7	10	14	15
Program Graduates	0	0	0	2	3

Forms Available Upon Request:

Form 6 Program Personnel

Form 7 Summary of Program Costs and Revenue

These forms are available upon request from Mark Bergeson at 360-753-7881 or markb@hecb.wa.gov.

Appendix A: Core Competencies of PhD students in Global Health: Metrics and Implementation Science

1. Discuss and evaluate the major issues confronting global health, including their levels and trends, their determinants, and their effect on individual and populations.
2. Describe, evaluate and apply the methods and metrics used in the Global Burden of Disease Study and alternative summary measures of population health.
3. Develop in-depth skills to design, implement, monitor and/or evaluate health programs and health systems, including their inputs, outputs, effectiveness, cost-effectiveness, and financial management.
4. Describe the biology of major global health diseases, and differentiate among the pathogenesis of diseases, infectious disease transmission modes, genetic susceptibility, nutritional concepts and the biological basis of major biomedical public health interventions.
5. Explain and assess the functions, operations, processes and performance of health systems, including critical decision-making and priority-setting mechanisms.
6. Analyze, explain and assess the role of global institutions, international non-governmental organizations and major funders and review their impact on global health.
7. Identify and differentiate the principles of financing in global health and health systems at the macro-level and the micro-level.
8. Critically appraise the current literature, evaluate the evidence, synthesize findings, draw inferences, and apply theoretical and conceptual models from a range of relevant disciplines to global health.
9. Effectively collect, collate, synthesize, analyze and assess the quality of global health data, including primary and secondary data from health information systems and a variety of other sources.
10. Acquire qualitative, quantitative, operations research and modeling skills and apply them to developing new innovative solutions for global health problems.

11. Ensure the ethical and responsible conduct of research in the design, implementation and dissemination of global health research.

12. Develop culturally-relevant professional leadership skills to work collaboratively, and to motivate and inspire others to help solve global health problems.
13. Conduct independent research that is of publishable quality and is characterized by conceptual and methodological rigor, as well as practical value, and which demonstrates expertise in global health research.
14. Critically appraise grants and participate in the grant writing and review process.
15. Effectively communicate research findings and their implications to appropriate academic, professional, policy, and lay audiences.
16. Demonstrate skills critical to teaching and mentoring.

Appendix B: Course Syllabi for PhD Program in Global Health: Metrics and Implementation Science

Core Requirement Options	Course Number	Credits
Global Health Doctoral Seminar	*In development*	8
Advanced Political Research Design and Analysis	CS&SS 501	5
Advanced Quantitative Political Methodology	CS&SS 503	5
Epidemiologic Methods I	EPI 512	4
Epidemiologic Methods II	EPI 513	4
Implementation Science in Health	GH 541	5
Population Health Measurement	GH 533	4
Impact Evaluation	*In development*	4

Implementation Science Track	Course Number	Credits
Research Methods for Developing Countries	GH 531/EPI 539	4
Advanced Qualitative Methods in Health Services Research	GH 538/HSERV 521	3
Methods, Tools and Data in Health Metrics and Evaluation	GH 590	2
Advanced Health Services Research Methods I	HSERV 523	4
Advanced Health Services Research Methods II	HSERV 524	4
Advanced Health Services Research Methods III	HSERV 525	4
Operations Research for Health Systems	*In development*	4
Global Program Management and Evaluation	GH 521	3
Leadership Development for Global Health	GH 522	2
Organizational Management for Global Health	GH 523	2
Policy Development and Advocacy for Global Health	GH 524	2
Managing Global Health Programs for Success	GH 590E	2

Metrics Track	Course Number	Credits
Categorical Data Analysis in Epidemiology	BIOST 536	4
Correlated Data Regression	BIOST 540	3
Advanced Quantitative Political Methodology	CS&SS 503	5
Maximum Likelihood for the Social Sciences	CS&SS 510	5
Survey Research Methods	CS&SS 527	4
Analysis of Categorical and Count Data	CS&SS 536	3
Hierarchical Models for the Social Sciences	CS&SS 560	4
Bayesian Statistics for the Social Sciences	CS&SS 564	5
Machine Learning	CSE 546	3
Casual Modeling	STAT 566	4

Health Information System / Public Health Surveillance	GH 590G	3
Population Health Measurement	GH 533	4
Global and National Burden of Disease	*In development*	3
Demographic Methods	*In development*	3
Global Health Challenges	GH 415/ GH 515	4
Global Program Management and Evaluation	GH 521	3
Leadership Development for Global Health	GH 522	2
Organizational Management for Global Health	GH 523	2
Policy Development and Advocacy for Global Health	GH 524	2
Managing Global Health Programs for Success	GH 590E	2

Electives	Course Number	Credits
Sample Survey Techniques	CS&SS 529	3
Event History Analysis for the Social Sciences	CS&SS 544	5
Statistical Analysis of Social Networks	CS&SS 567	4
Survival Skills for Scientific Research	PABIO 553	2

Proposed new course, currently under development
Global Health Doctoral Seminar: Biology, Systems and Measurement

Course number: TBD
(Offered every Autumn and Spring Quarter)
Course credits: 2
Lecture: One 2 hour session per week

Prerequisites:
To enroll in this course you must be a first- or second-year doctoral student from the new PhD Program in Global Health or the Pathobiology PhD program. The repeated interactions of the students over 4 quarters will foster meaningful relationships between the two programs.

Professors: Sheila Lukehart, Kenneth Sherr, Emmanuela Gakidou
Office hours and location: TBD

It is proposed that the course will be directed by three faculty members, one each from IHME, Pathobiology, and Implementation Science. For individual topics, additional faculty will be invited to participate according to their expertise. Such participating faculty may be based at various UW departments, PATH, ITECH, HAI, SBRI, Gates Foundation, etc.

Description of course

The study of global health comprises many disciplines that combine to determine the health of the world's population. An over-riding goal of training in DGH is to provide each of our students with an appreciation of the complexity of global health and expose them to some of the most significant challenges that the field is faced with and the currently available solutions. Throughout the four quarters of this course the students will be exposed to a wide array of the most critical issues in global health. Each week a topic will be assigned along with 3 or 4 readings. For most lectures, one of the readings will focus on the biology of the condition, one on the measurement challenges and one on the health system delivery constraints and challenges in dealing with the condition. One student from Pathobiology and one student from either Metrics or Implementation Science will be assigned to introduce the topic and lead the discussion. The faculty will facilitate discussion to the current issues and challenges from each of their fields.

Assignments

All students will be asked to read 3-4 articles per week; these papers will address several aspects of a particular topic. Selected students will prepare brief presentations of the key findings of the

papers, and the students will jointly explore issues that arise from those papers (e.g. methodological issues in the research, unanswered questions, potential technological , structural, or social approaches etc).

Grading

Students will be accessed by their understanding of the assigned readings, participation in class discussion and their presentations. This will be graded as credit or no credit.

Students with disabilities

If you would like to request accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, (206) 543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to Linda so we can discuss the accommodations you might need for the class.

Academic Honesty

Be advised, the instructors of this course have the right and responsibility to notify University Conduct committees about ANY suspected student misconduct. Exam cheating and plagiarism could result is serious consequences. To familiarize yourself with the policies and consequences regarding cheating and plagiarism refer to link below.
http://depts.washington.edu/grading/issue1/honesty.htm

Course Schedule and Readings

Fall 2012	Causes of Morbidity and Mortality - I	
Week 1	Introductory lecture	
Week 2	Reproductive health	Family planning, contraception, STDs, etc.
Week 3	Cervical cancer	HPV mechanism of cell immortalization, major antigens self-assembly for vaccine development, vaccine rollout, political issues in vaccine acceptance
Week 4	Syphilis: Impact on Maternal & Child Health	Chronic infection. Concept of antigenic variation. Congenital syphilis—major cause of still birth; point of care tests for antenatal clinics (pros & cons of dx based on treponemal antigens),implementation and effectiveness of increasing antenatal screening
Week 5	Neonatal tetanus and maternal health	Concept of toxin/toxoid; vaccination programs, issues of risks of safe delivery of infants in developing countries. Safe delivery

		for mothers.
Week 6	Meningitis	Carriage immunization vs disease, concept of strain differences in virulence, difficulties in developing a vaccine for Type B, "meningitis belt" in Africa, implementation of widespread vaccination
Week 7	Polio	Eradication, vaccines, international aid, involvement of private and public organizations
Week 8	Cardiovascular disease	Focus on social determinants, biology of CVD
Week 9	Tuberculosis	Focus on social determinants, biology of TB
Week 10	Trachoma	Fascinating life cycle, pathology due to immune response, history of vaccine studies, now antibiotic treatment program to eradicate.
Spring 2013	**Environment, Engineering & Technology in Health**	
Week 1	Water, sanitation and diarrheal diseases	Watershed management, water quality and health, engineering solutions to improve water and sanitation
Week 2	Economics of water	Policy dimensions of providing water supply and sanitation services
Week 3	Climate change	Impact of climate change on global health, including infectious diseases, food security, poverty, etc.
Week 4	Urbanization, pollution and pneumonia, asthma?	Health effects of exposure to pollutions and other toxins, approaches to mitigate environmental health effects, vaccine and zinc supplementation
Week 5	Urbanization, migration and health	Factors affecting urbanization in a global context, impact of urbanization on poverty and health
Week 6	Occupational health	Pesticide exposure, ground water safety in LMICs, approaches to monitoring and reducing occupational exposure
Week 7	Food security and malnutrition	Political and economic factors affecting global food security, strategies for improving food security; malnutrition
Week 8	Systems engineering applied to health	Application of industrial, management and systems engineering to improve organizational performance
Week 9	Technology development	The role of technological advancements in global health, how to identify and build innovative solutions

Week 10	Technology transfer	Strategies for developing and testing technologies to improve their transfer and application at scale in global health

Fall 2013	**Causes of Morbidity and Mortality - II**	
Week 1	Introductory lectures	
Week 2	Alcohol & addiction	Biology of addiction,
Week 3	Mental health	
Week 4	Obesity & diabetes	Biology of obesity & diabetes, socioeconomic contributors
Week 5	Tobacco & lung cancer	
Week 6	Malaria	Life cycle, vaccine development, drug resistance, effects of climate change,
Week 7	Hepatitis B	Chronic infection, implementation of vaccine programs
Week 8	HIV	Synergy with other infections, effects of HIV on social structures
Week 9	Accidental injuries	Charlie Mock Road accidents, workplace injuries
Week 10	War and its consequences for health	Amy Refugees, rape, land mines

Spring 2014	**Economics, Politics, and Health Systems**	
Week 1	History of Primary Health Care	What is primary health care, how has it evolved over the last 40 years , challenges to improvements and access to primary health care
Week 2	Macroeconomic policies and health	Impact of structural adjustment programs/poverty reduction strategy papers on health systems
Week 3	Global health landscape, international aid and the NGO sector	Who's who of international aid; what are their agendas, structures, assumptions and impact
Week 4	Health and human rights	Health as a human right, role of international organizations in law-making and regulation
Week 5	Financial flows & aid effectiveness	Evolution of ODA (who pays for it, where does it go, etc), comparison of disease-specific vs. sector-wide approaches vs. general budget support on country ownership & effectiveness
Week 6	Financing health systems	How to organize a health system in the context of aid (vertical vs. horizontal aid, market-based governance strategies,

		economic & political enclaving)
Week 7	Health workforce	External and internal health worker migration, strategies to improve production, allocation and retention of health workers, task shifting
Week 8	Global medicines systems	Economics of pharmaceuticals, drug resistance, drug safety
Week 9	Managing health systems	Value chain analysis for health systems, managing inputs/processes vs. outcomes/impact, identifying health system 'control knobs'

Epidemiology 512
Epidemiologic Methods I
Autumn, 2010

Course Syllabus

Introduction

EPI 512 is the first course in a two-course sequence on epidemiologic methods. Everyone who takes EPI 512 should plan to take EPI 513, which is offered in Winter Quarter, as neither course can stand alone as an introduction to the field.

Target audience

The EPI 512-513 sequence is designed mainly for graduate students majoring in Epidemiology, for whom these courses are required. It is assumed that EPI 512-513 graduates will actually be conducting research using epidemiologic study designs in the future. These courses are also open to graduate students from other departments who need an in-depth introduction to epidemiologic methods in order to apply them as research tools in related fields.

Non-Epidemiology majors who need a single introductory course in epidemiology should take EPI 511 instead. Note that EPI 512 alone does not satisfy the distribution requirements of the MPH or MS programs for an introductory course in epidemiology; it must be followed with EPI 513 to meet the requirement.

Faculty

Thomas Koepsell
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Victoria Holt
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Tom Koepsell will handle most administrative matters concerning EPI 512, and Victoria Holt will do so for EPI 513.

Course objectives

The primary objective of EPI 512-513 is to help you learn how to conduct good epidemiologic research. Secondary objectives are to help you understand and evaluate research reported by others, and to enable you to apply epidemiologic principles in other health-related areas, including clinical medicine, public health practice, and health policy.

Specific learning objectives for EPI 512-513 correspond to those for the MPH, MS, and PhD programs in Epidemiology. Upon successfully completing these two courses, you should be able to:

- Define and apply measures of disease frequency as they reflect the health status of a population

- Apply widely accepted criteria for causal inference.

- Define and calculate measures of association between a given risk factor and disease.

o Describe and interpret variations in disease frequency according to characteristics of person, place, and time.

o Describe the strengths and weaknesses of alternative epidemiologic study designs for determining whether a given factor is a determinant of disease risk.

o Use epidemiologic methods to evaluate public health programs and policies.

o Describe major sources of bias in epidemiologic research (including selection bias, measurement error, and confounding) and how such biases can be evaluated and reduced.

o Explain and use the basic terms and methods used in outbreak investigation, infectious disease epidemiology, chronic disease epidemiology, disease prevention research, and evaluation of screening tests.

o Evaluate effect modification.

o Critically review scientific literature and synthesize findings across studies.

o Correctly interpret epidemiologic research and place the findings into proper context in relation to other epidemiologic studies, biological or social processes, and public health implications.

o Design a randomized trial, cohort study, or case-control study to evaluate whether a certain exposure is causally associated with a certain health outcome.

Instructional philosophy

Although we will be discussing many examples dealing with a variety of diseases, EPI 512 is mainly a course about *principles and methods*. Examples used in class are generally chosen to illustrate an underlying concept, and any transfer of factual knowledge about the particular disease in question is coincidental. In fact, some studies used as examples will have been chosen specifically because they were flawed and their findings not to be believed.

Many students find the basic principles and tools of epidemiology to be fairly straightforward and easy to grasp in the abstract. Nonetheless, recognizing when and how epidemiologic concepts and techniques apply to a certain real-world situation can be surprisingly challenging. Hence, considerable time during the course will be spent on problem sets, which are intended to help you develop skills at linking theory to practice. Some problems concern real or hypothetical situations in which topics covered earlier must be applied to solve a study design or data interpretation problem. Others involve working with data. Still others focus on a published paper and raise questions about how the study was designed and conducted.

Some common stumbling blocks with applied problems in epidemiologic methods, including those on problem sets and exams, include:

- *Being distracted by another disciplinary perspective.* Past training and experience in clinical medicine, statistics, social science, etc., can sometimes channel one's thinking about a problem away from viewing it as an example of applied epidemiology. If you find yourself answering a question in a way that draws on your own special knowledge about the topic but that makes little or no use of ideas recently covered in class or readings, you may have missed something. In the short run, you may have to remind yourself to try to think like an epidemiologist. In the long run, you will benefit by combining your previous training with new expertise in epidemiologic methods.

- *New and confusing terminology.* Like any other branch of science, epidemiology has its own terminology

or "jargon" that takes some getting used to. Some words may be new and unfamiliar (e.g., "spurious," or "equipoise"). Sometimes words or phrases from everyday speech have a narrower, more specific meaning in epidemiology (e.g., being "at risk" for disease). Sometimes two or more words that seem synonymous are used by epidemiologists to refer to different things (e.g., "mortality" and "case fatality"). Sometimes the same thing goes by two or more different names (e.g., "relative risk" and "rate ratio"). And sometimes the same term can refer to different things, depending largely on where an epidemiologist received his/her training (e.g., "attributable risk"). Unfortunately, these are facts of life. Because confusion about terminology can lead to misunderstanding and inefficiency in communication, care needs to be taken in how key words are used. Problem sets provide a context in which to learn the language of epidemiology.

- *Lack of a single, obvious, "correct" answer.* Sometimes a decision concerning the design of a study or interpretation of a set of data will be found to depend on a judgment--e.g., whether a certain potential bias would be serious enough to worry about, or whether two numbers are meaningfully different from each other--and differences of opinion are legitimate. In other instances, a study question may be of interest because its potential ambiguity focuses attention on the critical underlying assumptions involved in possible competing answers.

- *Plugging numbers into a formula without really understanding it.* An appealing feature of epidemiologic methods is that the pieces tend to fit together pretty nicely. Most of the key formulas follow from a few basic ideas and assumptions. When you first encounter a new formula, it is a good idea to spend some time and effort to understand where it comes from and what main assumptions about the context are involved. Doing so will lessen your need to depend on rote memorization or on a written list of formulas that is easily lost or forgotten. It will also reduce the chance that a formula is mistakenly applied to a situation that it does not fit.

- *Inventing a new method based largely on intuition, while ignoring a standard method.* There is certainly room for creativity in epidemiology, but it is not usually necessary or efficient to invent a new method to solve a problem for which there are already good, well-known solutions. When working on a problem set, take advantage of recent lectures, notes, and readings on the topic. If you do feel the need to develop another approach, if is a good idea to show that you are aware of existing methods and can show that your method is better.

As will soon become obvious, we as your instructors are fallible. In fact, our experience is that some of the deepest subtleties of epidemiologic methods tend to surface when one is standing in front of a large group of people. Sometimes we may offer an answer to a question based on intuition, only to decide on further reflection that it was the wrong answer. At other times we may need to admit bafflement and defer the question pending some further study. At still other times, you or a clear-thinking classmate may be able to provide the answer, or at least prevent dissemination of misinformation. In any event, we view interaction in class as instructionally useful and encourage you to raise questions.

Course format

Class sessions in EPI 512 include a mixture of lecture and discussion of a problem set that was distributed previously.

Lectures

Lectures on new material will take place in our main classroom, T-439. For most sessions, a handout based on the lecture slides will be available in electronic form as a PDF file for downloading from the course website at least a day before class. Paper copies of these handouts will not be routinely distributed in class (except for the first day). Instead, you should download the handout for each upcoming lecture yourself and bring it to class with you.

The easiest way to take notes during lecture is to bring your own printed copy of the handout to class and write your notes on it. You can also view the handout on your laptop and take notes in another file or on paper. If you are unusually fleet of finger and technologically savvy, it is possible to add your own notes electronically to a PDF file. To this end, most lecture handouts will be edit-enabled, allowing them to be marked up with Adobe Reader. (Macintosh users may also wish to investigate Skim, a public-domain program that can be used to add notes to any PDF document, edit-enabled or not.)

Most lectures in EPI 512 will also be audio recorded, and the recordings will be available from the course website as MP3 files. MP3 files can be played back on most personal computers and on various portable audio devices (e.g., iPods and some cell phones). The audio recordings are intended for occasional use when you must miss class due to illness or out-of-town travel, or if you want to review a point covered in lecture. The recordings are not intended as a regular substitute for attending class, because there is no opportunity to ask questions, recordings and handouts do not capture all of the visual features of the slides, there is always a risk of technical problems with the recordings, and you miss the collegial experience of learning side by side and interacting with fellow students. In general, you will need to have a copy of the lecture handout in front of you to make sense of an audio recording of the lecture.

Handouts for sessions beyond the next one are not usually available in advance, because we may still be working on them and like to reserve the option to make changes based on what has happened in class before they are distributed.

As a courtesy to your fellow students, please turn off cell phones and audible pagers during class.

Problem sets

Written answers are to be submitted on-line for some problem sets but not for others, as indicated on the course schedule and at the top of each set of questions. Regardless of whether written answers are required, you should work through each problem set before it is scheduled for discussion in class and be prepared to contribute to the discussion.

On several Tuesday mornings, the class will divide up for the first hour into four smaller groups to discuss a problem set. Consult the small-group roster on the course website to see which group you are in. The Daily Details page on the website will show room assignments for each day. The faculty and teaching assistants will rotate as discussion leaders among all four groups. You may be asked to sign in on a checklist each time your small group meets so that the discussion leader knows who is present. (Signing in is for informational purposes only and is not used in grading.) On most Thursday mornings and occasional Tuesdays, problem set discussions will take place as one large group in our main classroom.

Discussion of problem sets in class is intended to be interactive, involving everyone in thinking through the methodological issues raised by a problem. To that end, we often call on individual students at random to initiate discussion on a problem by proposing their own answer. Calling on students at random promotes broader participation in the discussion, which otherwise tends to be dominated by a few vocal volunteers. It also provides an incentive for everyone to be prepared for class, even if no written answers are required that day. *At random* is literally true: a computer program is used to generate a random list of students' names, giving everyone an equal chance of being called upon. The random selection is carried out with replacement, so your probability of being called on for a given question is unaffected by whether you were called on for another question recently.

There is no penalty for giving a "wrong" answer in class. (Some of the problems are intended to be a bit tricky.) You may also "pass" if you are called upon for a specific problem but do not want to offer your answer to that problem. If you are painfully shy, you can opt out from being called on by requesting that your name not be included on the list from which random names are chosen. Contact Tom Koepsell to do so.

If you prefer to be called by a different name than the official one by which you are known to the Registrar's Office (e.g., you prefer to be called Rob rather than Robert), just let us know.

Past EPI 512 students have occasionally complained when some of their classmates seem to ask more than their share of questions and dominate the discussion. If you have already asked a question or two in class on a certain day, please consider holding back and giving others a chance to do so. From time to time, the small-group discussion leader (often a TA) may deliberately skip over a hand that has been raised before, in order to broaden participation and manage the discussion. We are always glad to talk with you individually after class or during office hours if you have more questions or comments after discussion of a problem set.

From time to time, optional additional problems (with answers) will be posted on the course website. These optional problems are intended to provide opportunities for extra practice, especially on topics that may be unfamiliar or difficult. Some of these optional problems are a bit more challenging than those in the required problem sets.

Learning resources

Textbooks

The required textbook is:

> Koepsell TD, Weiss NS. Epidemiologic Methods: Studying the Occurrence of Illness. New York: Oxford University Press, 2003.

This book was written by Tom and Noel specifically for use in EPI 512-513 and in similar courses at other universities. We hope you like it. Work is currently in progress on a second edition, and suggestions for improvement to the book are always welcome.

A few errors escaped detection during proofreading of the current edition and made their way into print. A list of known errors appears on a **Textbook Errata** page that is accessible from the course website home page. Several of them were pointed out by sharp-eyed EPI 512-513 students, to whom we are grateful. If you come across a new one, please let us know so that it can be corrected in the next edition of the book and, meanwhile, made known to other students.

Optional readings will also be drawn from:

> Gordis L. Epidemiology (4th edition). Philadelphia: Saunders Elsevier, 2009.

Before our book was published, an earlier edition of the Gordis book was used as the primary text for EPI 512-513. It is rich with examples and graphical aids and is written with a touch of humor. We expect that it will still be popular with many students. However, it covers many topics more lightly than we will in EPI 512-513.

Both books can be obtained at the South Campus Center branch of University Bookstore or from other booksellers.

Supplemental texts

Several other standard textbooks in epidemiology have been placed on reserve in the Health Sciences Library and Information Center. They are:

1. Friedman GD. Primer of Epidemiology (5th edition). New York: McGraw-Hill, 2004.

2. Hennekens CH, Buring JE. Epidemiology in Medicine. Boston: Little, Brown, 1987.

3. Kelsey JL, Whittemore A, Evans A, Thompson WD. Methods in Observational Epidemiology (2nd edition). New York: Oxford, 1996.

4. MacMahon B, Trichopoulos D. Epidemiology: Principles and Methods (2nd edition). Boston: Little, Brown, 1996.

5. Rothman KJ, Epidemiology: An Introduction. New York: Oxford University Press, 2002.

6. Rothman KJ, Greenland S, Lash TL. Modern Epidemiology (3rd edition). Philadelphia: Lippincott Williams & Wilkins, 2008.

7. Haynes RB, Sackett DL, Guyatt GH, Tugwell P. Clinical Epidemiology: How to Do Clinical Practice Research (3rd edition). Philadelphia: Lippincott Williams & Wilkins, 2006.

8. Szklo M, Nieto FJ. Epidemiology: Beyond the Basics (2nd edition). Sudbury, MA: Jones and Bartlett, 2007.

9. Weiss NS. Clinical Epidemiology: The Study of the Outcome of Illness (3rd edition). New York: Oxford University Press, 2005.

To view a big table that summarizes our views about which of these books offer the fullest coverage of various topics in EPI 512-513, click here.

Personal assistance

Sarah, Jeff, and Evan will each have regular office hours when students may stop in for help on any of the course material covered to date. The current TA office-hours schedule can be accessed from the EPI 512 website home page.

You may also send course-related e-mail questions to epi512@u.washington.edu, which will be regularly monitored by the TAs. Please use it as the primary address for most questions, including any new ones. If you want to follow up on an issue you discussed earlier with a particular TA, feel free to use his/her personal e-mail address, which can be found on the website home page and earlier in this syllabus.

Tom Koepsell is usually in his Department of Epidemiology office all day Tuesdays and Thursdays and less regularly on other days. His weekly schedule is posted on the door of his Epidemiology office. Victoria Holt divides her time between offices at UW and the Fred Hutchinson Cancer Research Center. She can be reached by telephone, e-mail, or after class. Noel Weiss is usually in his Epidemiology office on most weekdays. Students are welcome to drop by to see any of the instructors. E-mail also works well for setting up appointments or for questions that are not too lengthy or difficult.

Study groups

Past students in EPI 512-513 have often found it useful and stimulating to form a study group that works together on problem sets and reviews together for exams. Doing so is perfectly acceptable and, in fact, encouraged. Formation of study groups is entirely up to you and usually occurs informally. However, once the discussion in a study group is over, each individual is expected to compose and turn in his or her own answers to the problem sets. Other students prefer to work independently on problem sets, which is also fine. The midterm and final exams must be done by each student working alone.

Supercourse

Dr. Ronald LaPorte and colleagues at the University of Pittsburgh manage the Supercourse project, an on-line collection of over 4,000 self-study "lectures" on various topics in epidemiology, including epidemiologic methods. Lectures have been contributed by faculty from all over the world. Past students have found them to be variable as to level of difficulty and quality, but you may wish to explore what is available by visiting the Supercourse website.

EPI 512 on-line

To help manage information flow for our large class, we will rely heavily on the World Wide Web. EPI 512 has its own website from which most teaching materials will be available for downloading. We will also use several UW Catalyst Web Tools, including: (1) an on-line *dropbox* to which you can submit homework assignments electronically from anywhere on the Web, and (2) an on-line *gradebook* that lets you keep track of your scores on homework and exams throughout the course. If you are new to Catalyst Web Tools, you may want to read about them here. Besides the basic functions described below, they have other optional features that you may find handy, such as notifying you automatically by e-mail when something new has been posted.

Course website

The course website will be an important resource throughout the course. Handouts from lectures, problem sets, answers to problem sets, answers to exams, and other teaching materials will be added as we go along. Announcements and schedule updates will also be posted on the website. The URL is:

http://courses.washington.edu/epi512

Parts of the website are publicly accessible, including the home page, syllabus, and TA office-hours schedule. However, access to other parts is restricted because those areas are intended only for use by students in EPI 512, not for everyone on the Internet. When you first enter a private area during a session, you will be asked for your UW NetID and password--the same ones you use to access your UW e-mail account. Students who are officially registered for EPI 512 are automatically authorized to use the private areas of the website. The website authorization list is updated automatically every night based on data from the UW Registrar's Office. If you recently added the course, you should be able to access private areas of the website within a day or so. Approved guests may also be granted such access.

The website is organized fairly simply, and its links are mostly self-explanatory. Go ahead and explore. Probably the most common task will be to get information related to a specific class session, such as room assignments, lecture notes, problem set questions and answers, reading assignments, audio recordings, and other items. The quickest way is to go first to the **Schedule Overview** page, then click on the date in question. That will take you straight to the proper section of the **Daily Details and Downloads** page, where you should find what you need. (You can also go directly from the course website home page to the **Daily Details and Downloads** page, but it is rather long and may require quite a bit of scrolling to get to the date you want.) Once a downloadable item has been posted, its link will become active; until then, the name of the item will just appear in plain text as a placeholder.

Teaching materials posted on the website are not in the public domain and are protected by copyright law. You are asked not to share your password with anyone or to redistribute materials retrieved from the website.

Most downloadable documents are in Portable Document Format (PDF), which can be viewed and/or printed with Adobe Reader on almost any personal computer. Adobe Reader is widely available in on-campus computing labs and can be obtained for free over the Internet from the Adobe website.

The course website has limited storage capacity, so expect that materials on it will disappear soon after the EPI 512-513 sequence is over for the year.

On-line dropbox

The standard way to submit your answers to required problem sets or the midterm exam is to submit them electronically. To do so, follow these steps:

1. Create an electronic document that contains your answers. You may use whatever software you wish, but the final product should be a *single* file of type **.doc, .docx, .pdf**, or **.txt**.

   If you do calculations or prepare graphics using other software (e.g., Stata, R, Excel, Powerpoint) and wish to include the results as part of your answers, please figure out how to incorporate them into the main document that contains your answers rather than submitting multiple separate files.

2. Using your Web browser, go to the dropbox. A link to it can be found on the course website home page. The Daily Details page also contains a link to the dropbox for days when a homework assignment is due. You can also access the dropbox via MyUW by following a link to Catalyst Web Tools.

3. Once at the dropbox, select the appropriate assignment, then upload your file by clicking on the **Browse** button under **Submit a file for this assignment**.

Each assignment has an Open date and time, after which files can be submitted, and a Due date and time, which for problem sets is 10:30 AM on the day when the problem set is scheduled for discussion in class. Files submitted to the dropbox after the due date and time are automatically flagged as late, which may affect the score. At any time before the due date and time, you can delete and replace a file that you previously uploaded if you decide you want to update your answers.

If on-line submission of assignments poses a special hardship for you, please discuss your situation with one of the teaching assistants. If necessary, answers on paper can be submitted instead, due on the same date and time.

Please also bring a paper copy of your answers to class for use during the discussion, or an electronic copy that you can view on your laptop computer during class.

Gradebook

You can view your scores on problem sets and exams at any time in the on-line course gradebook. A link to it can be found on the course website home page. You can also access it via MyUW by following the link to Catalyst Web Tools.

Electronic mailing list

Registered EPI 512 students for whom an e-mail address is on file in the UW Registrar's office are automatically included in an electronic mailing list for the course. Announcements about the course may be sent out occasionally to members of this list, as well as being posted on the course home page. The list is updated automatically by the Registrar's Office when students officially add or drop the course. Unfortunately, there is no easy way to add unregistered attendees to the list.

Grading

Grades in EPI 512 are based on the following factors:

Problem sets   40%

Mid-term exam 20%

Final exam   40%

- **Problem sets.** Written answers will be required for several of the problem sets, as indicated on the Daily Details page of the course website. When written answers are to be turned in for a problem set, each student should prepare his or her own set of written answers, even if he/she worked on them as a member of a study group. Submitted answers for a problem set that are not the student's own work (e.g., identical answers from members of a study group, or answers drawn from official answers from previous years) may result in no credit for that problem set. Written answers should be submitted on-line before class begins on the due date.

  The three Teaching Assistants will review and grade the problem sets. All answers to a given problem set will be read by the same TA. Questions about how a particular answer was graded may be directed to epi512@u.washington.edu, where they will be routed to the appropriate TA.

  In general, answers that are submitted on time, represent the student's own work, and reflect a good-faith effort to grapple with the issues will receive full credit. This policy is an attempt to reward hard work and to discourage fixation on the number of points earned. However, a thoughtful response that is given full credit may not necessarily be correct. You should always try to reconcile what you wrote with what is discussed in class, with the "official" answers posted on the course website, and with any written feedback on your own answers.

  Exceptionally well-crafted (and correct) answers to graded homework may earn a "check-plus." Answers that are turned in late, are judged to reflect little effort, or are very far from correct may be given a "check-minus." At the end of the quarter, students with several check-pluses may qualify for a small boost in course grade, and those with several check-minuses may lose a little, at the instructors' discretion. However, it is possible to get a grade of 4.0 even with no check-pluses.

  Late homework will only be accepted for possible full credit if prior arrangement has been made with the TAs. If you will be unable to turn in answers to a problem set on time, you should make arrangements with a TA about how to turn them in without incurring a late penalty. One "free" turned-in-late homework will be accepted without prior arrangement during the quarter; however, in any case, the tardy homework is due no later than one week past the original due date. Regardless of the reason, homework answers that are turned in after the official answers have been posted are not eligible for a check-plus.

- **Exams.** Each exam will consist of a series of questions resembling those in the problem sets. Some will require calculation, some a short answer, and some may be based on a published article. You may use any written notes and books you wish during these exams. It will be handy to have a calculator available. Personal computers and portable communication devices may not be used during the final exam.

  - The **mid-term exam** will be a take-home exam, given out on Thursday, 11/4. Written answers will be due on-line before class begins on Tuesday, 11/9.

  - The **final exam** will take place on Monday, December 13, from 10:30 AM - 12:20 PM in our regular lecture room, T-439.

  Be forewarned that most students perceive the final exam to be harder than the problem sets, the mid-term exam, or the optional practice problems. This is probably because both exams must be done individually, the final exam has a more rigid time deadline, and the point of each question is not an automatic consequence of recent lecture material. Also, in contrast to the problem sets, answers on the exams receive full credit only if they respond to the point of the question and are correct.

Any registered student who completes satisfactorily all of the required homework assignments and takes both

exams is assured a passing grade of at least 2.7. Historically, the average grade in EPI 512 has been about 3.5.

Other information

Feedback to instructors

We welcome any comments, suggestions, criticisms or compliments you care to offer about the course as we go along. You can catch us during the break, after class, send us regular e-mail, or drop us a note in campus mail. You may also send comments anonymously by clicking here or on **Send feedback to instructors** on the EPI 512 website home page.

Students with concerns about the instructor or teaching assistants (TAs) should discuss these concerns with the TA and/or the course instructor. If the student is not satisfied with the response, s/he may contact the Department Chair at 206-543-1065. If concerns are not satisfactorily resolved, s/he may also contact the Graduate School at G1 Communications Building by phone at (206) 543-5900 or by email at elf@u.washington.edu

Course evaluation forms will also be distributed on the last day of class.

Approved guests

From time to time, members of the UW community ask to sit in on EPI 512-513 to learn about selected topics in epidemiologic methods without earning academic credit. As long as room capacity allows, permission to do so is usually given. To gain access to the course website as an approved guest, e-mail your request to Tom Koepsell from your UW e-mail account. (A UW NetID is required.) Approved guests do not turn in assignments or take exams and should remain on the sidelines in class discussions, but guests are of course welcome to seek out course faculty outside of class.

Plagiarism

EPI 512-513 students are expected to follow school and university policies against plagiarism, as described here. Under these policies, forms of plagiarism include, among other practices: (1) using another person's phrases, sentences, outline, or the structure behind them without proper attribution; or (2) citing a source but reproducing the exact words without quotation marks. Specific examples include copying part or all of another student's answers, or taking answers from course materials used in a previous year. Penalties for plagiarism range up to suspension or dismissal from the university.

Students with disabilities

If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to Tom Koepsell so that you and he can discuss the accommodations you might need for class.

Emergency evacuation

Should we need to evacuate the T-439 classroom:

- Exit via either door at the front of the room.
- Proceed to the northbound corridor that is located between the two T-439 doors. It is marked by a green EXIT sign and can be seen to lead outside.
- Go north through that corridor to exit the building, and cross the skybridge over Pacific Street.

- Assemble at the north end of the skybridge.

To be prepared for emergencies (e.g., fire, power outage, earthquake), review the UW Emergency Procedures.

Schedule overview

Day	Date	Hour	Room	Topic	Faculty
Th	9/30	1	T-439	Introduction	Koepsell
		2		Diseases and populations	Koepsell
Tu	10/5	1	*	Problem set #1: diseases and populations	Faculty
		2	T-439	Measures of disease frequency - I	Koepsell
Th	10/7	1	T-439	Problem set #2: disease frequency	Koepsell
		2		Measures of disease frequency - II	Koepsell
Tu	10/12	1	*	Problem set #3: disease frequency	Faculty
		2	T-439	Relationships among rates	Koepsell
Th	10/14	1	T-439	Problem set #4: rate relationships	Koepsell
		2		Data sources	Koepsell
Tu	10/19	1	*	Problem set #5: data sources	Faculty
		2	T-439	Descriptive epidemiology: person, place	Koepsell
Th	10/21	1	T-439	Problem set #6: person, place	Koepsell
		2		Descriptive epidemiology: time	Koepsell
Tu	10/26	1	*	Problem set #7: time	Faculty
		2	T-439	Overview of study designs	Koepsell
Th	10/28	1	T-439	Problem set #8: study designs	Koepsell
		2		Measures of excess risk	Holt
Tu	11/2	1&2	*	Problem set #9: measures of excess risk	Faculty
Th	11/4	1&2	T-439	Causal inferences I, II**	Holt
Tu	11/9	1	*	Problem set #10: causal inferences	Faculty
		2	T-439	Measurement error	Phipps
Th	11/11	No class		VETERANS DAY HOLIDAY	
Tu	11/16	1	T-439	Problem set #11: measurement error	Faculty
		2		Screening	Phipps
Th	11/18	1	*	Problem set #12: screening	Phipps
		2	T-439	Classification and misclassification	Weiss
Tu	11/23	1	T-439	Problem set #13: misclassification	Weiss
		2		Misclassification	Weiss
Th	11/25	No class		THANKSGIVING HOLIDAY	

Tu	11/30	1&2	T-439	Outbreak investigation	Duchin
Th	12/2	1	T-439	Infectious disease epidemiology - 1	Jackson
		2		Infectious disease epidemiology - 2	Manhart
Tu	12/7	1	T-439	Increasing the sensitivity of epidemiologic studies	Weiss
		2		Effect modification and discussion of problem set #14	Weiss
Th	12/9	1&2	*	Simulated outbreak investigation exercise	Faculty
Mo	12/13	1&2	T-439	FINAL EXAM	

*Class meets in 4 smaller groups--see course website for room assignments
**Mid-term exam distributed 11/4, due in class on 11/9

Last updated: 11/2/10

EPI 513 HOME

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  Course objectives

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Schedule overview

Epidemiology 513
Epidemiologic Methods II
Winter, 2011

Course Syllabus

Introduction

EPI 513 is the second course in a two-course sequence on epidemiologic methods, designed primarily for graduate students majoring in Epidemiology. It is assumed that EPI 512-513 graduates will actually be conducting research in the future using epidemiologic study designs. These courses are also open to graduate students from other departments who need an in-depth introduction to epidemiologic methods in order to apply them as research tools in related fields.

The successful completion of EPI 512 is a firm rerequisite for EPI 513, and EPI 513 may be taken for credit only once.

Faculty

Victoria Holt
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Victoria Holt will handle most administrative matters concerning EPI 513.

Course objectives

The primary objective of EPI 512-513 is to help you learn how to conduct good epidemiologic research. Secondary objectives are to help you understand and evaluate research reported by others, and to enable you to apply epidemiologic principles in other health-related areas, including clinical medicine, public health practice, and health policy.

Specific learning objectives for EPI 512-513 correspond to those for the MPH, MS, and PhD programs in Epidemiology. Upon successfully completing these two courses, you should be able to:

<!--[if !supportLists]-->o Define and apply measures of disease frequency as they reflect the health status of a population.
<!--[if !supportLists]-->o Apply widely accepted criteria for causal inference.
<!--[if !supportLists]-->o Define and calculate measures of association between a given risk factor and disease.
<!--[if !supportLists]-->o Describe and interpret variations in disease frequency according to characteristics of person, place, and time.
<!--[if !supportLists]-->o Describe the strengths and weaknesses of alternative epidemiologic study designs for determining whether a given factor is a determinant of disease risk.
<!--[if !supportLists]-->o Use epidemiologic methods to evaluate public health programs and policies.
<!--[if !supportLists]-->o Describe major sources of bias in epidemiologic research (including selection bias, measurement error, and confounding) and how such biases can be evaluated and reduced.
<!--[if !supportLists]-->o Explain and use the basic terms and methods used in outbreak investigation, infectious disease epidemiology, chronic disease epidemiology, disease prevention research, and evaluation of screening tests.
<!--[if !supportLists]-->o Evaluate effect modification.
<!--[if !supportLists]-->o Critically review scientific literature and synthesize findings across studies.
<!--[if !supportLists]-->o Correctly interpret epidemiologic research and place the findings into proper context in relation to other epidemiologic studies, biological or social processes, and public health implications.
<!--[if !supportLists]-->o Design a randomized trial, cohort study, or case-control study to evaluate whether a certain exposure is causally associated with a certain health outcome.

Course format

The format of EPI 513 resembles that of EPI 512. There will be a mixture of lectures and class discussion of a problem set that was distributed at a previous session. Several sessions that focus on problem sets will take place in four smaller groups meeting concurrently in different rooms (see below), which we hope will prove more conducive to discussion.

Lectures

Lectures on new material will take place in our main classroom, T-439. For most sessions, a handout based on the lecture slides will be available in electronic form as a PDF file for downloading from the course web site at least a day before class. Paper copies of these handouts will not be routinely distributed in class. Instead, you should download the handout for each upcoming lecture yourself and bring it to class with you.

The easiest way to take notes during lecture is to bring your own printed copy of the handout to class and write your notes on it. You can also view the handout on your laptop and take notes in another file or on paper. It is also possible to add your own notes electronically to a PDF file. To this end, most lecture handouts will be edit-enabled, allowing them to be marked up with Adobe Reader. If you choose to take notes electronically, be aware that you will not be able to use your computer during the EPI 513 final exam, although you may use printed notes.

Lecture sessions are routinely audio recorded, and the recordings will be available from the course website as MP3 files. MP3 files can be played back on most personal computers and on various portable audio devices (e.g., i Pods and some cell phones). The audio recordings are intended only for occasional use when you must miss class due to illness or out-of-town travel, or if you want to review a point covered in lecture. The recordings are not intended to be a regular substitute for attending class because there is no opportunity to ask questions, recordings and handouts do not capture all of the visual features of the slides, there is always a risk of technical problems with the recordings, and you miss the collegial experience of learning side by side and interacting with fellow students. In general, you will need to have a copy of the lecture handout in front of you to make sense of an audio recording of the lecture. Handouts for sessions beyond the next one are not usually available in advance, because we are still working on them and like to reserve the option to make changes based on what has happened in class before they are distributed.

As a courtesy to your fellow students, please turn off cell phones and audible pagers during class.

Small group sessions

Most Tuesdays we will meet from 10:30-11:20 in four small groups for discussion of a problem set--see the course schedule for details. Consult the small-group roster on-line to see which group you are in. Room assignments will be listed in the daily page for each session on the course web site. The faculty and teaching assistants will rotate as discussion leaders among all four groups. You may be asked to sign in on a checklist each time your small group meets so that the discussion leader knows who is present. Signing in is for informational purposes only and is not used in grading. Discussion of problem sets in class is intended to be interactive, involving everyone in thinking through the methodological issues raised by a problem. To that end, we often call on individual students at random to initiate discussion on a problem by proposing their own answer. Calling on students at random promotes broader participation in the discussion, which otherwise tends to be dominated by a few vocal volunteers. It also provides an incentive for everyone to be prepared for class, even if no written answers are required that day. *At random* is literally true: a computer program is used to generate a random list of students' names, giving everyone an equal chance of being called upon. The random selection is carried out with replacement, so your probability of being called on for a given question is unaffected by whether you were called on for another question recently.

There is no penalty for giving a "wrong" answer in class. You may also "pass" if you are called upon for a specific problem but do not want to offer your answer to that problem. If you are painfully shy, you can opt out from being called on by requsting that your name not be included on the list from which random names are chosen. Contact Victoria Holt to do so. If you prefer to be called by a different name than the official one by which you are known to the Registrar's Office, just let Victoria know.

Past EPI 513 students have occasionally complained when some of their classmates seem to ask more than their share of questions and dominate the discussion. If you have already asked a question or two in class on a certain day, please consider holding back and giving others a chance to do so. From time to time, the small-group discussion leader (often a TA) may deliberately skip over a hand that has been raised before, in order to broaden participation and manage the discussion. We are always glad to talk with you individually after class or during office hours if you have more questions or comments after discussion of a problem set.

Learning resources

Textbooks

The required textbook is:

> Koepsell TD, Weiss NS. Epidemiologic Methods: Studying the Occurrence of Illness. New York: Oxford University Press, 2003.

This book was written by Tom and Noel specifically for use in EPI 512-513 and in similar courses at other universities. We hope you like it. Suggestions for improvement of possible future editions are always welcome.

A few errors escaped detection during proofreading of the Koepsell & Weiss textbook and made their way into print. A list of currently known errors appears on a **Textbook Errata** page that is accessible from the course web site home page. Several of them were pointed out by sharp-eyed EPI 512-513 students, to whom we are grateful. If you come across a new one, please let us know so that it can be corrected in any future editions of the book and, meanwhile, made known to other readers.

An optional supplementary text is:

> Gordis L. Epidemiology (4th edition). Philadelphia: W.B. Saunders, 2009.

Before our book was published, an earlier edition of the Gordis book was used as the primary text for EPI 512-513. It is rich with examples and graphical aids and is written with a touch of humor. We expect that it will still be popular with many students. However, it covers many topics more lightly than we do in EPI 512-513.

Both books can be obtained at the South Campus Center branch of University Bookstore or from other booksellers.

Supplemental texts

Several other standard textbooks in epidemiology are available in the Health Sciences Library and Information Center. They are:

1. Friedman GD. Primer of Epidemiology (5th edition). New York: McGraw-Hill, 2004.
2. Hennekens CH, Buring JE. Epidemiology in Medicine. Boston: Little, Brown, 1987.
3. Kelsey JL, Whittemore A, Evans A, Thompson WD. Methods in Observational Epidemiology (2nd edition). New York: Oxford, 1996.
4. MacMahon B, Trichopoulos D. Epidemiology: Principles and Methods (2nd edition). Boston: Little, Brown, 1996.
5. Rothman KJ, Epidemiology: An Introduction. New York: Oxford University Press, 2002.
6. Rothman KJ, Greenland S. Modern Epidemiology (3rd edition). Philadelphia: Lippincott-Raven, 2008.
7. Haynes RB, Sackett DL, Guyatt GH, Tugwell P. Clinical Epidemiology: How to Do Clinical Practice Research (3rd edition). Boston: Little, Brown, 2006.
8. Szklo M, Neito FJ. Epidemiology: Beyond the Basics (2nd edition). Sudbury, MA: Jones and Bartlett, 2007.
9. Weiss NS. Clinical Epidemiology: The Study of the Outcome of Illness (3rd edition). New York: Oxford University Press, 2005.

Personal assistance

Sarah, Jeff, and Evan will each have regular office hours when students may stop in for help on any of the course material covered to date. Their current office-hours schedule can be accessed via a link from the EPI 513 web site home page. You may also send course-related e-mail questions to epi513@u.washington.edu, which will be regularly monitored by the TAs. Please use it as the primary address for most questions, including any new ones. If you want to follow up on an issue you discussed earlier with a particular TA, feel free to use his or her personal e-mail address, which can be found on the website home page and earlier in this syllabus.

Victoria Holt is in her Department of Epidemiology office (F-346A) Tuesdays and most Thursdays, and she can be reached by telephone (685-1643), e-mail (vholt@u.washington.edu), or after class. Noel Weiss is in his Department of Epidemiology office on most weekdays. Tom Koepsell is usually in his Department of Epidemiology office all day Tuesdays and Thursdays and less regularly on other days. Tom's weekly schedule is posted on the door of his Epidemiology office. Students are welcome to drop by to see any of the instructors. E-mail also works well for setting up appointments or for questions that are not too lengthy or difficult.

Study groups

Past students in EPI 512-513 have often found it useful and stimulating to work together on problem sets and to review together for exams. Doing so is perfectly acceptable and, in fact, encouraged. However, once the discussion is over, each individual is expected to compose and turn in his or her own answers to the problem sets. Other students prefer to work independently, which is also fine. Formation of study groups is entirely up to you and usually occurs informally.

Supercourse

Dr. Ronald LaPorte and colleagues at the University of Pittsburgh manage the Supercourse project, an on-line collection of over 2,000 self-study "lectures" on various topics in epidemiology, including epidemiologic methods. Lectures have been contributed by faculty from all over the world. Past students have found them to be variable as to level of difficulty and quality, but you may wish to explore what is available by visiting the Supercourse web site.

EPI 513 on-line

To help manage information flow for our large class, we will rely heavily on the World Wide Web. EPI 513 has its own website from which most teaching materials will be available for downloading. We will also use several UW Catalyst Web Tools, including: (1) an on-line dropbox to which you will submit homework assignments electronically, and (2) an on-line gradebook that lets you keep track of your scores on homework and exams throughout the course. If you are new to Catalyst Web Tools, you may want to read about them on the Collect It and Gradebook help pages. Besides the basic functions described below, they have other optional features that you may find handy, such as notifying you automatically by e-mail when something new has been posted to our course website.

Course website

The course website will be an important resource throughout the course. Handouts from lectures, problem sets, answers to problem sets, answers to exams, and so on will be added as we go along. Announcements and schedule updates will also be posted on the website.

URL: http://courses.washington.edu/epi513

Parts of the website are publicly accessible, including the home page, syllabus, and TA office-hours schedule. However, access to some parts is restricted because those areas are intended for use by students in EPI 513, not for everyone on the Internet. When you first enter a restricted-access area during a session, you will be asked for your UW NetID and password—the same ones you use to access your UW email account. Students who are officially registered for EPI 513 are automatically authorized to use the private areas of the website. The website authorization list is updated automatically every night based on data from the UW Registrar's Office. If you recently added the course, you should be able to access privae areas of the website within a day or so. Approved guests may also be granted such access.

Teaching materials posted on the website are not in the public domain and are protected by copyright law. You are asked not to share your password with anyone or redistribute materials retrieved from the website.

Most downloadable items are in Portable Document Format (PDF), which can be viewed and/or printed with Adobe Reader on almost any personal computer. Adobe Reader is widely available in on-campus computing labs, and can be downloaded for free over the Internet from the Adobe web site.

The course website has limited storage capacity, so expect that materials on it will disappear soon after the EPI 512-513 sequence is over for the year.

On-line drop box

The standard way to submit your answers to required problem sets and the midterm exam is to submit them electronically. To do so, follow these steps:

1. Create an electronic document that contains your answers. You may use whatever software you wish, but the final product should be a single file of type **.doc**, **.docx**, **.pdf**, or **.txt**.

If you do calculations or prepare graphics using other software (e.g., Stata, R, Excel, Powerpoint) and wish to include the results as part of your answers, please figure out how to incorporate them into the main document that contains your answers rather than submitting multiple separate files.

2. Using your Web browser, go to the dropbox. A link to it can be found on the course website home page. The Daily Details page also contains a link to the dropbox for days when a homework assignment is due. You can also access the dropbox via MyUW by following a link to Catalyst Web Tools. (Note that Catalyst Web Tools will work with most commonly used Web browsers, but not with all browsers. Catalyst will advise you if you need to switch browsers.)

3. Once at the dropbox, select the appropriate assignment, then upload your file by clicking on the **Browse** button under **Submit a file for this assignment**.

Each assignment has an Open date and time, after which files can be submitted, and a Due date and time, which for problem sets is 10:30 AM on the day when the problem set is scheduled for discussion in class. Files submitted to the dropbox after the due date and time are automatically flagged as late, which may affect the score. At any time before the due date and time, you can delete and replace a file that you previously uploaded if you decide you want to update your answers.

If on-line submission of assinments poses a special hardship for you, please discuss your situation with one of the teaching assistants. If necessary, answers on paper can be submitted instead, due on the same date and time.

Please also bring a paper copy of your answer to class for use during the discussion, or an electronic copy that you can view on your laptop computer during class.

Gradebook

You can view your scores on problem sets and exams at any time in the on-line course gradebook. A link to it can be found on the course website homepage. You can also access it via MyUW by following the link to Catalyst Web Tools.

Electronic mailing list

Registered EPI 513 students for whom an e-mail address is on file in the UW Registrar's office are automatically included in an electronic mailing list for the course. Announcements about the course may be sent out occasionally to members of this list, as well as being posted on the course home page. The list is updated automatically by the Registrar's Office when students officiallay add or drop the course. Unfortunately, there is no easy way to add unregistered attendees to the list.

Grading

EPI 513 is graded very similarly to EPI 512, with grades based on the following factors:

    Problem sets   40%

    Mid-term exam 20%

    Final exam   40%

Problem sets. Written answers will be required for several of the problem sets and are to be submitted on-line before class begins on the dates shown in the course schedule. When written answers are to be turned in for a problem set, each

student should prepare his or her own set of written answers, even if he/she worked on them as a member of a study group. Submitted answers for a problem set that are not the student's own work (e.g., identical answers from members of a study group, or official answers from previous years) will be considered plagiarism, and may result in no credit for that problem set. Be aware that without obtaining credit for all the problem sets, it is difficult to pass this course.

The three Teaching Assistants will review and grade the problem sets. All answers to a given problem set will be read by the same TA. Questions about how a particular answer was graded may be directed to epi513@u.washington.edu , where they will be routed to the appropriate TA.

In general, answers that are submitted on time, represent the student's own work, and reflect a good-faith effort to grapple with the issues will receive full credit. This policy is an attempt to reward hard work and to discourage fixation on the number of points earned. However, a thoughtful response that is given full credit may not necessarily be correct. You should always try to reconcile what you wrote with what is discussed in class, with the "official" answers posted on the course website, and with any written feedback on your own answers.

Exceptionally well-crafted (and correct) answers to graded homework may earn a "check-plus." Answers that are turned in late, are judged to reflect little effort, or are very far from correct may be given a "check-minus." At the end of the quarter, students with several check-pluses may qualify for a small boost in course grade, and those with several check-minuses may lose a little, at the instructors' discretion. However, it is possible to get a grade of 4.0 even with no check-pluses.

Late homework will only be accepted for possible full credit if prior arrangement has been made with the TAs. If you will be unable to turn in answers to a problem set on time, you should make arrangements with a TA about how to turn them in without incurring a late penalty. One "free" turned-in-late homework will be accepted without prior arrangement during the quarter; however, in any case, the tardy homework is due no later than one week past the original due date. Regardless of the reason, homework answers that are turned in after the official answers have been posted are not eligible for a check-plus.

Exams. The mid-term and final examinations will consist of a series of questions resembling those in the problem sets. Some will require calculation, some a short answer, and some may be based on a published article. You may use any written notes and books you wish during these exams. It may be handy to have a calculator available. Personal computers and portable communication devices may not be used during the final exam.

The **mid-term exam** will be a take-home exam, given out on Thursday, Feb. 10. Written answers will be due on-line before class begins on Tuesday, Feb. 15.

The **final exam** will take place on Monday, March 14, from 10:30 am -12:20 pm in our regular lecture room, T-439.

Be forewarned that most students perceive the final exam to be more difficult than the problem sets, the mid-term exam, or the optional practice problems. This is probably because both exams must be done individually, the final exam has a more rigid time deadline, and the point of each question is not an automatic consequence of recent lecture material. Also, in contrast to the problem sets, answers on the exams receive full credit only if they respond to the point of the question and are correct.

Any registered student who completes all of the required homework assignments successfully and on time and takes both exams is assured a passing grade of at least 2.7. Historically, the average grade in EPI 513 has been about 3.4.

Other information

Feedback to instructors

We welcome any comments, suggestions, criticisms or compliments you care to offer about the course as we go along. You can catch us during the break, after class, send us regular e-mail, or drop us a note in campus mail. You may also send comments anonymously by clicking on **Send feedback to instructors** on the course web site home page.

Students with concerns about the instructor or teaching assistants (TAs) should discuss these concerns with the TA and/or

the course instructor. If the student is not satisfied with the response, s/he may contact the Department Chair at 206-543-1065. If concerns are not satisfactorily resolved, s/he may also contact the Graduate School at G1 Communications Building by phone at (206) 543-5900 or by email at elf@u.washington.edu.

Course evaluation forms will also be distributed on the last day of class.

Approved guests

From time to time, members of the UW community ask to sit in on EPI 512-513 to learn about selected topics in epidemiologic methods without earning academic credit. As long as room capacity allows, permission to do so usually is given. To gain access to the course website as an approved guest, e-mail your request to Victoria Holt from your UW e-mail account. (A UW NetID is required.) Approved guests do not turn in assignments or take exams and should remain on the sidelines in class discussion, but guests are of course welcome to seek out course faculty outside of class.

Plagiarism

EPI 512-513 students are expected to follow school and university policies against plagiarism, as described at:
http://sphcm.washington.edu/gateway/plagiarism.asp.
Under these policies, forms of plagiarism include, among other practices: (1) using another person's phrases, sentences, outline, or the structure behind them without proper attribution; or (2) citing a source but reproducing the exact words without quotation marks. Specific examples include copying part or all of another student's answers, or taking answers from course materials used in a previous year. Penalties for plagiarism range up to suspension or dismissal from the university.

Students with disabilities

If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to Victoria Holt so that you and she can discuss the accommodations you might need for class.

Emergency evacuation

Should we need to evacuate the T-439 classroom:
- Exit via either door at the front of the room.
- Go to the northbound corridor located between the two T-439 doors. It is marked by a green EXIT sign.
- Go north along that corridor to exit the building, and cross the skybridge over Pacific St.
<!--[if !supportLists]-->•   <!--[endif]-->Assemble at the north end of the skybridge.

To be prepared for emergencies (e.g., fire, power outage, earthquake), review the UW Emergency Procedures.

Day	Date	Hour	Room	Topic	Faculty
Tu	1/4	1	T-439	Confounding 1	Holt
		2		Confounding 2	Holt
Th	1/6	1	T-439	Problem set #1 discussion (large group)	Holt
		2		Confounding 3	Holt
Tu	1/11	1	*	**Problem set #2 discussion (small groups)**	Teaching Team
		2	T-439	Multivariate analysis 1	Phipps
		1		Multivariate analysis 2	Phipps

Day	Date	#	Room	Topic	Instructor
Th	1/13	2	T-439	Causal diagrams 1	Koepsell
Tu	1/18	1	*	**Problem set #3 discussion (small groups)**	Teaching Team
		2	T-439	Meta-analysis	Hutter
Th	1/20	1	T-439	Randomized trials 1	Koepsell
		2		Randomized trials 2	Koepsell
Tu	1/25	1	*	**Problem set #4 discussion (small groups)**	Teaching Team
		2	T-439	Randomized trials 3	Koepsell
Th	1/27	1	T-439	Randomized trials 4	Koepsell
		2		The tale of one randomized trial	Baseman
Tu	2/1	1	*	**Problem set #5 discussion (small groups)**	Teaching Team
		2	T-439	Causal diagrams 2	Koepsell
Th	2/3	1	T-439	Cohort studies 1 (Problem set #6 discussion)	Weiss
		2		Cohort studies 2	Weiss
Tu	2/8	1	*	**Problem set #7 discussion (small groups)**	Teaching Team
		2	T-439	Cohort studies 3	Weiss
Th	2/10	1	T-439	Cohort studies 4 (Problem set #8 discussion)	Weiss
		2		The tale of one cohort study **	Thacker
Tu	2/15	1	*	Problem set #9 discussion (small groups)	Teaching Team
		2	T-439	Cohort studies 5 (Problem set #9, continued)	Weiss
Th	2/17	1	T-439	Case-control studies 1	Holt
		2		Case-control studies 2	Holt
Tu	2/22	1	*	**Problem set #10 discussion (small groups)**	Teaching Team
		2	T-439	Case-control studies 3	Holt
Th	2/24	1	T-439	Problem set #11 discussion (large group)	Holt
		2		Case-control studies 4	Holt
Tu	3/1	1	*	**Problem set #12 discussion (small groups)**	Teaching Team
		2	T-439	The tale of two case-control studies	Schwartz
Th	3/3	1	T-439	Case-control studies 5	Holt
		2		Temporal aspects of exposure-disease relationships	Weiss
Tu	3/8	1	*	Problem set #13 discussion (small groups)	Teaching Team
		2	T-439	Ecological and multi-level studies	Koepsell
		1	T-439	Limitations of epidemiologic studies (& Problem set #14)	Weiss

Th	3/10				
		2		Evaluating the effect of policies on health	Koepsell
Mo	3/14	1&2	T-439	FINAL EXAM	

* Class meets in 4 smaller groups. Problem sets in bold are to be handed in.
**Take-home mid-term exam distributed on Thursday, Feb 10, due on-line by 10:30 am on Tuesday Feb. 15

Last Updated: 12/20/10

Implementation Science in Health (GH 590B; will be GH541 beginning Spring, 2011)
Course Syllabus – Spring, 2010

Course Website: http://courses.washington.edu/gh590b
Course meeting days: Tuesdays and Thursdays
Course meeting times: 9:00-10:20
Course meeting location: I-132
Course Credits: 3

Instructors:
  Kenneth Sherr, PhD
  Assistant Professor, Department of Global Health
  Office location: Health Alliance International, 4534 11th Ave NE
  Box 354809
  Tel: 206-543-8382; 206-291-4943
  ksherr@u.washington.edu

  Judith Wasserheit, MD, MPH
  Vice Chair, Department of Global Health
  Professor of Global Health and Medicine
  Office location: Foege S-436
  Box 359931
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  Tel: 206-685-1894
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Teaching Assistant:
  Anna Talman
  Tel: 303-905-0944
  atalman@u.washington.edu

Office Hours:
Mondays 1:00-2:00, Health Sciences Library (Talman)
Tuesdays 10:30-11:30, Foege S-436 (Wasserheit)
Thursdays 11:00-12:00, offices of Health Alliance International, 4534 11th Ave NE (Sherr)
Or by appointment

Note that access above the first floor of the Foege South building requires a keycard. Please coordinate access with Aleta or Judy.

Course Description:
The past several decades have witnessed remarkable advances in medical science and the discovery of new medicines, vaccines, and diagnostic tools that have the capacity to lead to large improvements in global health. However, the translation of research findings into practice has been slow and uneven. As a result, many of the solutions to health problems are not applied, leading to a widening gap between what

is known and what is done in practice (what the World Health Organization refers to as the "know-do gap"). Implementation science has the potential to reduce this gap by applying systematic research and evaluation approaches to identify and address the barriers to effective replication and scale-up of evidence-based interventions in local settings. This course provides an introduction to the emerging field of implementation science by outlining various methods that are applied to improving implementation (including applied engineering, management tools, health systems and policy research), and using experiential case studies from global health leaders.

The material is presented in a format that includes both guest lecturers and case studies. Content of the discussions is shaped by the experience of the students and lecturers.

The schedule is built around two areas. The first defines the conceptual framework and appropriate methodologies for implementation science. The second provides case studies from global health experts that apply this conceptual framework to public health problems of global health importance, focusing on practical successes and failures in implementation 10-20 years post innovation.

Learning Objectives:
This course explores the current literature on implementation science; introduces strategies for using innovative scientific methods and tools of diverse disciplines to understand and overcome impediments to implementation and facilitate scale-up; and uses case studies to identify and contextualize implementation successes and failures. At the end of this course the student should be able to:

1. Identify the major factors that limit the translation of efficacy trials to effective health programs, and describe the role of complementary research methods in the development of evidence-based health programs and policies.
2. Explain appropriate research and evaluation methods to overcome impediments to implementation and facilitate timely scale-up of proven interventions with high levels of fidelity and effectiveness.
3. Contextualize and explain real-world examples where sound interventions failed or succeeded.
4. Describe the framework for designing successful implementation strategies and apply them to a real world problem.

Course Assignments:
Grades for this course will be based on the following:

1. **Analysis paper** (50% of grade). Students will be asked to develop a 1500-2000 word paper analyzing the application of one methodological approach covered in the course to a specific health program or intervention package (for example, application of economic and cost analysis to male circumcision for HIV prevention). The paper should review what has been done to date in this area; analyze and describe challenges, needs and opportunities; and articulate a strategy to apply this method in order to further improve scale-up. You are encouraged to select a topic that aligns with your group projects, but does not overlap significantly with others in your group. You will be expected to select a topic and hand in a one page written outline **no later than Thursday, April 22nd**. The paper is due **Thursday, May 20th**. The paper must not exceed 2,000 words, excluding bibliography, and should include between 15-25 references. See course website for more details.

2. **Group presentation** (40% of grade). Students will divide into small groups of 4-5 and work in a team to apply the course's methodological framework to implementation of a national program related to one of the last 6 course case studies in a country that will be assigned by the course co-directors. Each group will have 15 minutes to present on their topic, with an additional 15 minute question and answer session with the course students, co-directors and case study faculty from that day. The project will be introduced and groups will be assigned on **Tuesday, April 6th**.

3. **Class participation** (10% of grade). It is expected that students read the required materials before each lecture, and actively participate in discussions.

Grading:
Grading of assignments will be based on the clarity of your thinking, evidence and logic supporting your arguments, and the organization and effectiveness of your presentation.

Disability Policy:
If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from the Disabled Student Services indicating you have a disability that requires accommodations, please present the letter to the instructor and teaching assistant so we can discuss the accommodations you might need for class.

Plagiarism Policy:
Students at the University of Washington are expected to maintain the highest standards of academic conduct. The University of Washington and the School of Public Health have established clear guidelines on what constitutes plagiarism. Please visit the School of Public Health website for a detailed explanation and additional resources: http://sph.washington.edu/gateway/plagiarism.asp

Lecture Overview

#	Date	Title	Instructor	Assignment
1	Tues, Mar 30	Introduction to Implementation Science	Kenneth Sherr Judith Wasserheit	
2	Thurs, Apr 1	**Case Study**: Polio Eradication	Walter Orenstein	Required readings
3	Tues, Apr 6	Stakeholder & Policy Analysis	Aaron Katz	Required readings **Assignment of groups for group presentations**
4	Thurs, Apr 8	Surveillance to Measure Impact and Inform Strategies	David Fleming	Required readings
5	Tues, Apr 13	Operations Research as a Contributing Discipline	Richard Storch	Required readings
6	Thurs, Apr 15	Economic Analysis and Cost Effectiveness Analysis	Stephen Lim	Required readings
7	Tues, Apr 20	Overview of impact evaluation and study designs	Nancy Padian	Required readings
8	Thurs, Apr 22	**Case Study**: PEPFAR and ART Global Scale-up	Mark Dybul	****Outline of individual analysis paper due**** Required readings
9	Tues, Apr 27	Metrics and Measuring Effectiveness	Emmanuela Gakidou	Required readings
10	Thurs, Apr 29	**Case Study**: EPI in Mexico	Jaime Sepulveda	Required readings
11	Tues, May 4	Qualitative Health Systems Research	James Pfeiffer	Required readings
12	Thurs, May 6	**Case Study**: The Practice of Political Medicine: Scale-up of Bicycle Helmets in Seattle	Abraham Bergman	**Group Presentation 1** Required readings
13	Tues, May 11	Quality Improvement as a Management Tool	Edward Wagner	Required readings
14	Thurs, May 13	**Case Study**: Cervical Cancer Screening and HPV Vaccine	Vivien Tsu	**Group Presentation 2** Required readings
15	Tues, May 18	Dissemination Research: Adding Social Marketing to the Mix	Jeffrey Harris	Required readings
16	Thurs, May 20	**Case Study**: Male Circumcision for HIV Prevention	Stephen Moses	**Group Presentation 3 **Individual analysis paper due**** Required readings
17	Tues, May 25	**Case Study**: Implementing National Malaria Control Programs to Impact Child Mortality in Africa	Kent Campbell	**Group Presentation 4** Required readings
18	Thurs, May 27	**Case Study**: Tobacco Prevention and Control	Jeffrey Koplan	**Group Presentation 5** Required readings
19	Tues, Jun 1	**Case Study**: Safe Motherhood – Emergency Obstetric Care	Marge Koblinsky	**Group Presentation 6** Required readings
20	Thurs, Jun 3	Synthesis	Kenneth Sherr Judith Wasserheit	

Lecture objectives and readings:
Readings, including published articles and other background materials on implementation science, methodologies and case studies detailing best practices and lessons learned, are available online or on e-reserves at http://eres.lib.washington.edu/eres/coursepage.xxx (denoted with a *).

Session 1 (Tues, March 30): Introduction to Implementation Science
Sherr and Wasserheit

Learning Objectives:
1. Describe why implementation science is important to global health
2. Summarize a framework for using implementation science to facilitate the translation of knowledge to successful program implementation.

Readings (Recommended):
Madon T, Hofman K, Kupfer L, Glass R. Implementation Science. Science. 2007;**318**:(1728-1729).

Eccles M, Mittman B. Welcome to implementation science. Implementation Science. 2006;**1**(1):1-3.

Hirschhorn L, Ojikutu B, Rodriguez W. Research for change: using implementation research to strengthen HIV care and treatment scale-up in resource-limited settings. JID. 2007; **196**(Suppl 3): S516-S522.

Sanders D, Haines A. Implementation research is needed to achieve international health goals. PLOS Medicine. June 2006; **3**(6): 719-722.

Padian N, McCoy S, Balkus J, Wasserheit J. Weighing the gold in the gold standard: challenges in HIV prevention research. AIDS 2010;**24**(9):621-635.

Session 2 (Thursday, April 1): Case Study: Polio eradication
Walter Orenstein

Learning Objectives:
1. Explain the components of the current strategy to eradicate polio and the scientific basis underpinning the strategy.
2. Describe progress in eradicating polio to date and the remaining challenges to success.

Readings:
Required:
Sutter RW, Kew OM, Cochi SL. Poliovirus vaccine-live in Plotkin SA, Orenstein WA, Offit PA ed. Vaccines 5th edition, Elsevier 2008. Pp 631-685 (focus particularly on pages 666-676)

Aylward RB. Eradicating polio: today's challenges and tomorrow's legacy. Ann Trop Med Parasitol. 2006 Jul-Sep;**100**(5-6):401-13. Review

Supplementary:
Mohamed AJ, Ndumbe P, Hall A, Tangcharoensathien V, Toole M, Wright P. Independent evaluation of major barriers to interrupting poliovirus transmission. EXECUTIVE SUMMARY . Available at: http://www.polioeradication.org/content/general/Polio_Evaluation_CON.pdf

Weekly Polio Virus Case Count. Available at: http://www.polioeradication.org/casecount.asp

Thompson KM, Tebbens RJ. Eradication versus control for poliomyelitis: an economic analysis. Lancet. 2007 Apr 21;**369**(9570):1363-71.

Session 3 (Tuesday, April 6): Stakeholder & policy analysis
Aaron Katz

Learning objectives:
    1. Describe the stages of policy development and how empirical information can be used at each stage.
    2. Identify and map key stakeholders in a policy issue.

Readings
Required:
Lomas J. Connecting research and policy. Taken from the Policy Commentary Series of the Centre for Health Economics & Policy Analysis at McMaster University. Spring, 2000.

Atkins D, Siegel J, Slutsky J. Making policy when the evidence is in dispute. Health Affairs; 2005;**24**(1):102-113.

Supplementary:
Akua Agyepong I, Adjei S. Public social policy development and implementation: a case study of the Ghana National Health Insurance scheme. Health Policy and Planning. 2008;**23**:150-160.

Shiffman J, Smith S. Generation of political priority for global health initiatives: A framework and case study of maternal mortaliy. Lancet. 2007 Oct 13;**370**(9595):1370-1379.

Session 4 (Thursday, April 8): Surveillance to measure impact and inform strategies
David Fleming

Learning objectives:
    1. Understand the value of core systems of information collection to monitor disease and health programs in developing countries.
    2. Understand barriers to implementing these systems and applications of these concepts in developed countries as well.

Readings:
Required:
Second Edition of the Framework and Standards for Country Information Systems, including the two summary leaflets and "The HMN Framework and Standards for Country Health Information Systems" (58 pages) available at the Health Metrics Networks website:
http://www.who.int/healthmetrics/documents/framework/en/index.html

Supplementary:
Within Chapter 3, the section called "Estimating Incidence, Prevalence, and YLD: Methods and Data," page 73 to 84, and within Chapter 5, "Sensitivity of Burden of Disease and Injury Results to Variations in Key Parameter Values," page 402 to 405. Also, Chapter 3, section "Global and Regional Mortality in 2001," 68-72, from Global Burden of Disease and Risk Factors, 2006. Available online at: www.dcp2.org/pubs/GBD.

Chapter 53 "Public Health Surveillance: A Tool for Targeting and Monitoring Interventions," (20 pages), and Chapter 54 "Information to Improve Decision Making for Health," (15 pages) from *Disease Control Priorities in Developing Countries*, 2nd Edition, Oxford University Press and The World Bank, 2006. Available online at: www.dcp2.org/pubs/DCP.

Session 5 (Tuesday, April 13): Operations research as a contributing discipline
Richard Storch

Learning Objectives:
1. Understand Basic Lean Implementation and It's Application to Healthcare Settings
   a. Waste and Time
   b. Value Stream Mapping
   c. Process Improvement/Kaizen
2. Understand Use of Simulation Modeling
   a. Model Development
   b. Model Verification and Validation
   c. What-if Analysis

Readings:
Required:
Introduction from "Lean Thinking: Banish waste and create wealth in your corporation." Womak J, Jones D. Pages 16-28.

Womak J, Byrne A, Flume O, Kaplan G, Toussaint J. Going lean in health care. Institute for Healthcare Improvement Innovation series 2005. Available online at: www.ihi.org.

Supplementary:
Koelling C, Eitel D, Mahapatra S, Messner K, Grove L. Value stream mapping the emergency department. Available online at: http://www.iienet.org/uploadedFiles/SHS/Resource_Library/Details/180.pdf.

Jurishica C. Simulation Medication: Studies show patient flow improvement.

Session 6 (Thursday, April 15): Economic analysis and cost effectiveness analysis
Stephen Lim

Learning Objective:
To understand how and why cost-effectiveness analysis is used in health sector resource allocation

Readings:
Required:
Detsky A, Laupacis A. Relevance of cost-effectiveness analysis to clinicians and policy makers. JAMA. 2007;**298**(2):221-224.

Jamison D. Cost effectiveness analysis: concepts and applications. Social Science Techniques. Section 7.4. Oxford University Press.

Supplementary:
Evans D, Lim S, Adam T, Edejer T. Achieving the millennium development goals for health: evaluation of current strategies and future priorities for improving health in developing countries. BMJ. 2005 Nov 12; **331**(7525):1137-1140.

Laxminarayan R, Mills A, Breman J, Measham A, Alleyne G, Claeson M, Jha P, Musgrove P, Chow J, Shahid-Salles S, Jamison D. Advancement of global health: key messages from the disease control priorities project. Lancet. 2006;**367**:1193-1208.

Bloom D, Canning D, Jamison D. Health, wealth, and welfare. Finance and Development. 2004;March.

Session 7 (Tuesday, April 20): Overview of impact evaluation and study designs
Nancy Padian

Learning Objectives:
1. Familiarize with methods to evaluate programs at scale.
2. Understand the difference between randomized designs that are RCTs conducted for specific interventions and treatments, versus randomized designs for large scale programs.

Readings:
Required:
Oxman A, Bjorndal A, Becerra-Posada F, Gibson M, Gonzalez Block M, Haines A, et. al. A framework for mandatory impact evaluation to ensure well informed public policy decisions. Lancet. 2010;375:427-31.

Savedoff W, Levine R, Birdsall N. When will we ever learn? Improving lives through impact evaluation. Report of the evaluation gap working group; Center for Global Development: June, 2006.

Supplementary:
Duflo E, Glennerster R, Kremer M. Using randomization in development economics research: a toolkit. Discussion Paper No. 6059; Centre for Economic Policy Research: January, 2007. http://www.cepr.org/

Session 8 (Thursday, April 22): Case study: PEPFAR and ART global scale-up
Mark Dybul

Learning Objectives:
1. Understand the complexities of development architecture and the challenges for implementation.
2. Understand the key aspects of PEPFAR that promoted its success in ART scale-up.

Readings:
Required:
Dybul, M. how to save lives by breaking all the rules. Foreign Policy. Sept 22, 2009 (online)
Leger, et al. NEJM. 2005. 353(2);2325-43
Stringer, et al. JAMA. 2006. 296(7);782-93
Samb, et al. Lancet. 2009. 373(9681);2137-2169

Session 9 (Tuesday, April 27): Metrics and measuring effectiveness
Emmanuela Gakidou

Learning Objectives:
    1. Identify the types of health metrics and sources of data for health metrics
    2. Recognize the importance of impact evaluations in the design of sound health policies

Readings:
Required:
Murray C, Frenk J. Health metrics and evaluation: strengthening the science. Lancet. 2008;371:1191-99.

Horton R, Murray C, Frenk J. A new initiative and invitation for health monitoring, tracking and evaluation. Lancet. 2008;371:1139-40.

Murray C, Frenk J, Evans T. The global campaign for the health MDGs: challenges, opportunities, and the imperative of shared learning. Lancet. 2007;370:1018-20.

Session 10 (Thursday, April 29): Case Study: EPI in Mexico
Jaime Sepulveda

Learning Objectives:
    1. From vertical to diagonal: vaccines as an arrowhead for health delivery.
    2. Immunological equity as an achievable goal.

Readings:
Required:
Sepúlveda J, Bustreo F, Tapia R, Rivera J, Lozano R, Olaiz G, Virgilio P, Lourdes G, Valdespino J, Improvement of child survival in Mexico: the diagonal approach, The Lancet, Vol. 368. December 2, 2006; 2017-2027.

Daniels N, Valencia A, Gelpi A, Avila M, Bertozzi S, The art of public health: pneumococcal vaccine coverage in Mexico, The Lancet, Vol. 375. January 9, 2010; 114-115

Supplementary:
Markowitz L, Sepúlveda J et al. Immunization of six month-old infants with three different doses of Edmonston-Zagreb and Schwarz Measles Vaccines. N Engl J Med 1990;322(9):580-587.

Sepulveda J, Valdespino J, Garcia J, Islas R, Echaniz G, Fernandez J, A randomized trial demonstration successful boosting responses following simultaneous aerosols of measles and rubella (MR) vaccines in school age children, Vaccine, Vol 20. 2002, 2790-2795.

Session 11 (Tuesday, May 4): Qualitative health systems research
James Pfeiffer

Learning Objectives:
    1. Identify qualitative data gathering methods and sampling approaches, and describe their
        implications for analysis and interpretation of data in operations research studies.
    2. Identify how qualitative research design and methods can be developed to maximize rigor, validity, and reliability of findings in OR studies.
    3. Describe the benefits and limitations of mixing qualitative and quantitative methods in OR designs.

Readings:
Required:
Sandelowski, Margarete. 2000. Combining Qualitative and Quantitative Sampling, Data Collection, and Analysis Techniques in Mixed-Method Studies. *Research in Nursing and Health*, 23: 246-255.

Sandelowski, Margerete. 1995. Sample Size in Qualitative Research. *Research in Nursing and Health*, 18: 179-183.

Sandelowski, Margarete. 2001. Real Qualitative Researchers Do Not Count: The Use of Numbers in Qualitative Research. *Research in Nursing & Health*, 24: 230-240

Session 12 (Thursday, May 6): Case Study: The practice of political medicine – Scale-up of bicycle helmets in Seattle
Abraham Bergman

Learning Objectives:
    1. Actions should be undertaken to ensure that findings derived from research are applied to improve the health of individuals and the public. "Indignation without action is froth." (Wm Gladstone).

    2. "Victims" are the most effective advocates in health promotion/disease prevention campaigns.

Readings:
Required:
Bergman AB, Rivara FP, Richards DD, Rogers LW. The Seattle Bicycle Helmet Campaign. Am J Dis Child. 1990 Jun;144(6):727-31.

Rivara FP, Thompson DC, Thompson RS, Rogers LW, Alexander B, Felix D, Bergman AB. The Seattle children's bicycle helmet campaign: changes in helmet use and head injury admissions.
Pediatrics. 1994 Apr;93(4):567-9.

Supplementary:
Rivara FP, Dicker BG, Bergman AB, Dacey R, Herman C. The public cost of motorcycle trauma. JAMA. 1988 Jul 8;260(2):221-3.

Bergman, AB. The "Discovery" of Sudden Infant Death Syndrome: Lessons in the Practice of Political Medicine, University of Washington Press, 1988

Session 13 (Tuesday, May 11): Quality improvement as a management tool
Edward Wagner

Learning Objectives:
    1. Define how quality improvement can be used to identify and test innovations in the health care setting.
    2. Demonstrate how quality improvement has facilitated broad scale-up of health programs.

Readings:
Required:
Institute for Healthcare Improvement. The breakthrough series: IHI's collaborative model for achieving breakthrough improvement. Innovation series 2003. http://www.ihi.org.

World Health Organization. An approach to rapid scale-up: using HIV/AIDS treatment and care as an example. 2004. WHO/HIV/SPO/04.01.

Wroth T, Boals J. Application of quality improvement methods in a community practice: the Sandhills Pediatrics Asthma Initiative. NC Med J. May/June 2005;**66**(3):218-220.

Supplementary:
Kritchevsky S, Braun B, Bush A, Bozikis M, Kusek L, Burke J, et. al. The effect of a quality improvement collaborative to improve antimicrobial prophylaxis in surgical patients. Ann Intern Med. 2008;**149**:472-480.

Session 14 (Thursday, May 13): Case Study: Cervical cancer screening and HPV vaccine
Vivien Tsu

Learning Objectives:
1. Understand the scientific and programmatic constraints related to cervical screening and HPV vaccine introduction in low-income countries.
2. Describe key factors affecting policy and program decisions related to cervical cancer prevention in low-income countries.

Readings:
Required:
Louie KS, de Sanjose S, Mayaud P. Epidemiology and prevention of human papillomavirus and cervical cancer in sub-Saharan Africa: a comprehensive review. Trop Med Int Health. 2009 Oct;14(10):1287-302.

Bingham A, Drake JK, LaMontagne DS. Sociocultural issues in the introduction of human papillomavirus vaccine in low-resource settings. Arch Pediatr Adolesc Med. 2009 May;163(5):455-61.

Supplementary:
Franco EL, Tsu V, Herrero R, et al. Integration of Human Papillomavirus Vaccination and Cervical Cancer Screening in Latin America and the Caribbean. Vaccine. 2008;26(Supplement 11):L88-L95.

Tsu VD. Overcoming barriers and ensuring access to HPV vaccines in low-income countries. Am J Law Med. 2009;35(2-3):401-413.

World Health Organization. WHO position on HPV vaccines. Vaccine. 2009 Dec 9;27(52):7236-7. Epub 2009 May 29.

Session 15 (Tuesday, May 18): Dissemination research: Adding social marketing to the mix
Jeffrey Harris

Learning Objectives:
1. To describe and use Greenhalgh's model for dissemination of health interventions.
2. To define user needs and their role in designing public health policies and programs.

Readings:
Required:
Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Q.* 2004;82(4):581-629.

Dolan RJ. Note on marketing strategy. Harvard Business School. Document 9-598-061. 2000.

Supplementary:
Grier S, Bryant CA. Social marketing in public health. *Annu Rev Public Health.* 2005;26:319-339.

Session 16 (Thursday, May 20): Case Study: Male circumcision for HIV prevention: Science and Policy
Stephen Moses

Learning Objectives:
    1. To understand the evidence base for the association between male circumcision and reduced risk
       for acquisition of HIV infection.
    2. To understand the issues involved in planning, implementing and evaluating programs to scale up
       male circumcision services in Africa.

Readings:
Required:
Bailey RC, Moses S, Parker CB, *et al.* Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *Lancet* 2007; **369**:643-56.

Mills E, Cooper C, Anema A, Guyatt G. Male circumcision for the prevention of heterosexually acquired HIV infection: a meta-analysis of randomized trials involving 11,050 men. *HIV Med* 2008; **9**:332-5.

Supplementary:
Nagelkerke NJD, Moses S, de Vlas S, Bailey RC. Modelling the public health impact of male circumcision for HIV prevention in high prevalence areas in Africa. *BMC Infect Dis* 2007; **7**:16.

WHO/UNAIDS technical consultation on male circumcision and HIV prevention: research implications for policy and programming, Montreux, 6 – 8 March 2007. New data on male circumcision and HIV prevention: policy and programme implications.
http://www.malecircumcision.org/advocacy/documents/WHO_UNAIDS_New_Data_MC_recommendati ons_03_06_07_layout.pdf/ Accessed December 27, 2009.

World Health Organization and UNAIDS. Progress in male circumcision scale-up: country implementation update, December 2009.
http://www.malecircumcision.org/documents/MC_country_update_web.pdf/ Accessed December 27, 2009.

Session 17 (Tuesday, May 25): Case Study: Implementing national malaria control programs to impact child mortality in Africa
Kent Campbell

Learning Objectives:
    1. To become familiar with the epidemiology and burden of malaria in the Africa region.
    2. To learn about the approaches to program scale up in Africa with an explicit commitment to
       achieving health impact.
    3. To learn about progress in the 2005-2010 as national malaria control programs have scaled-up
       intervention coverage.
    4. To understand the challenges to sustaining and extending progress to date for elimination.

Readings:

Required:
Chizema-Kawesha E, Miller J, Steketee R, Mukonka V, Hilandu M, Mohamed A, Miti S, Campbell C. Scaling up malaria control in Zambia: progress and impact 2005-2008. *Unpublished manuscript.*

Steketee R, Eisele T. Is the scale up of malaria intervention coverage also achieving equity? Plos One. 2009;4(12):e8409.

Roll-back malaria. Executive Summary: The global malaria action plan. 2008.

Session 18 (Thursday, May 27): Case Study: Tobacco prevention and control
Jeffrey Koplan

Learning Objectives:
1. To recognize the role and importance of tobacco as a major contributor to burden of disease in low and middle income countries.
2. To understand the public health process and actions used to decrease smoking prevalence and health impact.

Readings:
1. Tobacco Atlas, American Cancer Society, MacKay, Eriksen et al, 2009
2. Jha P. Avoidable global cancer deaths and total deaths from smoking. Nat Rev Cancer. 2009 Sep; 9(9): 645-64.
3. Submitted article for Lancet that I can send you pre-publication on Tobacco in LDCs by Eriksen, Yong and Koplan.

Session 19 (Tuesday, June 1): Case Study: Safe motherhood – Emergency Obstetric Care
Marge Koblinsky

Learning Objectives:
1. To describe an effective maternal health service programme and its context.
2. To describe these programme elements within national health systems in Asia.

Readings:
Required:
Mahbub Elahi Chowdhury, Anisuddin Ahmed, Nahid Kalim, and Marge Koblinsky. Causes of Maternal Mortality Decline in Matlab, Bangladesh. J HEALTH POPUL NUTR 2009 April;27(2):108-123.

Campbell OM, Graham WJ; Lancet Maternal Survival Series steering group. Strategies for reducing maternal mortality: getting on with what works. Lancet. 2006 Oct 7;368(9543):1284-99.

Session 20 (Thursday, June 3): Course Synthesis
Wasserheit/Sherr

Learning Objectives:
1. Justify the need for an implementation science framework and summarize its main attributes.
2. Apply appropriate public health methods and strategies to develop and implement successful, large-scale public health programs.

Course Lecturer Biographies:

Abraham Bergman

On July 1, 2002 I stepped down as chief of pediatrics at Harborview Medical Center to devote my energies to improving health and early learning services for children in foster care, and to create the Seattle Children's PlayGarden, a project in South Central Seattle to serve children with physical and mental disabilities. I remain as an attending physician at Harborview, teaching medical students and pediatric residents. I am emeritus professor of pediatrics at the University of Washington School of Medicine, where I have been since joining the faculty in 1964.

I was born in Seattle, and attended Madrona Elementary School, Meany Middle School, and Garfield High School. I graduated from Reed College in Portland in 1954 and received my medical degree from Western Reserve University in Cleveland in 1958. I was a pediatric resident at Boston Children's Hospital and St. Mary's Hospital (London), and a Fellow in Pediatrics at the Upstate Medical Center in Syracuse. For 19 years I was director of outpatient services at Children's Hospital until moving to Harborview in 1983.

I have changed my major research interest about every decade: first, health services, then sudden infant death syndrome, and most recently, injury prevention. For 40 years I have practiced "political medicine", defined as using the political process to improve the public's health. On a national level I worked with former Senators Warren G. Magnuson and Henry M. Jackson in the fields of consumer protection, child accident prevention , and Indian health. This work resulted in such legislation as the Flammable Fabrics Act in 1967, the Poison Prevention Packaging Act of 1970, the National Health Service Corps in 1972, the Sudden Infant Death Syndrome Act of 1974, and the Indian Health Care Improvement Act (1976). Locally I worked to fluoridate Seattle's water supply (1968), and to create the Odessa Brown Children's Clinic (1970).

In 1985, I helped found the Harborview Injury Prevention and Research Center (HIPRC) devoted to research, education and prevention programs aimed at diminishing the personal impact of trauma and broadening the effectiveness of injury prevention and trauma treatment programs regionally and nationwide. This has led to involvement in a variety of injury prevention issues including motorcycle and bicycle helmet usage, drunken driving, and pedestrian safety. I headed a bicycle helmet promotion campaign that raised usage rates among Seattle children from 3% to over 60% over a five year period. I am currently involved in a project with Casey Family Services to assist states to establish systems that would provide comprehensive health services to children in foster care. And in a 5 year old effort in Washington State to increase early learning program enrollment of 3-5 year children in foster care.

Kent Campbell

Dr. Campbell is the Director of the Malaria Control Program at PATH, which is focused on developing evidence-based national malaria control programs in the Africa region. He has over 30 years of leadership experience in malaria control and international public health, and is a leading authority on the control and therapy of malaria, with a focus on Africa. From 2004-2008 he served as the Program Director for the MACEPA (Malaria Control & Evaluation Partnership in Africa) Program based at PATH.

He began his professional career with the US Public Health Service at the Centers for Disease Control and Prevention (CDC), with most of his 21 years service as the Chief of the Malaria Branch. He and his colleagues at CDC were instrumental in major advances in the therapy of drug resistant malaria, the

impact of malaria on pregnant women and young infants, and in the demonstration of the effectiveness of insecticide-treated bednets, with a focus on Africa.

Following his service with CDC, he joined the faculty of the University of Arizona Health Sciences Center where he led the development of the Arizona College of Public Health; and following the College's formal approval; he served as the Interim Dean of the College for 2 years. More recently he served for 2 years as the Senior Malaria Advisor for UNICEF based in New York City where he was instrumental in the development of the UNICEF and the Roll Back Malaria strategic orientations for malaria control in Africa.

Beginning in 2003 he began serving as a consultant to the Bill and Melinda Gates Foundation Infectious Diseases Program where he helped develop the Foundation's program directions in support of malaria control in Africa. This work resulted in the funding of the MACEPA program in 2004, at which time he assumed the Program directorship with the MACEPA host agency, PATH. The program is funded by the Bill and Melinda Gates Foundation through a 9-year $81 million set of grants. The PATH Malaria Control programs are playing a pivotal role in a collaborative effort to support several African nations to document the benefit and impact of full national scale-up of malaria control programming.

Dr. Campbell received his undergraduate education at Haverford College, and his medical degree from Duke University. He completed his pediatric residency and his Masters in Public Health at Harvard University. He is board certified in Pediatrics and Preventive Medicine. He is a member of the WHO Expert Panel on Malaria. He is a Past President of the American Society of Tropical Medicine and Hygiene. He has published over 150 peer reviewed articles in the fields of public health, maternal and child health, and malaria.

Mark Dybul
Ambassador Mark R. Dybul co-directs the Global Health Law Program at Georgetown University Law Center's O'Neill Institute, where he is also a Distinguished Visiting Scholar. He is the inaugural Global Health Fellow of the George W. Bush Institute and serves as the Managing Director of the Office of the United Nation Special Envoy for Malaria. Ambassador Dybul served as the United States Global AIDS Coordinator from 2006 to the end of the George W. Bush administration. In that role, he led the implementation of the President's Emergency Plan for AIDS Relief (PEPFAR), the largest international health initiative in history for a single disease. Ambassador Dybul oversaw the United States government engagement in the Global Fund to Fight AIDS, Tuberculosis and Malaria and was the Chair of the Finance and Audit Committee. He also served as chair of the Joint United Nations Programme on HIV/AIDS' coordinating board and as a member of the board of trustees of the Woodrow Wilson International Center for Scholars. Prior to assuming the post of Ambassador, he was Acting, Deputy and Assistant Coordinator, and was a member of the Planning Task Force that created PEPFAR. He also led President Bush's International Prevention of Mother and Child HIV initiative at the Department of Health and Human Services (HHS), was the Executive Secretary for HHS guideline for adult and adolescent HIV therapy and was a member of the writing committee for the World Health Organization's guidelines on the use of antiretroviral therapy. At HHS, Ambassador Dybul served as the Assistant Director for Medical Affairs at the National Institute of Allergy and Infectious Diseases and the National Institutes of Health, and was the principal investigator of basic and clinical research with a particular emphasis on HIV treatment in Africa. He is well published in scientific and policy literature, has received several honorary degrees and significant awards, and has served on numerous national and international boards.

Ambassador Dybul received his A.B. in philosophy and M.D. from Georgetown University before completing a residency in Internal Medicine at the University of Chicago Medical Center in 1992 and a fellowship in Infectious Diseases from the National Institute of Allergy and Infectious Diseases in 1995.

David Fleming
David W. Fleming, M.D., is Director and Health Officer for Public Health - Seattle & King County, a large metropolitan health department with 1900 employees, 39 sites, and a budget of $296 million, serving a resident population of 1.8 million people. Programs and services range from core prevention activities to environmental health, community oriented primary care, emergency medical services, correctional health services, Public Health preparedness, and community-based public health assessment and practices.

Prior to assuming this role, Dr. Fleming directed the Bill & Melinda Gates Foundation's Global Health Strategies Program. In this capacity, Dr. Fleming oversaw the Foundation's portfolios in vaccine-preventable diseases, nutrition, newborn and child health, leadership, emergency relief, and cross-cutting strategies to improve access to health tools in developing countries.

Dr. Fleming has also served as the Deputy Director of the Centers for Disease Control and Prevention and as the State Epidemiologist of Oregon. He has published on a wide range of public health issues, and has served on a number of boards and commissions and committees.

Dr. Fleming received his medical degree from the State University of New York Upstate Medical Center in Syracuse. He is board certified in internal medicine and preventive medicine and serves on the faculty of the departments of public health at both the University of Washington and Oregon Health Sciences University.

Emmanuela Gakidou
Emmanuela Gakidou, MSc, PhD, is Associate Professor of Global Health and Director of Education and Training at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington. She also leads the Institute's research activities in the area of evaluations.

In addition, she is currently a Faculty Affiliate for the Center for Statistics and the Social Sciences at the University of Washington.

Dr. Gakidou's research interests are impact evaluation and methods development for analytical challenges in global health. Examples of current research projects include the evaluation of Avahan – a large HIV-prevention program in India; the development of a time series of educational attainment for all countries from 1960 to present; the measurement of adult mortality in developing countries; and the measurement of economic status through health surveys.

Before joining IHME, Dr. Gakidou was a research associate at the Harvard Initiative for Global Health and the Institute for Quantitative Social Science. Prior to moving to Harvard University, Dr. Gakidou worked as a health economist at the World Health Organization (WHO), where she led work on the measurement of health inequalities.

Apart from being instrumental in the founding of IHME, Dr. Gakidou is passionate about training the next generation of leaders in the field of health metrics and evaluation. She created and is directing the two fellowship programs at IHME, and is coordinating the overall curriculum and degree programs the Institute offers through the Department of Global Health.

Originally from Greece, Dr. Gakidou moved to the US for higher education and received her degrees – a Bachelor of Arts, a Master's of International Health Economics, and a PhD in Health Policy – from Harvard University.

Jeffrey Harris
Dr. Harris is the director of the University of Washington's Health Promotion Research Center and a professor of Health Services. His work focuses on dissemination research to implement what is known about preventing cancer, diabetes, heart disease, and other chronic diseases among middle-aged and older adults. He uses the principles of social marketing in this work and directs the UW Health Marketing Research Center, funded by the CDC.

Before moving to Seattle in 2001, Dr. Harris served for 20 years with the U.S. Public Health Service and CDC, where he was a co-investigator of a cholera vaccine trial in Bangladesh, led development of the AIDS prevention program at the Agency for International Development, oversaw development of CDC's Guide to Community Preventive Services, served as CDC's liaison to the U.S. Preventive Services Task Force, and served as CDC's participant in the development for HEDIS quality-of-care measures by the National Committee for Quality Assurance. Dr. Harris is a physician, board-certified in internal medicine and preventive medicine. He also received a Masters of Public Health from Johns Hopkins University and a Masters of Business Administration from the University of Washington.

Aaron Katz
Aaron Katz is a principal lecturer of Health Services and Global Health (adjunct), University of Washington School of Public Health. He has held numerous academic leadership positions, including his current role as director of the Global Health Leadership Program (http://depts.washington.edu/deptgh/resource_center/training_ghlp.php). He was director of the UW Health Policy Analysis Program from 1988 until 2003 and editor-in-chief of the School's biannual journal, *Northwest Public Health*, from 1999 to 2008 Aaron teaches several graduate level courses in health policy.

Aaron received the American Public Health Association's Award for Excellence in November 2006 and the Outstanding Teaching Award from the UW School of Public Health in 2004.

Aaron has developed a deep understanding of the U.S. health care system and its strengths and weaknesses during a career that has spanned more than 30 years and three "bouts" with health care reform. He has worked in health policy and planning in Washington state since 1978, serving as a health planner, policy and planning consultant, lobbyist, and political adviser. Aaron has directed numerous policy analysis and policy development projects for legislative bodies, state and local public agencies, and private sector clients, including work on health system reform, public health reform, managed care, rural access, HIV/AIDS, workers compensation, long term care, medical economics, and services for people with low incomes. Since 1999, Aaron has collaborated on policy development and advocacy projects with colleagues in various countries in southern Asia, Sub-Saharan Africa, and Latin America as well as Japan.

Aaron has served as a peer reviewer of articles for the *Journal of Rural Health, Health Affairs, Journal of Health Care for the Poor and Underserved, Journal of Public Health Management and Practice,* and *Family and Community Health.* He has served on numerous academic committees and community boards, including his current roles as Board Chairman of the Washington State Budget and Policy Center and Board President of Health Alliance International.

Aaron received a bachelor of science degree from the University of Wisconsin - Madison in 1974 and a certificate [master] of public health degree from the University of Toronto in 1975.

Marge Koblinsky
Dr. Marge Koblinsky is the Sr. Technical Advisor for Women's Health, with John Snow, Inc. in Washington DC. Her work focuses on the development, implementation and monitoring of maternal health programs in developing countries. She is presently engaged with such efforts in Ethiopia, Nepal,

and Indonesia. Her research includes determining the consequences of maternal morbidity and mortality in Bangladesh and case studies of maternal health program implementation in Rwanda and one other African country.

Prior to rejoining JSI in late 2008, Dr. Koblinsky spent 4 years in Bangladesh as Director of the Public Health Sciences Division of the International Centre for Diarrhoeal Disease Research, Bangladesh, seconded from the Johns Hopkins Bloomberg School of Public Health. She has also worked with the IMMPACT project of the University of Aberdeen, Save the Children, and previously with John Snow Inc, where she was Director of the USAID funded MotherCare Project from 1989 to 2000. Dr. Koblinsky is a biochemist by training.

Jeffrey Koplan
Dr. Jeffrey P. Koplan is Director of the Emory Global Health Institute and Vice President for Global Health at Emory University. Dr. Koplan is also a Co-founder and President of the International Association of National Public Health Institutes (IANPHI), and leads its sub-secretariat at Emory University.

A former director (1998-2002) and 26-year veteran of the U.S. Centers for Disease Control and Prevention (CDC), Dr. Koplan began his public health career in the early 1970s as a member of the CDC's Epidemic Intelligence Service. He has worked on virtually every major public health issue, including infectious diseases such as smallpox and HIV/AIDS, environmental issues such as the Bhopal chemical disaster, and the health toll of tobacco and chronic diseases around the globe. From 1994 to 1998, he pursued his interest in enhancing the interactions between clinical medicine and public health by leading the Prudential Center for Health Care Research, a nationally recognized health services research organization.

He has extensive international experience including long term assignments in Trinidad and Tobago, and extensive work experience in countries including China, Bangladesh, India, Guatemala, Panama, Kenya, Uganda, and Hungary. He has worked in collaborative relationships with Chinese health officials since his first visit to China in 1979, as leader of the US-PRC Public Health – Health Services Research Team. His work has included US-PRC bilateral projects, World Bank missions and World Health Organization consultations. He is an Honorary Professor of the Chinese Academy of Preventive Medicine and Honorary Advisor 001 of the Chinese CDC. He has just finished serving on the Commission on Macroeconomics and Health for the Caribbean, co-chaired a joint commission on childhood obesity in Mexico and the U.S., serves on the Research Advisory Evaluation for Academic Public Health in the United Kingdom, is a board member of the *Nigerian Journal of Clinical and Biomedical Research*, and serves on the Chronic Disease Advisory Council to the Government of Pakistan.

Dr. Koplan is a graduate of Yale College, the Mt. Sinai School of Medicine, and the Harvard School of Public Health. He is a Master of the American College of Physicians, a member of the U.S. Institute of Medicine's Governing Council and a member of its Global Advisory Board. He has served on many advisory groups and consultancies in the U.S. and overseas, and has had several international academic appointments. He has written more than 190 scientific papers. He is a trustee of The Marcus Family Foundation, The Carlos Museum, and Kid's Health of Georgia, and a former trustee of Yale University.

Stephen Lim
Stephen Lim, PhD, is Assistant Professor of Global Health at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington. He is also Adjunct Assistant Professor in the Department of Health Services at the University of Washington and Adjunct Senior Lecturer at the School of Population Health at the University of Queensland in Australia.

Dr. Lim leads IHME's work on monitoring the effective coverage of interventions and health systems. This includes a recently completed research study on tracking immunization coverage and the impact of the GAVI Alliance's Immunization Services Support program. His second major research program relates to priority setting as part of the management group of the Disease Control Priorities Network (DCPN), which aims to assess the cost-effectiveness of interventions and health service delivery platforms. Dr. Lim is also actively involved in a number of other research areas, including chronic diseases and risk factors, impact evaluation, mortality statistics, and health inequalities. He has published widely in leading journals.

Prior to joining IHME, Dr. Lim was a Senior Research Fellow at the School of Population Health at the University of Queensland and was based at the Ministry of Public Health in Thailand, where he led a major project on health information system capacity building with a focus on burden of disease and cost-effectiveness analysis. Previously, Dr. Lim worked at the Evidence and Information for Policy Cluster at the World Health Organization (WHO), where he was a key member of the Choosing Interventions that are Cost-Effective (CHOICE) project.

Dr. Lim has been a member of numerous international expert groups, including The Lancet's Chronic Disease Action Group, WHO's Expert Committee for Guidelines for the Primary Prevention of Cardiovascular Disease in Developing Countries, and the Global Burden of Disease Expert Group on Socioeconomic Determinants. He has also served as a reviewer for WHO/UNICEF Estimates of National Immunization Coverage, the Strategic and Technical Advisory Group for Malaria, and for the Taskforce on Innovative International Financing for Health Systems Working Group One.

Dr. Lim studied at Monash University in Australia, where he received a Bachelor of Arts in Philosophy and Psychology, a Bachelor of Science in Pharmacology, and a PhD in Epidemiology and Health Economics.

Stephen Moses

Dr. Stephen Moses obtained his medical degree from the University of Toronto in 1976 and a Master of Public Health degree from Johns Hopkins University in 1982. From 1982 to 1989, Dr. Moses worked in the Health Sciences Division of the International Development Research Centre (IDRC), and was based in Nairobi, Kenya from 1986 to 1989 as the Division's Regional Representative for eastern and southern Africa. In 1989, he joined the Faculty of Medicine, University of Manitoba, but remained in Nairobi with the international collaborative STI/HIV/AIDS research and training program based at the University of Nairobi.

Dr. Moses returned to Canada in 1996. He is currently a Professor in the University of Manitoba's Departments of Community Health Sciences and Medical Microbiology, and Associate Director of the Centre for Global Public Health. He continues to maintain a leadership role in the collaborative research and training program in Kenya, and has been Co-Principal Investigator on a major randomized clinical trial funded by the Canadian Institutes of Health Research (CIHR) and the National Institutes of Health (NIH) examining the impact of male circumcision on HIV incidence among young men in western Kenya. Over the past eight years, Dr. Moses has spent the majority of his time working in India on HIV/AIDS prevention and control programming and research. He is currently based in India, and is Project Director of a large HIV/AIDS prevention and control program funded by the Bill & Melinda Gates Foundation. He also collaborates in and provides technical support for several other HIV/AIDS-related research projects, and prevention and care programs in India, funded by CIHR, USAID and other agencies. His main research and programmatic interests include biological and behavioural risk factors for STI/HIV transmission; syndromic approaches and risk assessment in the management of STIs; focused interventions among vulnerable groups to reduce the transmission of STIs and HIV infection; health

worker training in STI management in resource-poor settings; and integrated approaches to STI/HIV prevention and control. He has published widely on these topics, having authored over 150 peer-reviewed publications, monographs and book chapters, and has made numerous presentations at national and international conferences

Walter Ornstein

Walter A. Orenstein, MD, is a Deputy Director for Vaccine-Preventable Diseases in the Delivery department of the Global Health Program at the Bill and Melinda Gates Foundation. His primary focus at the foundation has been on polio eradication, measles control, and improving routine immunization programs.

Between 2004 and 2008, he was a Professor of Medicine and Pediatrics at Emory University, Associate Director of the Emory Vaccine Center and Director of the Emory Program on Vaccine Policy and Development among other responsibilities. Prior to 2004, he served as a former Assistant Surgeon General of the United States Public Health Service and Director of the National Immunization Program at the Centers for Disease Control and Prevention (CDC), where Dr. Orenstein successfully developed, promoted, facilitated and expanded new vaccination strategies to enhance disease prevention.

Dr. Orenstein has authored and co-authored numerous books, journals and reviews. Along with Stanley Plotkin, MD and Paul Offit, MD, Dr. Orenstein co-edited Vaccines, 5th edition in 2008 – the leading textbook in the field.

He is a fellow of the American Academy of Pediatrics, the Infectious Diseases Society of America and the Pediatric Infectious Diseases Society. In 2006, he was elected to the Institute of Medicine. He is a past Chair of the WHO's Poliomyelitis Technical Consultative Group. Dr. Orenstein received his Bachelor of Science at The City College of New York and his degree in Medicine from the Albert Einstein College of Medicine in 1972. He completed an internship and residency in pediatrics at the University of California, San Francisco and the Children's Hospital of Los Angeles, followed by a fellowship in infectious diseases at the University of Southern California Medical School. Dr. Orenstein also completed a residency in preventive medicine at the CDC.

Nancy Padian

Nancy Padian, PhD, MPH, is an internationally-recognized leader in the epidemiology and prevention of STDs including HIV. She is Executive Director of the Women's Global Health Imperative (WGHI) within RTI where she is also a Distinguished Fellow, as well as Senior Director for Prevention at Pangaea Global AIDS Foundation (PGAF). She is an elected member of the Institute of Medicine, the American Epidemiology Society, and the International Society for Sexually Transmitted Disease Research. She frequently consults for UNAIDS, where she is a member of the Prevention Reference Group, and for the WHO on programs related to care, treatment and prevention of HIV. Dr. Padian is a regular participant in annual NIH Office of AIDS Research (OAR) planning workshops as well as an advisor on numerous NIH study sections. This summer she chaired the OAR meeting on Implementation Science for HIV/AIDS in Cape Town.

Dr. Padian is a faculty member at the School of Public Health at the University of California, Berkeley (UCB) in the Department of Epidemiology. At UCB, she is also a founding member of the Center of Evaluation for Global Action (CEGA), a multi-disciplinary research center advancing global health and development through impact evaluation and economic analysis. In this capacity, she participates as a faculty member in World Bank sponsored workshops on Impact Evaluation.

Dr. Padian's work bridges the gap among traditional infectious disease epidemiology, economics and the broader context of women's reproductive health. Within WGHI, Dr. Padian leads initiatives dedicated to

improving the health status of women and girls around the world by conducting research on HIV/AIDS and sexually transmitted infections (STIs), reproductive health, domestic violence, gender and economic inequities, contraceptive technologies and female-initiated methods of HIV prevention. Her current research focuses mainly methodological issues related to HIV prevention research. Her work with PGAF focuses on the design and evaluation of programs that link large-scale HIV prevention and treatment programs in a variety of settings. She has served on the editorial board of four internationally recognized journals and has authored over 200 published articles

James Pfeiffer

James Pfeiffer Ph.D, MPH, is Associate Professor in the Department of Health Services and the Department of Global Health at the University of Washington, Seattle. Dr. Pfeiffer is also Director of Mozambique Programs for Health Alliance International at its headquarters in Seattle where he coordinates and manages a wide range of training activities, operations research projects, program evaluations, and project activities related to the scale-up of AIDS treatment services. He received his doctoral degree in medical anthropology and his MPH from UCLA where his interests centered on inequality and the political economy of health in southern Africa. He currently teaches qualitative methods in the Department of Health Services and the Department of Global Health at UW.

Jaime Sepulveda

Dr. Jaime Sepulveda, senior fellow in the Global Health Program, serves as a deputy to Global Health President, Dr. Tachi Yamada and plays a central role in shaping the foundation's overall global health strategy as part of its executive team. Sepulveda works closely with key foundation partners—including the GAVI Alliance, where he chairs the Executive Committee—to increase access to vaccines and other effective health solutions in developing countries. He also serves as Director of Special Initiatives in the Global Health Program.

Sepulveda served for more than 20 years in a variety of senior health posts in the Mexican government. From 2003 to 2006, he served as director of the National Institutes of Health of Mexico. He also served as director-general of Mexico's National Institute of Public Health and dean of the National School of Public Health.

In addition to his research credentials, Sepulveda is an experienced implementer of effective health programs. As Mexico's director-general of epidemiology and later vice minister of health, Sepulveda designed Mexico's Universal Vaccination Program, which eliminated polio, measles, and diphtheria by more than doubling childhood immunization coverage in two years. He also designed a national health surveillance system and founded Mexico's National AIDS Council.

Sepulveda holds a medical degree from National Autonomous University of Mexico and three advanced degrees from the Harvard School of Public Health. He is a member of the Institute of Medicine of the U.S. National Academy of Sciences.

Kenneth Sherr

Kenneth Sherr, PhD, MPH, is an Assistant Professor in the Department of Global Health at the University of Washington, and Director of Implementation Science at Health Alliance International. Dr. Sherr has worked the majority of the past 15 years in the public and NGO sectors in Mozambique, Uganda, and Bolivia. Currently, Dr. Sherr is the Principal Investigator for a 7-year grant from the Doris Duke Charitable Foundation's African Health Initiative, which aims to develop innovative and measureable approaches to strengthening integrated Primary Health Care in Sofala, Mozambique. Previously, he served as Country Director for Health Alliance International's activities in Mozambique, where he focused on strengthening the Mozambique Ministry of Health's capacity to deliver ART services through

an integrated approach. The program has expanded public sector antiretroviral treatment from less than 400 to over 100,000 in a period of 4 years.

Dr. Sherr's research interests focus on identifying and testing practical solutions to support service integration into the Primary Health Care framework as a means of improving health system efficiency, coverage and quality. Particular areas of emphasis include expanding human resources for health and identifying innovative approaches to foreign assistance. Kenny's current Mozambique research activities include evaluating the quality of HIV care and treatment provided by physicians and mid-level health providers, describing the level and determinants of internal and external brain drain of physicians from the public sector, and carrying out a national evaluation of the quality of ART service provision in Mozambique.

Dr. Sherr received his doctoral degree in Epidemiology from the University of Washington, and holds a Master's of Public Health degree in International Health/Health Services from the same institution. He also holds a Bachelor of Arts degree in Anthropology and Sociology from Kenyon College in Gambier, Ohio.

Richard Storch
Richard Storch is a Professor of Industrial and Systems Engineering at the University of Washington and has been the chair of ISE since 2003. He has been on the faculty at the University of Washington since 1978. Before his academic career, Dr. Storch worked as a naval architect for The Glosten Company in Seattle for six years, as a staff member of the Council on Environmental Quality in the Executive Office of the President, and as an officer in the U. S. Coast Guard, stationed in the Merchant Marine Technical Branch in Headquarters in Washington, D.C. In addition to teaching general courses in Industrial Engineering, he has conducted shipbuilding productivity research through the National Shipbuilding Research Program since 1980. He has been a consultant to dozens of U.S. and a number of European shipyards. His primary areas of interest have been dimensional control, production planning, design for production, mass customization and work organization. Dr. Storch is a fellow of SNAME, and a senior member of IIE and ASNE. He is the technical editor of the *Journal of Ship Production,* and a member of the editorial board of the *International Journal of Marine Science and Technology*, and is on the international program committee of ICCAS (International Conference on Computer Applications in Shipbuilding) and of the IFIP WG 5.7 conference on Advances in Production Management. He is the lead author of the text *Ship Production,* as well as over 50 papers and reports. Dr. Storch received a bachelor's degree in Naval Architecture and Marine Engineering from Webb Institute, a master's degree in Ocean Engineering from Massachusetts Institute of Technology, and a doctorate in Mechanical Engineering from the University of Washington and is a Professional Engineer registered in the State of Washington.

Vivien Tsu
Vivien Tsu is Associate Director of PATH's Reproductive Health Global Program and Senior Advisor on Cervical Cancer. She is also an Affiliate Professor of Epidemiology at the University of Washington (UW). Dr. Tsu holds an M.A. in African History from UC Berkeley, an M.P.H. from UCLA, and a Ph.D. in epidemiology from the UW. In her 25-plus years at PATH she has carried out a variety of studies evaluating new technologies and innovative approaches to public health problems related to the health of women and children. She spent a year in Zimbabwe as a Fulbright Fellow doing research on maternal health and obstetric complications. From 2000-2007 she was also part of the core faculty for the Population Leadership Program at the UW School of Public Health.

Her responsibilities at PATH include providing research protocol design, study management, and data analysis for field trials of new health programs and technologies; carrying out health system needs assessments; and designing and evaluating introduction strategies for new health interventions. During her tenure with PATH, she has carried out epidemiological studies and coordinated field trials for

technologies such as a birthweight scale, vaccine vial monitors, and new injection devices, and for new approaches to cervical cancer screening, breast cancer, and maternal and newborn care. Dr. Tsu has been responsible for training and project monitoring in about 25 countries in Africa, Asia, Eastern Europe, and Latin America. She has published more than 30 papers in peer-reviewed journals and has served as the guest editor for two supplement issues of the International Journal of Gynecology and Obstetrics, one of them on cervical cancer prevention and the other on maternal health technologies.

Edward Wagner
Patients and health care systems worldwide have benefited from Ed Wagner's commitment to transforming health care. Best known for innovations in chronic illness care, Dr. Wagner's work spans a range of topics in health services research and produces results that consistently enhance our nation's capacity for health systems change.

Translating evidence-based methods of improving care into practice is the tie that binds Dr. Wagner's investigations in preventive medicine, geriatrics, diabetes, cardiovascular disease, and cancer. Another common thread is collaboration—between researchers and health care teams *and* between health care teams and patients. Under his leadership, several projects, initiatives, and organizations aimed at improving care have sprung up and flourished.

Group Health Research Institute's founding director, Dr. Wagner established The MacColl Institute for Healthcare Innovation in 1992, launching a new effort to move advances in quality improvement research into practice. He and his team developed and disseminated the Chronic Care Model (CCM), an evidence-based framework for health care that delivers safe, effective, and collaborative care to patients.
The CCM is widely recognized for its capacity to guide health care teams in caring for chronically ill patients. Funded as a national program by The Robert Wood Johnson Foundation and led by Dr. Wagner, Improving Chronic Illness Care (ICIC) introduced the Chronic Care Model to a wide spectrum of organizations, ranging from Centers for Medicaid and Medicare Services (CMS) to individual health care practices of all sizes and types.

Dr. Wagner also serves as principal investigator for the Cancer Research Network (CRN), a National Cancer Institute-funded consortium of 14 health-plan-based research organizations. The CRN is part of the HMO Research Network, a larger alliance of health care delivery organizations with sophisticated research capabilities that he helped establish in 1996.

Dr. Wagner's professional service is extensive. First serving as co-chair of the task force that led to the creation of the Puget Sound Health Alliance (PSHA), he now participates in its quality improvement committee. PSHA is a regional multi-stakeholder collaboration committed to improving health care quality and reducing costs in the Pacific Northwest. He also provides ongoing consultation to organizations such as CMS and the World Health Organization and has been a key contributor to a variety of Institute of Medicine (IOM) reports, including several focused on caring for underserved and uninsured populations.

In 2007, Dr. Wagner received the Health Quality Award from the National Committee for Quality Insurance and was elected into the IOM. A longstanding champion of patient-centered care, he was also honored with the Picker Award for Excellence in the Advancement of Patient-Centered Care—for advocating that respecting patients' values and preferences be central to chronic illness care.
Dr. Wagner has authored two books and more than 250 publications. He serves on the editorial boards of *Health Services Research*, the *British Medical Journal*, the *Journal of Clinical Epidemiology*, and the *Journal of Cancer Survivorship*. He is also a professor of health services at the University of Washington School of Public Health and Community Medicine.

Judith Wasserheit

Judith N. Wasserheit MD, MPH is currently Professor of Medicine and Global Health and Vice Chair of the Department of Global Health at the University of Washington in the Schools of Medicine and Public Health & Community Medicine. She is also an Affiliate Investigator the Fred Hutchinson Cancer Research Center. She was formerly the Director of the HIV Vaccine Trials Network, a NIH-funded global clinical trials platform linking 28 sites on 4 continents in evaluating preventive HIV vaccines. She has had extensive experience in sexually transmitted disease (STD) research, policy development and program implementation both in the United States and in developing countries. Her research has included one of the first laparoscopic studies of pelvic inflammatory disease etiology conducted in the US, the first population-based study of the prevalence and etiologic spectrum of STDs among rural women in the Indian Subcontinent, and research on the interrelationships between STDs and contraceptive practices in other parts of the developing world, including Indonesia, and Egypt. She has also worked in Columbia, Thailand and Zambia. Her development of the concept of epidemiological synergy between HIV infection and other STDs has had a major influence on HIV prevention policy and programs around the world.

From 1989 to 1992, Dr. Wasserheit led the development of the newly established STD Research Branch at the National Institute of Allergy and Infectious Diseases (NIAID), where she shaped a robust multidisciplinary national research agenda that launched the STD Cooperative Research Centers (CRCs), which continue to be a major part of the Institute's STD research portfolio today. She directed the Centers for Disease Control and Prevention's national STD Prevention Program from 1992 to 2001, where she led the development and implementation of STD prevention policy guidance for state and local health department programs, and related research in epidemiology, clinical services, behavioral science, surveillance and program evaluation. These initiatives included the establishment of this country's National Chlamydia Prevention Program and the National Syphilis Elimination Plan that dramatically reduced syphilis among African Americans. Dr. Wasserheit has extensive experience working successfully with national and international agencies, governments, and colleagues on STD and HIV research, policy and programmatic issues. She has led or served on numerous World Health Organization and UNAIDS committees and advisory groups.

Dr. Wasserheit received her BA from Princeton University, her MD from Harvard Medical School, and her MPH from the Johns Hopkins University. During her Infectious Disease research fellowship at the University of Washington from 1982-84, she helped establish the Refugee Clinic at Harborview Medical Center, a clinic that continues to operate today as the HMC International Medicine Clinic. She is a member of the editorial board for Sexually Transmitted Diseases, a fellow of the American College of Physicians and the Infectious Disease Society of America and a member of the American Public Health Association and the American Sexually Transmitted Diseases Association. Her honors include the Young Professional Award of the Maternal-Child Health Section of the American Public Health Association, the Presidential Meritorious Rank Award of the Department of Health and Human Services, the Edward E. Kass Award Lecture of the Infectious Diseases Society of America, the American STD Association's Achievement Award, and the American Social Health Association's Presidential Award. In 2006, Dr. Wasserheit was elected to the Institute of Medicine of the National Academies. In 2007, she was selected as a Paul Rogers Society Global Health Research Ambassador, and in 2009 was honored as the London School of Hygiene and Tropical Medicine's Heath Clark Endowed Lecturer.

Population Health Measurement

Course number: 533
Winter 2011
Course credits: 4

Lecture and Discussion: Tuesdays and Thursdays 3:00pm - 4:50pm, HST T531

Prerequisites: GH 515 or permission of instructor.

Professor:
Stephen Lim
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Teaching Assistant:
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PhD Candidate, Economics
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Office hours and location:
Wednesdays, 3:00 – 4:00pm
Institute for Health Metrics and Evaluation
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Description of course:
This course is designed to introduce students to the definition and measurement of population health. It is predominantly quantitative and is designed primarily for PhD students. It will provide an overview of the conceptual, methodological and empirical basis for quantifying levels of health in individuals and populations, including the construction of a range of different summary measures that combine information on mortality and non-fatal health outcomes. The course will also introduce students to the concepts and application of causal attribution of summary measures of population health to risk factors. It aims to give students an understanding of the technical basis for measurement in international work on population health; and to give students an appreciation of the uses and limitations of these methods, particularly in developing countries.

Course Learning Objectives:
At the end of this course, students will be able to:
- Describe the rationale, conceptual and historical basis of population health measurement;
- Critically examine different summary measures of population health;
- Compare data collection systems for population health measurement, their strengths and weaknesses and the key challenges facing these systems;
- Recognize the challenges and contrast methods used to measure mortality;
- Compare the advantages and disadvantages of different methods for combining multi-dimensional information into measures of overall health-state levels;
- Describe the concepts and methods of causal attribution of summary measures of population health to risk factors, and its applications in disease prevention;
- Describe the conceptual framework and main applications in measuring health inequalities; and
- Outline the use of population health measurement in health policy, planning and priority setting.

Readings

Readings for this course are available through the UW Library online course reserves. The readings are organized by lecture date. You can easily access the readings by searching the library course reserves by instructor or course number or title.

Link: http://eres.lib.washington.edu/eres/coursepage.aspx?cid=6945

Final Exam: Thursday, March 17, 4:30 – 6:20pm

Grading:
Final grades for the course will be based on class participation including presentation of a paper(s) in class (15%; papers to be presented are indicated with a *), homework (25%), a mid-term exam (25%) and a final exam (35%)

Course Website: https://catalysttools.washington.edu/workspace/seanpl/9827/

Course Schedule and Readings

Date	Topic

January 4   **Course Introduction and Summary measures of population health**

Required:

Mathers CD et al. (2003) Population health metrics: crucial inputs to the development of evidence for health policy. Population Health Metrics 1:6.

Murray CJL, Salomon JA, Mathers CD (2000) A critical examination of summary measures of population health. Bulletin WHO 78: 981-94.

Gold MR, Stevenson D, Fryback DG (2002) HALYs and QALYs and DALYs, oh my: similarities and differences in summary measures of population health. Ann Rev Public Health 23:115-34.

January 6   **Measuring mortality using continuous registration systems**

Required:

Setel PW, Macfarlane SM, Szreter S et al. (2007) A scandal of invisibility: making everyone count by counting everyone. Lancet 370: 1569-1577.

Preston SH, Heuveline P, Guillot M. (2001) Methods for evaluating data quality. In: Demography: Measuring and Modeling Population Processes. Blackwell Publishers Ltd: Oxford, Chapter 10, pp. 211-215.

Murray CJL, Rajaratnam JK, Marcus J, Laakso T, Lopez AD (2010) What Can We Conclude from Death Registration? Improved Methods for Evaluating Completeness. PLoS Med 7(4): e1000262.

Hill et al. (2007) Epidemiologic transition interrupted: a reassessment of mortality trends in Thailand, 1980–2000. International Journal of Epidemiology 2007;36:374-384

*Yang G, Hu J, Rao KQ et al. (2005) Mortality registration and surveillance in China: History, current situation and challenges. *Population Health Metrics* 3: 3

Optional:

Mahapatra P, Shibuya K, Lopez AD et al. (2007) Civil registration systems and vital statistics: successes and missed opportunities. Lancet 370: 1653-1663

January 11   **Interim measures for measuring the mortality envelope: Part I**

Required:

Hill K, Lopez AD, Shibuya K et al. (2007) Interim measures for meeting health sector data needs: births, deaths and causes of death. Lancet 370: 1726–35

Preston SH, Heuveline P, Guillot M. (2001) Modelling age patterns of vital events. In: Demography: Measuring and Modeling Population Processes. Blackwell Publishers Ltd: Oxford, Chapter 9, pp. 191-201.

United Nations (1983). Manual X: Indirect Techniques for Demographic Estimation (United Nations publication, Sales No. E.83.XIII.2). Chapter III

Rajaratnam JK, Tran LN, Lopez AD, Murray CJL (2010) Measuring Under-Five Mortality: Validation of New Low-Cost Methods. PLoS Med 7(4): e1000253.

*Rajaratnam JK, Marcus JR, Flaxman AD et al. Neonatal, postneonatal, childhood, and under-5 mortality for 187 countries, 1970–2010: a systematic analysis of progress towards Millennium Development Goal 4. Lancet 375: 1988-2008

January 13   **Interim measures for measuring the mortality envelope: Part II**

Required:

Timaeus IM (1991) Measurement of adult mortality in less developed countries: a comparative review. Population Index 57(4): 552-68.

*Obermeyer Z, Rajaratnam JK, Park CH, Gakidou E, Hogan MC, et al. (2010) Measuring Adult Mortality Using Sibling Survival: A New Analytical Method and New Results for 44 Countries, 1974–2006. PLoS Med 7(4): e1000260.

Rajaratnam JK, Marcus JR, Levin-Rector A et al. (2010) Worldwide mortality in men and women aged 15–59 years from 1970 to 2010: a systematic analysis. Lancet 375: 1704–2

Lopez AD, Ahmad OB, Guillot M et al. (2003) Life Tables for 191 Countries for 2000: Data, Methods, Results. In: Murray CJL, Evans DB (eds). Health Systems Performance Assessment. Geneva: World Health Organization.

Optional:

Gakidou E, Hogan MC, Lopez AD. (2004) Adult mortality: time for a reappraisal. International Journal of Epidemiology 33: 710–717.

| January 18 | **Measuring causes of death** |

Required:

Soleman N, Chandramohan D, Shibuya K. (2006) Verbal autopsy: current practices and challenges. Bull World Health Organ 84: 239-245

Yang G, Rao C, Ma J et al. (2006) Validation of verbal autopsy procedures for adult deaths in China. International Journal of Epidemiology 35: 741–748

Murray CJL, Lopez AD, Barofsky JT et al. (2007) Estimating population cause specific mortality fractions from inhospital mortality: Validation of a new method. PLoS Med 4: e326

Porapakkham Y, Rao C, Pattaraarchachai J et al. Estimated causes of death in Thailand, 2005: implications for health policy. Population Health Metrics 2010, 8:14

*Morris SS, Black RE, Tomaskovic L. (2003) Predicting the distribution of under-five deaths by cause in countries without adequate vital registration systems. International Journal of Epidemiology 32: 1041–1051

Optional:

Hogan MC, Foreman KJ, Naghavi M et al. (2010) Maternal mortality for 181 countries, 1980-2008: a systematic analysis of progress towards Millennium Development Goal 5. Lancet 375: 1609-1623

Byass P, Fottrell E, Huong DL et al. (2006) Refining a probabilistic model for interpreting verbal autopsy data. Scand J Public Health 34: 26-31.

| January 20 | **Measuring non-fatal health: Part I** |

Required:

Salomon JA et al. (2003) Quantifying individual levels of health: definitions, concepts and measurement issues. In: Murray CJL, Evans DB (eds). Health Systems Performance Assessment. Geneva: World Health Organization.

McHorney CA (1999) Health status assessment methods for adults: past accomplishments and future challenges. Annu Rev Public Health 20:309-35.

Sadana R (2002) Development of standardized health state descriptions. In: Murray CJL et al. Summary measures of population health. Geneva: WHO

*Mallinson S (2002) Listening to respondents: a qualitative assessment of the Short-Form 36 Health Status Questionnaire. Soc Sci Med 54(1):11-21.

Optional:
Naughton MJ, Shumaker SA (2003) The case for domains of function in quality of life assessment. Qual Life Res 12 Suppl 1:73-80.

Bok S (2004) Rethinking the WHO definition of health. Cambridge: Harvard Center for Population and Development Studies (working paper). Available at: http://www.hsph.harvard.edu/hcpds/wpweb/Bok_wp1407_2.pdf (not in packet).

| January 25 | **Measuring non-fatal health: Part II** |

Required:

Murray CJL et al. (2002) Cross-population comparability of evidence for health policy. In: Murray CJL et al. Summary measures of population health. Geneva: WHO.

Sen A (2002) Health: perception versus observation. BMJ 324:860-1.

Nau DP et al. (2005) Gender and perceived severity of cardiac disease: evidence that women are 'tougher.' Am J Med 118: 1256-61.

Salomon JA, Tandon A, Murray CJL (2004) Comparability of self rated health: cross-sectional multi-country survey study using anchoring vignettes. BMJ 328(7434): 258-61.

*Salomon JA, Nordhagen S, Oza S et al. (2009) Are Americans feeling less healthy? The puzzle of trends in self-rated health. Am J Epidemiol 170:343-351

January 27   **Health State Valuation Exercise (In class)**

February 1   **Measuring non-fatal health: Part III**

Required:

Essink-Bot M-L, Bonsel GJ (2002) How to derive disability weights. In: Murray CJL et al. Summary measures of population health. Geneva: WHO.

*Baltussen RMPM et al. (2002) Obtaining disability weights in rural Burkina Faso using a culturally adapted visual analogue scale. Health Econ. 11:155-63

Feeny D et al. (2002) Multiattribute and single-attribute utility functions for the health utilities index mark 3 system. Med Care 40:113-28.

Salomon JA, Murray CJL (2004) A multi-method approach to measuring health-state valuations. Health Econ. 13: 281–290

Optional:

Ware JE, Gandex B (1998) Overview of the SF-36 health survey and the international quality of life assessment (IQOLA) project. J Clin Epidemiol 51:903-12.

Salomon JA. (2003) Reconsidering the use of rankings in the valuation of health states: a model for estimating cardinal values from ordinal data. Population Health Metrics 1:12

February 3   **Midterm (in class)**

February 8   **Health expectancies**

Required:

Molla MT, Wagener DK, Madans JH (2001) Summary measures of population health: Methods for calculating healthy life expectancy. Hyattsville: NCHS.

Perenboom RJM et al. (2004) Trends in disability-free life expectancy. Disability Rehab 26:377-86.

*Mathers CD et al. (2001) Healthy life expectancy in 191 countries, 1999. Lancet 357:1685-91.

Mathers CD (2002). Health expectancies: an overview and critical appraisal. In: Murray CJL et al. Summary measures of population health. Geneva: WHO.

Optional:

Robine JM, Romieu I, Cambois E. (1999) Health expectancy indicators. Bulletin WHO 77:181-5.

Katz S et al. (1983) Active life expectancy. N Engl J Med 309:1218-24.

February 10   **Health gaps**

Required:

Murray CJL, Mathers CD, Salomon JA et al. (2002). Health gaps: an overview and critical appraisal. In: Murray CJL et al. Summary measures of population health. Geneva: WHO.

Hyder AA, Rotllant G, Morrow RH (1998) Measuring the burden of disease: healthy life-years. Am J Public Health 88:196-202.

Murray CJL (1996) Rethinking DALYs (excerpt), pp. 44-63. In Murray CJL, Lopez AD (eds). The global burden of disease. Boston: Harvard School of Public Health.

Anand S, Hanson K (1997) Disability-adjusted life years: a critical review. J Health Econ 16:685-702.

*Jelsma J et al. (2002) Preferences of urban Zimbabweans for health and life lived at different ages. Bulletin WHO 80:204-9.

Optional:

Williams A (1999) Calculating the global burden of disease: time for a strategic reappraisal? Health Econ. 8:1-8.

Olsen J (1993) On what basis should health be discounted? Journal of Health Econ 12:39-53.

February 15   **Burden of disease**

Required:

Lopez AD, Mathers CD, Ezzati M et al. (2006) Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. Lancet 367: 1747-57.

Stevens G, Dias RH, Thomas KJA et al. (2008) Characterizing the Epidemiological Transition in Mexico: National and Subnational Burden of Diseases, Injuries, and Risk Factors. PLoS Med 5(6): e125

Zhao Y et al. (2004) Burden of disease and injury in Aboriginal and non-Aboriginal populations in the Northern Territory. Med J Austr 180:498-502.

*Kruijshaar ME, Barendregt JJ, Van De Poll-Franse LV. (2003) Estimating the prevalence of breast cancer using a disease model: data problems and trends. Population Health Metrics 1: 5.

Optional:

Barendregt JJ, van Oortmarssen GJ, Vos T et al. (2003) A generic model for the assessment of disease epidemiology: the computational basis of DisMod II. Population Health Metrics 1: 4.

Barendregt JJ, Ott A. (2005) Consistency of epidemiologic estimates. European Journal of Epidemiology 20: 827-832.

February 17   **Causal attribution of summary measures of population health to risk factors**

Required:

Rothman KJ (1976) Causes. American Journal of Epidemiology 104:587-592

*Powles J, Day N (2002) Interpreting the global burden of disease. Lancet 360: 1342-1343

Murray CJL, Ezzati M, Lopez AD et al. (2003) Comparative quantification of health risks: conceptual framework and methodological issues. Population Health Metrics 1:1

Vander Hoorn S, Ezzati M, Rodgers A et al. (2004) Estimating attributable burden of disease from exposure and hazard data. In Ezzati M, Lopez AD, Rodgers A and Murray CJL (Eds) Comparative Quantification of Health Risks: The Global and Regional Burden of Disease Attributable to Selected Major Risk Factors. Geneva: World Health Organization (Chapter 25)

Optional:

Eide GE, Heuch I (2001) Attributable fractions: fundamental concepts and their visualization. Statistical Methods in Medical Research 10:159-193

February 22   **Measuring exposure to risks**

Required:

Curtis V, Cairncross S, Yonli R (2000) Domestic hygiene and diarrhoea - pinpointing the problem. Tropical Medicine and International Health 5:22-32

Ezzati M, Utzinger J, Cairncross S et al. (2004) Environmental risks in the developing world: exposure indicators for evaluating interventions and policies. Journal of Epidemiology and Community Health 59:15-20

CMM Lawes, S Vander Hoorn, MR Law et al. (2006) Blood pressure and the global burden of disease 2000. Part 1: Estimates of blood pressure levels. Journal of Hypertension. 24: 413-422

*Chen Z et al. (1991) Serum cholesterol concentration and coronary heart disease in population with low cholesterol concentrations. BMJ 303:276-282

Optional:

Rehm J, Room R, Graham K et al. (2003) The relationship of average volume of alcohol consumption and patterns of drinking to burden of disease: an overview. Addiction 98:1209-28

February 24   **Measuring hazardous effects**

Required:

Yusuf S, Hawken S, Ounpuu S et al. (2004) Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. Lancet 364:937-52

Thun MJ, Apicella LF, Henley SJ (2000) Smoking vs other risk factors as the cause of smoking-attributable mortality: confounding in the courtroom. JAMA 284:706-712

Doll R, Peto R, Boreham J, Sutherland I (2004) Mortality in relation to smoking: 50 years' observations on male British doctors. BMJ 328(7455):1519

Peto R, Lopez A, Boreman J, Thun M, Heath C (1992) Mortality from tobacco in developed countries: Indirect estimation from national vital statistics. Lancet 339: 1268-1278

*Micha R, Wallace SK, Mozaffarian D (2010) Red and Processed Meat Consumption and Risk of Incident Coronary Heart Disease, Stroke, and Diabetes Mellitus: A Systematic Review and Meta-Analysis. Circulation 121:2271-2283

Optional:

Asia Pacific Cohort Studies Collaboration (2004) Body mass index and cardiovascular disease in the Asia-Pacific Region: an overview of 33 cohorts involving 310 000 participants. International Journal of Epidemiology 33:751-758

Law MR, Wald NJ, Thompson SG (1994) By How much and how quickly does reduction in serum cholesterol concentration lower risk of ischaemic heart disease? BMJ 308:367-373

March 1   **Burden of disease attributable to risk factors**

Required:

Ezzati M, Lopez AD, Rodgers A et al. (2002). Selected major risk factors and global and regional burden of disease. Lancet 360:1347-1360

Ezzati M, Vander Hoorn S, Rodgers A et al. (2002) Estimates of global and regional potential health gains from reducing multiple major risk factors. Lancet 362: 271-280

Danaei G, Ding EL, Mozaffarian D, Taylor B, Rehm J, et al. (2009) The Preventable Causes of Death in the United States: Comparative Risk Assessment of Dietary, Lifestyle, and Metabolic Risk Factors. PLoS Med 6(4): e1000058.

*Danaei G, Rimm EB, Oza S, Kulkarni SC, Murray CJL, et al. (2010) The Promise of Prevention: The Effects of Four Preventable Risk Factors on National Life Expectancy and Life Expectancy Disparities by Race and County in the United States. PLoS Med 7(3): e1000248.

Optional:

Vos T, Astbury J, Piers LS et al. (2006) Measuring the impact of intimate partner violence on the health of women in Victoria, Australia. Bull World Health Organ 84: 739-744

March 3   **Measuring health inequality**

Required:

Gakidou EE, Murray CJL, Frenk J (2000) Defining and measuring health inequality: an approach based on the distribution of health expectancy. Bulletin of the World Health Organization 78: 42-54

Marmot M. (2005) Social determinants of health inequalities. Lancet 365: 1099-1104

*Moser K, Leon DA, Gwatkin DR. (2005) How does progress towards the child mortality millennium development goal affect inequalities between the poorest and least poor? Analysis of Demographic and Health Survey data. BMJ 331: 1180-1182

Gakidou E, King G. Measuring total health inequality: adding individual variation to group-level differences. International Journal for Equity in Health 2002, 1:3

Optional:

Ezzati M, Vander Hoorn S, Lawes CMM et al. (2005) Rethinking the "Diseases of Affluence" Paradigm: Global Patterns of Nutritional Risks in Relation to Economic Development. PLoS Med 2: e133

Gakidou E, Oza S, Fuertes CV et al. (2007) Improving Child Survival Through Environmental and Nutritional Interventions: the Importance of Targeting Interventions Toward the Poor. JAMA 298: 1876-1887

| March 8 | **Population health measurement and health policy** |

Required:

AbouZahr C, Adjei S, Kanchanachitra C. (2007) From data to policy: good practices and cautionary tales. Lancet 369: 1039-1046

Baltussen R, Stolk E, Chisholm D et al. (2006) Towards a multi-criteria approach for priority setting: an application to Ghana. Health Economics 15: 689–696

Kapiriri L, Norheim OF, Heggenhougen K (2003) Using burden of disease information for health planning in developing countries: the experience from Uganda. Soc Sci Med 56:2433-41.

González-Pier E, Gutiérrez-Delgado C, Stevens G et al. (2006) Priority-setting for health interventions in Mexico's System of Social Protection in Health. Lancet 368:1608-1618

Michaud CN, Murray CJL, Bloom BR (2001) Burden of disease – implications for future research. JAMA 285:535-9.

Optional:

Ustun TB. (2000) The Global Burden of Mental Disorders. American Journal of Public Health 89: 1315-1318

Kjellstrom T, van Kerkhoff L, Bammer G et al. (2003) Comparative assessment of transport risks: how it can contribute to health impact assessment of transport policies. Bulletin of the World Health Organization 81:451-457

| March 10 | **Review Session – In class** |

| March 17 | **Final (4:30pm – 6:20pm)** |

GH 531/EPI539
Research Methods in Developing Countries
Winter 2011 Quarter

Course Web site: https://moodle.washington.edu/course/view.php?id=24041

Time: Tuesday/Thursday, 1:30 – 2:50PM

Credits: 3-4 Credits (3 for class + 1 for optional, recommended lab)

Locations:
Lectures: Health Sciences Center, Room T-639
Lab Sessions (Tue and Thurs, 3-5pm): HS Library Computer Lab, T-323, Rooms A&B

Instructors:
Charles Mock, MD, PhD
cmock@u.washington.edu
Office Hours: After class or by appointment

Mark Micek, MD, MPH
mmicek@u.washington.edu
Office Hours: After class or by appointment

Teaching Assistant:
Laura Newman
lauranewman@gmail.com
Office Hours: Individual scheduling

General Description:
The course will explore methodologies to obtain useful information regarding health status and health services in less developed countries. The focus is on practical applications of research. Course sessions will discuss evaluation methods that require minimal resources and their applicability and limitations. New approaches to assessment of primary health care effectiveness will be addressed.

Discussion will be encouraged. A major aspect of this course is the students' development of their own research proposals. This proposal will be worked on throughout the course and is an opportunity for students to further develop ideas that they might actually hope to carry out in the future. It is also an opportunity for students to develop thesis proposals.

A computer lab will be held during several, regularly scheduled class times. This time will be used to learn the software program Epi-Info. This component of the course is optional, but strongly encouraged. An extra credit will be given for the lab, making this a 4-credit course when taken with the lab. In the past, the great majority of students have taken the computer lab.

Learning Objectives:
On completion of the course, students should be able to
1. Describe the limitations and usefulness of vital statistics and routine health systems data in developing countries
2. Understand the cost and utility of household sampling in developing countries
3. Design a research methodology appropriate to answer an important health status or systems question for a developing country

4. Write a research proposal addressed at a important policy issue in a developing country
5. Apply WHO cluster sampling methodology to obtain a sample in a country without subject enumeration
6. Communicate research findings in a simple manner to key policy makers
7. Understand how to use Epi-Info software, including entering, cleaning, analyzing (frequencies, cross tabs) and presenting data (for students getting 4 credits)
8. Analyze a DHS dataset for a developing country (for students getting 4 credits)

Course Requirements:
1. Class attendance and participation [10% of 3-credit course grade];
2. Three assignments [30% of 3-credit course grade]
3. Research Project Proposal (up to 2000 words): This paper is a written description of a proposed research project to be carried out in a less developed country. You may choose your own project, or you may choose among several case studies which the instructors can provide. Your project design must include a brief description of the local importance of the problem, the usefulness of the research (including to whom it is useful), the target population, the sample population, the study methodology, the study instrument (s), the method analysis, and some preliminary analysis using predicted values of the data. Project Proposal guidelines can be found on the Web. They will also be discussed in class. [60% of 3-credit course grade]

Student Presentations (Optional):
Two sessions of class time will be devoted to presentations of research proposals by students to the entire class. Not all students will have the opportunity to present in class (3-4 students per presentation day); presenting students will benefit from student and instructor feedback that may assist in revising final papers prior to submission.

Grading:
Grading of assignments will be based on the clarity of your thinking, your logic and evidence supporting your arguments, and the organization and effectiveness of your presentation.

For students taking the optional laboratory, this 1 credit will receive the same grade as that received for the 3-credit course (e.g. a 3.5 received for the 3 credits will become a 3.5 for the 4 credits)

Class Reading Materials:
- **All** required and optional readings will be on Electronic Reserve through the University of Washington (UW) Online Library Services.
- Readings on Electronic Reserve are more to be considered as references for the lectures in-class. We recommend that you review them, particularly the ones in which you have a research interest, but they serve more as background information for the lectures rather than required reading.
- There are *neither* required textbooks *nor* course packets for purchase. You may want to purchase *Designing and Conducting Health Systems Research Projects*, *Volume 2, Parts 1 and 2*.

Session Evaluation:
Each student is requested to evaluate course sessions on a special form to be handed out at the end of the quarter.

2011 COURSE PLAN
GH 590E Managing Global Health Programs for Success

	Content	Readings & Tools	Case Study	Assignments	Responsible person
Session 1 January 4 Intro.	Introduction to course flow Project framework Summaries of Case Study Projects	Case Study Overviews	N/A		Jackie Sherris & Eric Walker
Session 2 January 11 **Partnering**	Design • Selecting the partners Implementation • Engaging and working effectively with partners Project End • Handing off to partners/stakeholders	Case study partnering plans Creating and Sustaining Effective Collaboration Principles for private sector collaboration Grant making to other partners (short white paper on partnering with NGOs/CBOs)	HPV vaccines: Evidence for Impact (Jackie Sherris &/or Vivien Tsu)	Groups state case study choice for mid-course and final project.	Eric Walker
Session 3 January 18 **Donor relations**	Design • Scanning the landscape • RFP vs. LOIs • Managing donor response and finalization Implementation • Ensuring the right approvals/procedures (e.g. research ethics) • Interacting effectively with donors • Responding to donor concerns and changes Project End • Maximizing chances that findings are utilized	Case study proposals BMGF Proposal Guidelines US Fed Business Opps site (www.fbu.gov) and www.grants.gov	Ultra Rice (Carmen Forsman & Dan Grundy		Jackie Sherris

	Content	Readings & Tools	Case Study	Assignments	Responsible person
Sessions 4 January 25 **Work planning**	Design ▪ Understanding the proposal sections ▪ Crafting the technical plan ▪ Assessing the proposal ▪ Considering the proposal design Implementation ▪ Establishing work plans ▪ Responding to external project challenges – political, climactic, epidemiological, etc. ▪ Reporting progress Project End ▪ Final reports	Case study workplans BMGF annual report guidelines PATH work planning templates	Special lecture: USAID Overview (Eric Walker)		Eric Walker
Session 5 February 1 **Work planning (cont)**	As above. Discussion of mid-term case assessments.		Influenza Vaccine Project (Kathy Neuzil)	Mid-term case assessment assignment due	Jackie Sherris
Session 6 February 8 **Budgeting**	Design ▪ Building the budgets Implementation ▪ Financial stewardship and tracking Project End ▪ Financial close out	Case study budgets and budget narratives PATH financial tracking tools	Designing Health Management Information Systems for Sustainability (David Lubinski)		Eric Walker
Sessions 7 February 15 **M&E**	Design ▪ Designing the M&E framework Implementation ▪ Establishing M&E plans ▪ Managing with M&E plan ▪ Disseminating findings and managing data during a project Project End ▪ End of project evaluation ▪ Disseminating results effectively (what worked and what did not work)	Case study M&E plans PATH M&E guidance PATH online M&E course	HPV vaccines: Evidence for Impact (Scott LaMontagne)		Jackie Sherris and Jeff Bernson

	Content	Readings & Tools	Case Study	Assignments	Responsible person
Session 8 February 22 M&E (cont)	As above – in-depth M&E guidance from Jeff Bernson Reserve 45 minutes for discussion/questions from teams on their cases – invite some project representatives to join.	PATH M&E guidance PATH online M&E course	All available case study representatives join for case study discussions		Jackie Sherris and Jeff Bernson
Session 9 March 1 Teaming /staffing	Design ■ Finding key personnel ■ Balancing staffing needs with funding constraints Implementation ■ Forming strong teams ■ Responding to internal project challenges – staffing, internal collaboration, communication, etc. ■ Responding to external project challenges – political, climactic, epidemiological, etc. Project End ■ Engaging staff in ongoing work and advocacy related to project findings.	Sample PATH teaming agreement	Special lecture from donor on partnering for effective implementation?		Eric Walker
March 8 – week 10	Group work session: Eric and Jackie unavailable (Extra session with PATH President Chris Elias and other professional related to project design, implementation, and completion will be arranged for another date)	N/A	N/A	N/A	N/A
Finals week session (TBD)	Final case presentations			Group presentation due Reflection paper due	Jackie Sherris, Eric Walker, Jeff Bernson

Global Health Project Life Cycle – Managing for Success
Project Framework

	Design	Implementation	Project End
Partnering	■ Selecting the partners	■ Engaging and working effectively with partners	■ Handing off to partners/stakeholders
Donor relations	■ Scanning the landscape ■ RFP vs. LOIs ■ Managing donor response and finalization	■ Ensuring the right approvals/procedures (e.g. research ethics) ■ Interacting effectively with donors ■ Responding to donor concerns and changes	■ Maximizing chances that findings are utilized
Work planning	■ Understanding the proposal sections ■ Crafting the technical plan ■ Assessing the proposal ■ Considering the proposal design	■ Establishing work plans ■ Responding to external project challenges – political, climactic, epidemiological, etc. ■ Reporting progress	■ Final reports
Budgeting	■ Building the budgets	■ Financial stewardship and tracking	■ Financial close out
M&E	■ Designing the M&E framework	■ Establishing M&E plans ■ Managing with M&E plan ■ Disseminating findings and managing data during a project	■ End of project evaluation ■ Disseminating results effectively (what worked and what did not work)
Teaming/staffing	■ Finding key personnel ■ Balancing staffing needs with funding constraints	■ Forming strong teams ■ Responding to internal project challenges – staffing, internal collaboration, communication, etc. ■ Responding to external project challenges – political, climactic, epidemiological, etc.	■ Engaging staff in ongoing work and advocacy related to project findings

HSERV 523
ADVANCED HEALTH SERVICES RESEARCH METHODS
Autumn Quarter 2010

Course Schedule and Instructors

Etzioni: Ruth Etzioni, Fred Hutchinson Cancer Center
Liu: Chuan-Fen Liu, VA HSR&D
Fishman: Paul Fishman, Group Health Cooperative, Center for Health Studies
Hebert: Paul Hebert, VA HSR&D
Rutter: Carolyn Rutter, Group Health Cooperative, Center for Health Studies

Lecture	Date	Session Title	Instructor
1	Th 9/30	Introduction: Course objectives, intro to cost and utilization data, review of basic statistical concepts	Etzioni, Hebert
2	Tu 10/5	Review of Regression analysis, estimation, prediction and model building	Etzioni
3	Th 10/7	Conceptual Models in Health Services	Fishman
4	Tu 10/12	Models for utilization I: Binary data - logit and probit regression	Hebert
5	Th 10/14	Models for utilization II: Multinomial and ordered multinomial regression	Hebert
6	Tu 10/19	Models for utilization III: Poisson regression for modeling counts	Etzioni
7	Th 10/21	Risk Adjustment	Liu
8	Tu 10/26	Medical costs I: Issues in analyzing cost data	Fishman
9	Th 10/28	Medical Costs II: Log linear models and smearing	Hebert
10	Tu 11/2	Medical Costs III: Two-part models for cost and utilization data	Hebert
11	Th 11/4	Does the normality assumption matter? Introduction to the bootstrap	Etzioni
12	Tu 11/9	Advanced bootstrap	Hebert
	Th 11/11	No class – Veterans day	
13	Tu 11/16	Causal Inference: Selection models	Hebert
14	Th 11/18	Propensity Models	Rutter

15	Tu 11/23	Analyzing survey data	Etzioni
16	Tu 11/30	Instrumental variables	Hebert
17	Th 12/2	MEPS: an in-depth look at structure access and analysis	Etzioni
18	Tu 12/7	Student Project Proposals	Etzioni
19	Th 12/9	Review	Etzioni

Detailed Schedule

Lecture 1: Introduction
September 30 2010

Readings: Maciejewski et al, 2002; Diehr et al, 1999

Outline

1. About this course
2. The distribution of health utilization and costs
3. Conceptual models of health care utilization and costs
4. Data sources
5. Hypothesis testing cautions
6. Statistical inference and jargon
7. STATA tips and useful commands

Homework 1 distributed; due October 5

Lecture 2: Regression Analysis Review
October 5 2010

Readings: Gelman and Hill Chapters 3 and 4; Polissar and Diehr, 1982; Brookhart et al, 2010

Outline
1. Least squares, maximum likelihood
2. Interpretation of the beta's in multiple regression
3. Confounders and mediators
4. Dummy variables
5. Interaction
6. Model comparisons: beyond R-squared
7. Stepwise regression and hypothesis testing
8. Transformations and implications

Homework 2 (regression) distributed; due October 12

Lecture 3: Conceptual Models
October 7 2010

Readings: Evans and Stoddart, 1990; Gelberg et al, 2000

Outline

1. Linking frameworks and analysis
2. Andersen Newman model of health seeking behavior
3. The chronic care model

Lecture 4: Models for utilization I: Binary data - logit and multinomial regression
October 12 2010

Readings: Gelman and Hill, Chapter 5; Kleinman and Norton, HSR 2009

Outline
1. Modeling binary outcome data
2. The logistic regression models
3. Model fitting
4. Model interpretation: the problem with odds ratios
5. Presenting model results: the method of direct substitution
6. Comparison with the multinomial model

Homework 3 (logit-multinomial) distributed; Due October 19

Lecture 5: Models for utilization II: Ordered logistic and conditional logistic regression
October 14 2010

Readings: Fischer et al 2008, Liu et al, 2009

Outline
1. Modeling an ordered categorical dependent variable: the ordered logistic model
2. Conditional logistic regression
3. Discussion of Hebert et al, use of conditional logistic

Homework 4 (multinomial and conditional logistic models) distributed; Due October 21

Lecture 6: Models for utilization III: Modeling count data
October 19 2010

Readings: Gelman and Hill, Chapter 6; Gardner et al, 1995; Gross et al 2008

Outline
1. Modeling count data

2. Poisson regression: formulation and interpretation, accounting for exposure duration, the concept of overdisperion
3. Negative binomial regression
4. Zero-inflated Poisson and negative binomial
5. Generalized linear models
6. Discussion of Gross et al

Homework 5 (Count models) distributed; due October 26

Lecture 7: Risk Adjustment
October 21 2010

Readings: Liu et al 2003; Maciejiewski et al 2005

Outline

1. Perspectives and dimensions of risk
2. Terminology and outcomes of risk
3. Risk adjusting for cost versus clinical outcomes
4. Types of risk adjustors: Demographic, diagnoses/prescriptions, functional status
5. Sources of risk adjustment data: clinical, administrative, survey
6. Risk adjustment systems

Lecture 8 : Medical costs I
October 26 2010

Readings: Diehr et al 1999; Fishman and Hornbrook 2009

Outline

1. Components of health care costs
2. Economic concepts of cost
3. Sources of cost data
4. Issues in cost analysis
5. Assigning dollars to health care services: Production costs, prices, relative costs

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Lecture 9: Medical costs II
October 28 2010

Readings: Afifi et al, 2007; Manning et al 2001, 2005

Outline

1. The log transformation and regression of log costs
2. The retransformation problem and smearing
3. GLM as an alternative: the gamma distribution
4. Tests for determining the best GLM for the data

Homework 6 (log-linear models) distributed ; due November 4

Lecture 10: Medical costs III
November 2 2010

Readings: Blough et al, 1999; Buntin and Zaslavsky, 2004

Outline

1. Adding a small constant to get rid of the zero costs
2. The Tobit model
3. The two-part model
4. Presenting model results: effect of X on E(Y)? The direct substitution approach

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Lecture 11: Normality assumption and bootstrap I
November 4 2010

Readings: Lumley et al, 2002; Dunn et al, 2003

Outline

1. Review of cost models
2. Lumley et al premise: Use OLS if sample is large enough
3. The bootstrap; using the bootstrap to investigate Lumley et al premise
4. Reasons for sticking with two-part models
5. Cross-validation for model choice

Homework 7 (two-part models) distributed; due November 9

Lecture 12: Advanced bootstrap
November 9 2010

Readings: Frytack et al, 2008

Outline

1. Use two-part model to estimate difference in predicted costs for two groups
2. Use the bootstrap to produce a confidence interval on the difference
3. Compare results with the direct substitution method

Homework 8 (bootstrap) distributed; due November 16

Lecture 13: Causal inference
November 16 2010

Readings: Dowd and Town, 2002

Outline

1. Definition of important terms: bias and efficiency; exogenous/endogenous; stochastic/deterministic
2. Causes and sources of selection bias: measurement error, omitted variables. Simultaneous equations bias, unobserved endogenous variables, reverse causality
3. Methods for dealing with selection bias: selection models
4. The Heckman model

Lecture 14: Propensity scores
November 18 2010

Readings: D'Agostino, 1998; Rubin, 1997

Outline

1. Randomized versus observational studies: the notion of synthetic balance
2. The strongly ignorable treatment assignment assumption
3. Estimating propensity scores
4. Evaluating propensity scores
5. Using propensity scores: stratification, regression, matching, weighting

Homework 9 (propensity scores) distributed; due November 23

Lecture 15: Analyzing survey data
November 23 2010

Readings: Korn and Graubard 1995

Outline

1. Survey designs
2. Stratification, clustering and impact ton variance
3. Sampling weights
4. Variance estimation techniques
5. Scatterplots and regression with survey data

Lecture 16: Instrumental variables
November 30 2010

Readings: Newhouse and MacClellan 1998; Stukel et al 2007; Terza, Basu and Rathouz, 2008

Homework 10 (IV's) distributed; due November 30

Lecture 17: MEPS: implementing a survey analysis
December 2 2010

Readings: Devine et al, 2005; Martin et al, 2008

Outline

1. MEPS: organization of files and types of variables
2. Loading and linking files
3. Using ICD9 codes to identify conditions of interest
4. Analysis with STATA survey commands

Homework 11 (survey) distributed; Due November 9

Lecture 18: Student project proposals
December 7 2009

Lecture 19: Review
December 9 2010

Readings

Lecture 1

Maciejewski ML, Diehr P, Smith M, and Hebert P. Clarifying Semantic Differences in Health Services Research Methods from Economics, Biostatistics, and Epidemiology. Medical Care 40: 477-484, 2000

Diehr P, David Yanez, Mark Hornbrook, and D.Y. Lin, Methods for Analyzing Health Care Utilization and Costs, Annual Review of Public Health 20: 125-144, 1999

Lecture 2

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Brookhart MA, Sturmer T, Glynn RJ et al. Confounding control in healthcare database research: Challenges and potential approaches. Medical Care 48(6 Suppl 1): S114-S120, 2010

Lecture 3

Evans RG and Stoddart GL. Producing health, consuming health care. Soc. Sci. Med. 31(12):1347-1363, 1990

Gelberg L, Anderson RM, Leake BD. The behavioral model for vulnerable populations: application to medical care use and outcomes for homeless people. Health Services Research 34(6):1273-1302, 2000.

Lecture 4

Kleinman LC and Norton EC. What's the risk? A simple approach for estimating adjusted risk measures from nonlinear models including logistic regression. Health Services Research 44(1): 288-302, 2009

Lecture 5

Fischer EP, McSweeney JC, Pyne JM et al. Influence of family involvement and substance use on sustained utilization fo services for schizophrenia. Psychiatric Services 59(8):902-908, 2008.

Liu H, Phelps CE, Veazie PJ, et al. Managed care quality of care and plan choice in New York SCHIP. Health Services Research 44(3):843-861, 2009

Lecture 6

Gardner W, Mulvey EP, Shaw EC.Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. Psychol Bull. 1995 Nov;118(3):392-404.

Gross CP, Andersen MS, Krumholz HM, et al. Relation between Medicare screening reimbursement and stage at diagnosis for older patients with colon cancer. JAMA 296(33): 2815-2822, 2006.

Lecture 7

Liu CF, Sales AE, Sharp ND, Fishman P et al. Case-mix adjusting performance measure in a eteran population: pharmacy- and diagnosis-based measures. Health Services Research 38(5):1319-1337, 2003

Maciejewski ML, Liu CF, Derleth A, et al. The performance of administrative and self-reported measures for risk adjustment of Veterans Affairs expenditures. Health Services Research 40(3): 887-904, 2005

Lecture 8

Diehr P, Yanez D, Ash A, Hornbrook M, Lin DY. Methods for analyzing health care utilization and costs. Annual Review of Public Health 20:125-144, 1999.

Fishman PA, Hornbrook MC. Assigning resources to health care use for health services research: options and consequences. Med Care. 2009 Jul;47(7 Suppl 1):S70-5.

Lecture 9

Afifi AA, Kotlerman JB, Ettner SL, Cowan M.Methods for improving regression analysis for skewed continuous or counted responses. Annu Rev Public Health. 2007;28:95-111.

Manning WG. The logged dependent variable, heteroscedasticity and the retransformation problem. Journal of Health Economics, 17:283–295, 1998

Lecture 10

Blough DK, Madden CW, Hornbrook MC. Modeling risk using generalized linear models. Journal of Health Economics 1999, 18: 153-171.

Buntin MB, Zaslavsky A. Too much ado about two-part models and retransformation? Comparing methods of modeling Medicare expenditures. Journal of Health Economics 2004:23:525-542

Lecture 11

Lumley T, Diehr P, Emerson S, Chen L. The Importance of the Normality Assumption in Large Public Health Data Sets, Annual Review of Public Health 2002, 23: 151-169.

Dunn G, Mirandola M, Amaddeo F, Tansella M. Describing, explaining or predicting mental health care costs: a guide to regression models. Methodological review. Br J Psychiatry. 2003 Nov;183:398-404.

Lecture 12

Frytack JR, Henk HJ, Zhao Y, et al. Health service utilization among Alzheimer's disease patients: Evidence from managed care. Alzheimer's and Dementia 4:361-367, 2008.

Lecture 13

Dodd B and Town R. Does X really cause Y? Robert Wood Johnson Foundation HCFO Report, 2002.
Lecture 14

D'Agostino RB Jr. Propensity score methods for bias reduction in the comparison of a treatment to a non-randomized control group. Stat Med. 1998 Oct 15;17(19):2265-81.

Rubin DB. Estimating causal effects from large data sets using propensity scores. Annals of Internal Medicine 127: 757-763, 1997.

Lecture 17

Korn EL and Graubard BI. Examples of differing weighted and unweighted estimates from a sample survey. Tha American Statistican 1995;49(3):291-295.

Lecture 16

Newhouse JP, McClellan M. Econometrics in outcomes research: the use of instrumental variables. Annual Review of Public Health 1998;19:17-34.

Stukel TA, Fisher ES, Wennberg DE, et al. Analysis of observational studies in the presence of treatment selection bias: effects of invasive cardiac management on AMI survival using propensity score and instrumental variable methods. JAMA 297(3):278-285, 2007.

Terza JV, Basu A, Rathouz PJ. Two-Stage Residual Inclusion Estimation: Addressing Endogeneity in Health Econometric Modeling. J Health Econ. 2008 May ; 27(3): 531–543.

Lecture 17

Devine JW, Farley JF and Hadsall RS. Patterns and Predictors of Prescription Medication Use in the Management of Headache: Findings From the 2000 Medical Expenditure Panel Survey. Headache 2005;45:1171-1180

Martin BI, Deyo RA, Mirza SK, et al. Expenditures and health status among adults with back and neck problems. JAMA. 2008 Feb 13;299(6):656-64.

HSERV524: Advanced Health Services Research Methods II
Mon & Wed 1:30-3:20

Gary Chan, PhD
Assistant Professor,
Departments of Biostatistics and Health Services

kcgchan@u.washington.edu
Office hour: Wed 12:30-1:30 (H-655H)

Course Description

This is the second course in the Advance Health Services Research Method sequence. It will cover the topics of causal inference, missing data, multilevel models and incomplete follow-up data. For multilevel models, emphasis will be placed on both conditional and marginal models and their interpretations for both linear and non-linear models. For incomplete follow-up data, students will be exposed to survival analysis methods, including competing risks and censored medical cost. The emphasis of this course is on the application of advanced biostatistical techniques in applied research. Students are expected to understand statistical concepts qualitatively and be able to formulate statistical models. However, mathematical details are not the emphasis in this course.

Course learning objectives

After completing the course you should be able to:

1. Understand and apply statistical methods for analyzing surveys with missing data
2. Understand counterfactual models and graphical approaches to causal inference
3. Model correlation in multilevel data
4. Identify statistical issues related to incomplete follow-up data
5. Apply suitable statistical methods for answering scientific questions using multilevel data and survival data
6. Implement the analyses using STATA.
7. Interpret the results appropriately to a non-specialist
8. Critique the methods used in health services literature

Textbooks

Gelman A. and Hill J. Data Analysis Using Regression and Multilevel Hierarchical Models. Cambridge University Press.

Diggle P., Heagerty, P., Liang, K.-Y. and Zeger S. Analysis of Longitudinal Data. Oxford University Press. (recommended)

Rabe-Hesketh, S. and Skrondal, A. Multilevel and Longitudinal Modelling Using Stata. Stata Press.

Grading

There will be five homework assignments, totaling 25% of the course grade. Students may discuss in groups but each student must write up his/her own version of the assignment. Late assignments will not be accepted. Students who are struggling with homework are encouraged to hand in the assignments partially but on time, but it is always best to start earlier and ask when you encounter problems.

Each student will have to write a research proposal, including the scientific motivation, data set used and statistical methods used to answer the scientific question. Students will make a short presentation about 20 minutes long in class, with an emphasis on data structure and statistical methods. The written report and presentation will account for 30% of the course grade.

There will be a take-home mid-term exam and a take-home final exam which will count for 15% and 30% of the course grade respectively. Students must not collaborate or consult with others. In-class exam will cover topics from lecture 1 to 8, and the final take-home exam will cover materials from the entire quarter.

Course Schedule

Lecture	Date	Session Title	Assignments due
1	1/3	Review of GLM, basic tools for regression model building, splines, indicator variables, interaction	
2	1/5	Causal inference 1: counterfactual model	
3	1/10	Causal inference 2: graphical model	HW 1
4	1/12	Missing data 1: mechanisms and inverse probability weighting	
5	1/19	Missing data 2: model based and model assisted methods	
6	1/24	Connections between survey, missing data and causal inference	HW2
7	1/26	Study design of multilevel and longitudinal trial	
8	1/31	One way random effects ANOVA: Shrinkage estimate of group means	HW3
9	2/2	Linear random effects model	
10	2/7	Multilevel logistic model, item response model	Midterm
11	2/9	Longitudinal data analysis	
12	2/14	Marginal vs conditional models, Generalized estimating equations	
13	2/16	Applications: Profiling medical providers	HW4
14	2/23	Survival analysis basics: Sampling and Kaplan-Meier estimates	
15	2/28	Proportional hazards model and other regression models for survival data	HW5
16	3/2	Competing risks and censored medical cost	
17	3/7	Review	Proposal
18	3/9	Student presentation	

HSERV 525: Advanced Health Services Research Methods III
Fridays: 1:00-3:50 (Spring Quarter 2010)
Room: Health Sciences Library Computer Lab

http://depts.washington.edu/hserv/courses?HSERV_525/

Allen Cheadle
cheadle@u.washington.edu

Chuck Maynard
cmaynard@u.washington.edu

Office hours: By appointment

Description

This course is designed as a "capstone" to the Health Services advanced methods sequence. Students bring a research question and data set to the course and conduct the analysis and writing needed to produce a publishable paper. Lectures cover selected topics not included in the earlier two methods courses (HSERV 523, 524), including missing data, survival analysis, and mixed models. Students develop a proposal for data analysis during the second course of the sequence in the winter quarter. Students will produce a paper that could be submitted for publication, and are encouraged to plan to submit their paper for publication.

Prerequisites

Biostatistics 511 and 512 or equivalent; Health Services 511; strongly recommend that students have completed Health Services 522, 523 and 524. Class size is strictly limited to 15 students, and preference will be given to students in Health Services. PhD students in Health Services are required to take this course and will be given priority enrollment. In addition to coursework prerequisites, students must also have identified a research question, a dataset to address the question, and a general data analysis plan.

Class objectives

At the conclusion of this course, students will be able to:

1. Evaluate appropriateness of an analytic approach for a specified question;

2. Conduct complex data analysis using real data to answer one or more specific research questions.
   Specify estimation model
   Test model specification and assumptions
   Describe data integrity
   Account for data structure;

3. Report results of data analysis in a publishable paper following format and requirements for a specific peer-reviewed journal

4. Learn about statistical methods not covered in previous courses. These may include survival analysis, analysis of survey data, missing data, and analysis of multi level data

An environment emphasizing learning from each other is a foundation for this course. Attendance is essential for achieving the goals of the course.

Assignments: 1) Presentation of research question, background, and methods, including analytic plan, 2) Draft paper, including introduction, methods, shell tables, and discussion outline (May 14) 3) Completion of paper in publishable form (June 9).

Grading Policy: Departmental grading policy is in effect (http://depts.washington.edu/hserv/policy/grading.shtml). 60 points on final paper, 20 points on 2 presentations, and 20 points on class participation.

Class dates:

April 2rd Introduction and expectations for paper
April 9th Presentation of introduction and methods, including data analysis plan
April 16th Presentation of introduction and methods, including data analysis plan, Workshop on data analysis
April 23th Caleb Banta Green, Planning and finishing a research project Workshop on data analysis
April 30th Workshop on data analysis
May 7th Fen Liu, Analysis of survey data with STATA, Workshop on paper writing and data analysis,
May 14th, Paper draft due, to include introduction, methods, shell tables, and outline of discussion
May 21nd Susanne May survival analysis, Workshop on data analysis
May 28th Presentation of results
June 4th Presentation of results
June 9th Paper due

Guest lectures:

1) Caleb Banta-Green, (April 23)

2) Fen Liu (May 7)

3) Susanne May, Survival analysis (May 21)

Statistical References:

General Statistics Books:

Diggle PJ, Heagerty P, Liang KY, Zeger SL *Analysis of longitudinal data (second edition)*. New York: Oxford University Press, 2002.

Fleiss JL, Levin B, Paik MC. *Statistical methods for rates and proportions (third edition)*. New York: John Wiley and Sons, 2003.

Hosmer DL, Lemeshow S. *Applied logistic regression regression, second edition*. New York: John Wiley and Sons, 2001.

Hosmer DL, Lemeshow S, May S. *Applied survival analysis, regression modeling of time to event data, second edition.* New York: John Wiley and Sons, 2008.

Van Belle G. *Statistical rules of thumb, 2nd edition*. New York: John Wiley and Sons, 2008.

Van Belle G, Fisher LD, Heagerty PJ, Lumley T. *Biostatistics: A methodology for the social sciences (second edition)*. New York: John Wiley and Sons, 2004.

Missing data:

Buhl ER, Goodson P, Neilands TB. Out of sight, not out of mind: strategies for handling missing data. *Am J Health Behav* 2008;32:83-92.

Schafer JL. Multiple imputation: a primer. *Statistical Methods in Medical Research* 1999;8:3-15.

Little RJA, Rubin DB. *Statistical analysis with missing data (second edition)*. New York: John Wiley and Sons, 2002.

Statistical software:

Altman DG, Machin D, Bryant TN, Gardner MJ. *Statistics with confidence (second edition)*. BMJ Books, 2000.

STATA www.stata.com

The R home page: www.r-project.org.

Verzani J. *Using R for introductory statistics*. Boca Raton: Chapman and Hall/CRC, 2005.

Gary Grunkemeier: The Statistician's Page, Annals of Thoracic Surgery

Grunkemeier GL, Jin R. Receiver operating characteristic curve analysis of clinical risk models. *Ann Thorac Surg* 2001;72:323-326.

Grunkemeier GL, Zerr KJ, Jin R. Cardiac surgery report cards: making the grade. *Ann Thorac Surg* 2001;72:1845-1848.

Grunkemeier GL, Wu YX. Propensity score analysis of stroke after off-pump coronary artery bypass grafting. *Ann Thorac Surg* 2002;74:301-305.

Grunkemeier GL, Payne N. Bayesian analysis: a new statistical paradigm for new technology. *Ann Thorac Surg* 2002;74:1901-1908.

Grunkemeier GL, Wu YX. Bootstrap resampling methods: something for nothing? *Ann Thorac Surg* 2004;77:1142-1144.

Grunkemeier GL, Wu YX. What are the odds? *Ann Thorac Surg* 2007;83:1240-1244.

Grunkemeier GL, Jin R, Eijkemans JC, Takkenberg JJM. Actual and actuarial probabilities of competing risks: apples and lemons. *Ann Thorac Surg* 2007;83:1586-1592.

Grunkemeier GL, Jin R, Eijkemans JC, Takkenberg JJM. Power and sample size: how many patients do I need? *Ann Thorac Surg* 2007;83:1934-1939.

Grunkemeier GL, Jin R, Wu YX. Cumulative sum curves and their prediction limits. *Ann Thorac Surg* 2009;87:361-364.

Grunkemeier GL, Wu YX, Furnary AP. What is the value of a p value? *Ann Thorac Surg* 2009;87:1337-1343.

Circulation: Statistical Primer for Cardiovascular Research Series

Cabral HJ. Multiple comparisons procedures. *Circulation* 2008;117:698-701.

D'Agostino Jr, RB. Propensity scores in cardiovascular research. *Circulation* 2007;115:2340-2343.

Davis RB, Mukamal KJ. Hypothesis testing-means. *Circulation* 2006;114:1078-1082.

Larson MG. Descriptive statistics and graphical displays. *Circulation* 2006;114:76-81.

Larson MG. Analysis of variance. *Circulation* 2008;117:115-121.

Rao SR, Schoenfeld DA. Survival methods. *Circulation* 2008;117:109-113.

Ross JS, Gross CP. Policy research: Using evidence to improve health care delivery systems. *Circulation* 2009;119:891-898.

Sullivan LM. Repeated measures. *Circulation* 2008;117:1238-1243.

Peer Review

Roberts WC. Reducing flaws in the peer review process of manuscripts submitted to medical journals for publication. *Am J Cardiol* 2009;103:891-892.

Example papers

Clinical medicine journals.

Bryson CL, Au DH, Sun H, William EC, Kivlahan DR, Bradley KA. Alcohol screening scores and medication nonadherence. *Annals of Internal Medicine* 2008;149:795-803. (Measurement study of medication adherence)
http://www.annals.org.offcampus.lib.washington.edu/cgi/reprint/149/11/795.pdf

Health services journals

Weeks WB, West AN, Wallace AE, Fisher ES. Comparing the characteristics, utilization, efficiency, and outcomes of VA and non-VA inpatient care provided to VA enrollees. *Medical Care* 2008;46:863-871.(Database study)
http://ovidsp.tx.ovid.com.offcampus.lib.washington.edu/spb/ovidweb.cgi?WebLinkFram eset=1&S=BAKOFPMBMLDDIDBANCGLAACKGLCEAA00&returnUrl=http%3a %2f%2fovidsp.tx.ovid.com%2fspb%2fovidweb.cgi%3f%26Full%2bText%3dL%257 cS.sh.15.16.18.40%257c0%257c00005650-200808000-00013%26S%3dBAKOFPMBMLDDIDBANCGLAACKGLCEAA00&directlink=htt p%3a%2f%2fgraphics.tx.ovid.com%2fovftpdfs%2fFPDDNCCKAABAML00%2ffs0 47%2fovft%2flive%2fgv024%2f00005650%2f00005650-200808000-00013.pdf&filename=Comparing+the+Characteristics%2c+Utilization%2c+Efficienc y%2c+and+Outcomes+of+VA+and+Non-VA+Inpatient+Care+Provided+to+VA+Enrollees%3a+A+Case+Study+in+New+Yor k.

Public health journals

Latka MH, Hagan H, Kapadia F, Golub ET, et al. A Randomized Intervention Trial to Reduce the Lending of Used Injection Equipment Among Injection Drug Users Infected With Hepatitis C. *Am J Public Health* 2008; 98: 853-861 (Randomized trial)
http://www.ajph.org.offcampus.lib.washington.edu/cgi/reprint/98/5/853

Bates LM, Acevedo-Garcia D, Alegria M, Krieger N. Immigration and Generational Trends in Body Mass Index and Obesity in the United States: Results of the National Latino and Asian American Survey, 2002–2003 *Am J Public Health* 2008; 98: 70-77 (Descriptive cohort study)
http://www.ajph.org.offcampus.lib.washington.edu/cgi/reprint/98/1/70

Roux L, Pratt M, Tengs TO, Yore MM, et al. Cost Effectiveness of Community-Based Physical Activity Interventions. *Am J Prev Med* 2008; 35(6):578–588. (Cost-effectiveness study).
http://www.sciencedirect.com.offcampus.lib.washington.edu/science?_ob=PublicationUR L&_cdi=6075&_pubType=J&_acct=C000029718&_version=1&_urlVersion=0&_us erid=582538&md5=7c82a6a71c754f2bbeceafd29ed8b291&jchunk=35#35

2010

Department of Global Health
University of Washington (UW)
Seattle, USA

GH #521: *Global Program Management and Evaluation*
an overview of challenges and technical skills associated with managing and
assuring quality programming in global health organizations

Summary

This course connects a classroom at the University of Washington (UW) in
Seattle, USA, to 8 other classrooms around the world using synchronous (same
time) distance communication technology. This graduate level course engages
students in discussion and learning about leadership and management in
complex global health environments. It also presents challenges and approaches
to assuring quality program design, monitoring and evaluation for global health
projects. This is a skills-building course that utilizes lecture, discussion, case
studies and other interactive exercises. Participants explore personal leadership
strengths and core values; analyze management dilemmas; practice making
data-driven management decisions; pose critical questions for program planning
and design; gain insight into managing resources and leading people; and
conceptualize program evaluation. Registered graduate students at UW can
take this course for 3 graded credits. That group will have the option of meeting
with the instructor for 1 hour every Friday on the UW campus from 2:00-3:00 pm
in addition to participating in the classroom sessions. All other participants will
receive a UW certificate of completion for completing sessions and required
assignments.

Website

- Informational Website:
  http://www.go2itech.org/what-we-do/health-workforce-development/distance-learning/gh-521
- Course Website:
  https://catalysttools.washington.edu/workspace/downer/9531/

UW Instructor

Ann Downer, EdD, Executive Director
International Training and Education Center for Health (I-TECH)
Senior Lecturer, Department of Global Health, University of Washington (UW)

(Confirmed) Guest Instructors & Drop-in Guests

- Anita Verna Crofts, MPA; Clinical Instructor, Dept. of Global Health, UW
- Elaine Douglas, MA; Senior Technical Specialist, UW I-TECH; Clinical
  Instructor, Dept. of Global Health, UW
- Christopher Elias, MD, MPH; President and CEO, PATH, Seattle
- Barbara Grant, MA, ABS; Principal, MGS Consulting, Seattle

- King K. Holmes, MD, PhD; Professor and Chair, Dept. of Global Health, UW
- Gabrielle O'Malley, PhD; Director, Operations Research and Quality Improvement; Assistant Professor, Dept. of Global Health, UW
- Dan Kraushaar, ScD; Management Sciences for Health, Boston
- Jacqueline Sherris, PhD; Vice President, Global Programs, PATH, Seattle
- Richard Wilkinson, Human Resource Director, I-TECH, Seattle

On-Site Facilitators

Botswana
Baz Semo, MD, MPH, Country Director, I-TECH Botswana
Clinical Assistant Professor, Department of Global Health, UW
and
Jenny Ledikwe, PhD, M&E Director, I-TECH Botswana
Clinical Assistant Professor, Department of Global Health, UW

Ethiopia
William Graham, MPH, Country Director, I-TECH Ethiopia
Clinical Instructor, Department of Global Health, UW
and Getachew Feleke, MD, Medical Director, I-TECH Ethiopia
Clinical Associate Professor, Department of Global Health, UW

Guyana
Wallis Best-Plummer, PhD, Country Director, I-TECH Guyana
Clinical Assistant Professor, Department of Global Health, UW

Kenya
Sospeter Ndaba Kimani, BSc, MSc Public Health
Institute of Tropical and Infectious Diseases (UNITID) in Nairobi, Kenya
and
Margaret Mwago, MA Project Management; Diploma HR Management
Institute of Tropical and Infectious Diseases (UNITID) in Nairobi, Kenya

Mozambique
Marla Smith, MS, Country Director, I-TECH Mozambique
Clinical Instructor, Department of Global Health, UW

Namibia
Deqa Ali, MPH, Country Director, I-TECH Namibia
Clinical Instructor, Department of Global Health, UW

Uganda
Ann Miceli, MA, Curriculum and Training Advisor
Infectious Disease Institute in Kampala, Uganda

USA
2nd classroom: Liz Stevens, MSW, and Elaine Douglas, MA, Senior Technical Specialists; Department of Global Health, UW

Instructional Support

- Mara Child, MPH, MPA (course content)
  mbrain@u.washington.edu
- Joseph Daniels, PhD-c (evaluation)
  daniels.joseph@gmail.com
- Alison Ensminger, MPhil. (website, instructor support)
  aensming@uw.edu
- Alex McGee (technical and IT support)
  camcgee@uw.edu
- Anneleen Severynen, RN, MN (coordination, registration)
  odasev@u.washington.edu

Times and Locations

This course includes 10 sessions broadcast on consecutive Mondays, beginning on March 29, to the following classrooms.

Classroom	Location	Hours	Contact
Botswana	I-TECH Botswana, 730 Botswana Road, Gaborone, Botswana	1700-1900	spencer.manthe@itech.org.bw
Croatia	10 Krajljovacki Odvojak Zagreb, Croatia	1600-1800	petroj@u.washington.edu
Ethiopia	I-TECH Ethiopia, Kebele 03/05, House No. 2367, Addis Ababa, Ethiopia	1800-2000	communications@itech-ethiopia.org
Guyana	I-TECH Guyana, Ministry of Health Annex, Liliendaal, Greater Georgetown, Guyana	1100-1300	wbestplummer@itech-guyana.org
Kenya	Institute of Tropical and Infectious Diseases, (UNITID) College of Health	1800-2000	sospeter.ndaba@uonbi.ac.ke

	Sciences, University of Nairobi, P.O. Box 19676-00202, Nairobi, Kenya		
Mozambique	I-TECH Mozambique, AV Cahora Bassa, #106, Maputo, Mozambique	17:00-19:00	marlas@itech-mozambique.org
Namibia	I-TECH Namibia, 25, Kalie Roodt Street, Northern Industry, PO Box 20752, Windhoek, Namibia	1700-1900	nancy@itech-namibia.org
Uganda	Infectious Diseases Institute, Makarere Medical School, New Mulago Hospital Complex, Kamapala, Uganda 22418KLA	1800-2000	micelia@u.washington.edu
USA	UW I-TECH Headquarters, 9th and Jefferson, Seattle, WA 98104 Room 1360	8:00-10:00 am	odasev@u.washington.edu

Course Format

Ten classroom sessions occur between March-June 2010. Each of the classroom sessions is broadcast using Adobe Connect. Teaching methods combine lecture, classroom-based discussion, and participatory exercises. Weekly homework includes reading and one assignment. The course website contains all reading, optional video and media viewing resources, relevant links, and assignments. It will also contain an archived copy of each classroom session within 48 hours of broadcast.

Objectives (see course website for details of content for each session)

Session	Dates
1	**March 29, 2010** **Leading and Managing Framework**

	Objectives *As a result of participating in this session, learners will be able to:* • Explain course structure and expectations; • Locate and explore course website; • Define management and leadership in global health; • Distinguish between management and leadership skills; and • Reflect upon person strengths and situation.
2	**April 5, 2010** **Leading from Within** • Drop-in Guest: Christopher Elias, MD, MPH; President and CEO, PATH *Objectives* *As a result of participating in this session, learners will be able to:* • View modern leadership theory in historical context; • Hear personal stories about the leadership journey; • Consider sphere of influence; and • Articulate core values and align with vision.
3	**April 12, 2010** **Leading Change (1): Persuasive Communication** • Guest Instructor: Anita Verna Crofts, MPA; Clinical Instructor, Dept. of Global Health, UW *Objectives* *As a result of participating in this session, learners will be able to:* • Describe ways to build strong relationships with donors and host governments; • Explore storytelling as a leadership tool; • Incorporate key components of persuasive speech into planned communications; • Utilize visuals to enhance and not compete with a presentation • Organize a short persuasive presentation; and • Analyze a case example.
4	**April 19, 2010** **Working with Others (1): Team Building** • Guest Instructor: Elaine Douglas, MA; Senior Technical Specialist, UW I-TECH; Clinical Instructor, Dept. of Global Health, UW • Drop-in Guest: Jacqueline Sherris, PhD; Vice President, Global Programs, PATH

	Objectives *As a result of participating in this session, learners will be able to:* • Recognize the characteristics of highly functioning teams; • Identify potential threats to effective team functioning; • List several tools for building strong teams; • Plan team-building activities for teams and working groups; • Recommend next steps for continuous improvement of team functioning; and • Effectively lead a meeting.
5	**April 26, 2010** **Working with Others (2): Influence without Authority** • Guest Instructor: Barbara Grant, MA, ABS; Principal, MGS Consulting, Seattle **Objectives** *As a result of participating in this session, learners will be able to:* • Distinguish between personal and positional sources of power and build a relevant and accessible list; • Define and give examples of reciprocity and currency that are relevant in a global health environment; • Understand and explain how currency exchange leads to influence in multiple examples; and • Apply an influence model to increase personal potency in an organization and across multiple or virtual working teams.
6	**May 3, 2010** **Monitoring and Evaluating (1)** • Guest Instructor: Gabrielle O'Malley, PhD; Director, Operations Research and Quality Improvement, UW I-TECH; Assistant Professor, Dept. of Global Health, UW **Objectives** *As a result of participating in this session, learners will be able to:* • Define the components of the logic model; • Differentiate between a logic model and workplan; • Explain the purposes, uses, and limitations of logic models for management; and • Differentiate between monitoring and evaluation questions to support project management.
7	**May 10, 2010** **Monitoring and Evaluating (2)** • Guest Instructor: Gabrielle O'Malley, PhD; Director, Operations Research and Quality Improvement, UW I-TECH; Assistant

		Professor, Dept. of Global Health, UW
		Objectives *As a result of participating in this session, learners will be able to:* • Explain the purposes of monitoring M&E data for performance-based management; • Differentiate between management and technical roles in monitoring and evaluation; • Identify decision making implications of key programmatic data points; • Select effective and feasible methods, indicators/data points for leading/managing a public health program intervention; and • Describe data use strategies for leaders and managers.
8		**May 17, 2010** **Systems Thinking** • Guest Instructor: Dan Kraushaar, ScD; Management Sciences for Health, Boston *Objectives* *As a result of participating in this session, learners will be able to:* • Define systems thinking and use it to analyze an organizational setting; • Use systems thinking tools and models to understand and navigate complex environments; • Use project management tools to manage workflow, clarifying roles, and assessing risk; • Work through at least one management issue using a systems approach for identifying possible solutions for action; • Recognize and accept that complex systems create complex challenges; • Explain the five disciplines of a learning organization; and • Analyze a case example.
9		**May 24, 2010** **Leading Change and Transition** • Guest instructors: Richard Wilkinson, Human Resource Director, I-TECH *Objectives* *As a result of participating in this session, learners will be able to:* • Access practical tools for planning and organizational development; • Plan for meaningful stakeholder involvement in program design,

	implementation, and evaluation; • Assess and address forces and trends that challenge an organization; • Apply findings from assessment activities to prioritize, allocate resources, and select strategies; • Estimate human resources and other cost requirements for planning; and • Analyze a case example.
10	**First week of June (day to be decided by individual sites)** **Final Project: Leadership Stories** *Objectives* *As a result of participating in this session, learners will be able to:* • Actively listen and respond to leadership storytelling; • Deliver a short persuasive presentation; and • Offer feedback on the course.

Reading

Each week participants will be expected to complete one reading and one assignment prior to the next session. Weekly readings and assignments are located on the course website and can be downloaded. Optional readings and videos will also be posted on the course website each week. In addition to the downloaded readings, copies of the following books will be available for loan at each classroom:

- Barnes, Kim (2006) *Exercising Influence Workbook: A Self-Study Guide.* Pfeiffer.
- Cohen, Alan and D. Bradford (2005) *Influence without Authority.* Wiley.
- Covey, Stephen. (2004) *The 7 Habits of Highly Effective People.* Free Press.
- Covey, Stephen. (2003) *Personal Workbook: The 7 Habits of Highly Effective People.* Free Press.
- Drucker, Peter (2006) *Managing the Non-Profit Organization.* Harper.
- Kouzes, James & B. Posner (2007) *The Leadership Challenge.* San Francisco: Jossey-Bass.
- Krutchfield, Leslie (2007) *Forces for Good: The Six Practices of High-Impact Non-Profits.* Jossey-Bass.
- Lencioni, Patrick (2005) *Overcoming the Five Dysfunctions of a Team: A Field Guide for Leaders, Managers, and Facilitators.* Jossey-Bass.
- Management Sciences for Health (2005) *Managers Who Lead: A Handbook for Improving Health Services.*
- Senge, Peter (2006) *The Fifth Discipline: The Art and Practice of the Learning Organization.* Broadway Business.

- Senge, Peter (1994) *The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization.* Broadway Business.
- Stanfield, R. Brian (2000) *The Art of Focused Conversation: 100 Ways to Access Group Wisdom in the Workplace.* Gabriola Island, BC: New Society Publishers.

Final Assignment

Students will complete a final assignment under the guidance of the instructor and guest instructor, Anita Verna Crofts, a journalist and specialist in digital storytelling. Students will select a global health policy issue of particular relevance to them, designing a final product to address the issue in a way that is creative, concise, persuasive and compelling. The assignment has the following components:

1. **Visuals-** No more than 8 PowerPoint slides and no fewer than 4 are required to accompany the memo. At least 1 slide must be a photograph.
2. **Public Speaking-** Students will present their slide decks in class, making their case in no more than 3 minutes.
3. **Memo-** No more than two pages in length, the memo should be addressed to the appropriate stakeholder/donor/decision-maker and outline your position and request in a clear and straightforward manner.
4. **Audio-** Based on feedback from the class, students may record an audio narration on the PowerPoint slide deck using the voiceover tool that is part of PowerPoint. NOTE: <u>Students receiving a grade for the class must complete this final step</u>. Those taking the course for a certificate may do so if they wish. Select decks from each classroom site/country will be posted on the course website and the I-TECH website for a year.

This assignment aims to integrate key teachings from the course. One of the fundamental elements of effective leadership is strong communication- whether it including speaking or writing, how we engage with our colleagues and clients, or how we approach and partner with stakeholders. The assignment aims to address core competencies in written communication, public speaking, targeting multiple learning styles, and being able to hear feedback from peers.

Digital cameras will be available for loan at each site in order for everyone to be able to complete this assignment.

Missed Sessions

As much as possible, regular and full attendance is expected for all course sessions. If a participant is forced to miss a class, the instructor or on-site course facilitator will direct him/her to view the missed session in the archives on the course website. He/she will demonstrate completion of the archived session by identifying a word or phrase that will be embedded in each session. Identifying this word or phrase will prove to the instructor that the session has been made up. Two exceptions to regular attendance are anticipated for some participants:

- Session 2 on April 5th falls on a holiday for some course participants. All who miss will be allowed to take the archived session, but must do so before Session 3 on April 17th. It is also possible to take the session live from home.
- Some course participants in Namibia attended a workshop in March 2010 that replicates course content in several sessions. They are encouraged to attend all sessions, but may be more readily excused from sessions they have already taken.

Expectations: Grade or Certificate

Grading/Credit

Registered graduate students at UW can take this course for 3 graded credits. This group has the option to meet with the instructor for 1 hour every Friday on the UW campus (from 2:00-3:00 pm) in addition to participating in the classroom sessions. The final project is worth 50% of the final grade. Grading of the final assignment will be based on clarity and logic of the written document (15%) and organization, effectiveness of the verbal presentation (15%), and overall creativity and persuasiveness of the multi-media package. Other weekly assignments will total 35% of the final grade, and 15% will be allocated for active participation in discussion and evidence of weekly preparation (i.e., required reading).

Certificate

All other course participants will receive a certificate from UW for completing the course requirements. Those requirements include, for all:

- Attendance at all classroom sessions, if possible. If an exception is made by the instructor or on-site course facilitator, the course participant may view the archived session on the website to make up for an excused absence. A word or phrase will be embedded in each session that must be identified by the course participant before credit will be given for the make up session.
- Participation in and completion of all assignments.

Other Expectations

Graduate students at UW are expected to produce work at a grade level of 3.5 and above. Students can work toward a higher grade by demonstrating strong analysis, integration, and synthesis skills in all assignments. Students are expected to attend classroom sessions, complete the reading, and participate in discussion and assignments. Instructors are expected to create and support a rich and collegial learning experience for course participants.

Disability Accommodation: If you are in Seattle and would like to request academic accommodations due to disability, please contact Disabled Student Service, 448 Schmitz, 543-8924 (V/TTY). If you have a letter indicating you have a disability that requires academic accommodation, please present to the instructors for discussion. Equal Opportunity and Disability Accommodation: http://www.washington.edu/admin/eoo/EOO_policy_01.html

Plagiarism Policy: Students at the UW are expected to maintain the highest standards of academic conduct. The UW and the School of Public Health have established clear guidelines on what constitutes plagiarism. Please visit the School of Public Health website for a detailed explanation and additional resources: http://sph.washington.edu/gateway/plagiarism.asp

Leadership Development
for Global Health Managers (GH 522a)
Course Syllabus Autumn 2010

Course website: https://catalyst.uw.edu/workspace/nmc3/16462/

Days:	Monday
Times:	10:30-12:20 pm
Place:	Bloedel 392

Instructor:	Nancy M. Campbell, M.A.
Email:	nancy@nmcampbell.com
Office Hrs:	Before class or by appointment
Credits:	Two

Course Description:

Leadership matters. Effective leaders not only can analyze issues and make good decisions; they also know how to inspire and influence others to deliver services. In short, they know how to get ideas implemented through others. To do this requires the ability to understand one's self and impact on others, how to effectively engage and challenge others and how to constructively leverage cultural differences.

This class is designed to expand the student's capacity to support individuals, groups and organizations to work together in productive and meaningful ways. It is designed to give you an understanding of your current level of leadership performance and effectiveness, your strengths and your development needs. The course relies heavily on assessment, feedback and interactive activities. Assessments will measure leadership competencies, influencing style, emotional intelligence, communications approach, personality and interpersonal relations. A key element of the class is designing an action plan for further personal and professional growth and development.

The class design allows for self-reflection on the social, spiritual, mental, and physical dimensions of leadership. It provides an opportunity for you to explore "what makes a person effective in a variety of leadership roles and processes."[1] To be effective in leadership roles and processes assumes a willingness to learn about one's abilities and capacities and a desire to change and grow. While the class explores what leaders do within the context of teams and organizations, it focuses primarily upon an individual's efforts to demonstrate effective leadership.

There are no examinations in this class. The exercises throughout the class are designed to help you incrementally complete the final assignment which is your leadership development plan. This means you have a lot of work in the beginning of the class but by the time you get to the end of the class and finals week you should be finished with your course work. All readings and assignments are on the class website. Part of your grade is based on the level and quality of your interaction with your small group. Many of your assignments are group assignments. The group is a resource to help you understand your assessment data and to develop your leadership development plan.

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[1] The Center for Creative Leadership Handbook for Leadership, p. 4

This class is the first in an integrated three course sequence that focuses on preparing health professionals in the public, private, academic and donor sectors to transform organizations, systems, and environments to achieve health for all. The first class focuses on individual leadership competencies while the second and third courses in the sequence focus on organizational leadership and management and context and systems leadership. While there is no requirement to take all classes in the sequence, the sequence is designed to integrate skills, behaviors and knowledge developed in each class.

Course Objectives:

The fall quarter learning objectives include:

- Identify and describe competences required for effective leadership and management in public health
- Identify and describe the impact of personality and emotional intelligence upon leadership style
- Define the difference between impact and intent in leadership style
- Identify and describe the impact of cultural influences upon leadership style and strategies for managing cultural differences
- Describe the attributes, qualities and characteristics of an organizational learning environment that fosters individual and team growth and learning
- Develop a personal mission and vision to guide leadership development and growth
- Identify strengths in influencing others and areas for development
- Refine communication and public speaking style and strategies
- Understand how to transition others through organizational change
- Develop a frame through which to reconcile the nature of leadership with the reality of daily work

Course Requirements:

Two journals (25%)
Group Meetings and online conversations (25%)
Leadership Development Plan (40%)
Assessments: EQ-I, MBTI, Learning Style, Bias Assessment (10%)

Topic Outline and Readings:

Week 1

4 October   The Context of Leadership

- Overview of class
- Leadership Past, Present and Future
- The role of leaders in public health

Jo Ivey Boufford, <u>Leadership Development for Global Health</u>, Chapter 12, John Wiley and Sons, 2005.

2

Joseph Dwyer, et. al, Management Sciences for Health: An Urgent Call to Professionalize leadership and management in Health Care Worldwide, 2006.

Jonathon Gosling and Henry Mintzberg, *The Five Minds of a Manager,* Harvard Business Review, 2003.

David Whyte, Crossing the Unknown Sea: Work as a Pilgrimage of Identity, Chapters 1-2, Riverhead Books, 2001.

Assignment: David Hoffman A and B Case. Read B Case until May 30th Report. Complete Bias Assessment.

Week 2

11 October   The Role of Context and Culture

- Where culture comes from?
- Where Individual, team and organizational culture comes from
- The impact of culture on leadership style

Malcolm Gladwell, Blink: The Power of Thinking Without Thinking, Chapter 3, Little, Brown and Company, 2005.

Edgar H. Schein, Organizational Culture and Leadership, Second Edition, Chapter 1, Jossey-Bass, 1992.

Fons Trompenaars and Charles Hampden-Turner "An introduction to Culture" in Riding the Waves of Culture, McGraw Hill, 1998, pp. 1-12.

Assignment: Complete MBTI assessment; develop first draft of core values, create operating rules for your group and propose same for class.

Week 3

18 October   The Role of the Learning Environment in Leadership

- The Building Blocks of a Learning Environment
- The Role of Learning Styles
- Learning Style Assessment

David A. Garvin, Amy C. Edmondson and Francesca Gino, *Is Yours a Learning Organization?* Harvard Business Review, March 2008.

Assignment: Meet with your group to discuss your personal mission.

Week 4

25 October The Leadership Development Process

- Defining the leadership development process
- Defining leadership and management
- Identifying core values
- The role of person mission
- Authentic Leadership

Clayton M. Christensen, *How Will You Measure Your Life*? Harvard Business Review, 2010.

Jim Collins, *Level Five Leadership,* Harvard Business Review, January 2001.

Robert M. Galford and Regina Fazio Maruca, Your Leadership Legacy, Chapter 4, Harvard Business School Press, 2006.

John W. Gardner, Speech to The Active Living Institute, Stanford, CA, 2000.

Assignment: First Draft of Personal Mission. Complete EQ-I assessment.

Week 5

1 November   Self Awareness: The Foundation of Interpersonal Success through the Lens of Personality

- Getting accurate assessment
- The role of feedback
- Forms of feedback
- The limitations and strengths of this form of assessment
- Defining preferences
- The role of personality in leadership style

Craig T. Chappelow, *360 Feedback,* Center for Creative Leadership: Handbook of Leadership Development, Chapter 1, Jossey-Bass, 1998

Naomi, L. Quenk, Was That Really Me?, Introduction and Chapter 1, Davies-Black, 2002.

Assignment: First journal due next week.

Week 6

8 November   Self Awareness: The Foundation of Interpersonal Success thru the lens of
                 Emotional Intelligence

- What is emotional intelligence?
- Emotional intelligence and productivity
- The styles of emotionally intelligence leaders

Daniel Gilbert, Stumbling on Happiness, Chapters, 9-10, Vintage Books, 2007.

Daniel Goleman, The Neuroanatomy of Leadership, Primal Leadership, Chapter 3, Harvard Business School, 2002.

Daniel Goleman, Social Intelligence and the Biology of Leadership, Harvard Business Review, September 2008.

Stephen, J. Stein & Howard, E. Book, The EQ Edge, Exploring Emotional Intelligence, Jossey-Bass, 2006.

Assignment: Second Journal due next week.

Week 7

15 November   Effective Influencing

- The Role of Decision-making and Personality
- What people listen for
- Power and Influence

David C. McClelland and David H. Burnham, Power is the Great Motivator, Harvard Business Review, January 2003

William H. Peace, The Hard Work of Being a Soft Manager, Harvard Business Review, December 2001

Deborah Tannen, The Power of Talk: Who Gets Heard and Why, Harvard Business Review, 2002.

Assignment: Meet with group and complete Group Assignment 4 and Work on your Leadership Development Plan.

No Class November 22

Week 8

29 November   Leading Change

- Becoming the Change you Want to See
- Transition then Change
- Positive Deviance: Change Agents in Communities

William Bridges, <u>Managing Transitions</u>, Chapters 1 and 3, Perseus Books, 2003.

Marshall Goldsmith, <u>What Got You Here Won't Get You There</u>, Hyperion Press, Chaps. 3-4., 2007

Richard Tanner Pascale and Jerry Sternin, *Your Company's Secret Change Agents*, Harvard Business Review, May 2005.

Assignment: Leadership Development Plan Due.

Week 9

6 December   Creating a Legacy

- The Imagined End
- Defining Your Legacy

Marshall Goldsmith, *Ask, Learn, Follow-up and Grow,* Excerpt from <u>The Leader of The Future.</u>

Dov Seidman<u>, How: Why How We Do Anything Means Everything in Business (and in Life)</u>, Chapter 12, John Wiley and Sons, 2007.

GH 523 –Organizational Leadership and Management for Global Health

Syllabus - Winter Quarter 2011

Instructors:
William E. Welton, DrPH, MHA
Senior Lecturer and MHA Program Director
Tel: 206-685-5294 (W)
wwelton@u.washington.edu

Stephen Gloyd, MD, MPH
Professor, Department of Global Health
Tel: 206-616-2922 (W)
gloyd@u.washington.edu

Teaching Assistant:
Chloe Waters, MSW/MPHc
Tel: 206-446-8007 (C)
cdwaters@uw.edu

Office hours and location: TBD

Course meeting times and location: Wednesdays, Jan 5 – March 10, 2:00 – 3:50 pm
Room: I-132, Health Sciences Building

Course Description:

This management course is intended to provide a foundation for developing a generic and holistic
leadership perspective and for developing a clear sense of the issues associated with organization,
financing and delivery of health care services within a global health context. Students will be introduced
to the study of health care organizations using strategic organizational management concepts. The
course introduces skills in organizing, managing, and leading complex systems and processes within a
variety of local, regional, national and/or global contexts. A particular focus will be on managing human
resources, budgeting and financing, and grant management.

Leadership, Policy and Management (LPM) Seminar Sequence:

This 2-credit management course is the second part of the three-part course series developed for the
LPM track of the Global Health MPH program: The three parts are: 1) Individual Leadership, 2)
Organizational Leadership & Management for Global Health, and 3) Global Health Policy Development.
This series of courses in their totality provides Global Health MPH students with opportunities to
develop, integrate, and apply a broad range skills required for organizational leadership and
administrative career advancement in internationally-based or oriented health delivery organizations,
including non-governmental organizations (NGOs), ministries of health, universities, and donor agencies.

It is likely that much of the work that students will do in their management careers will take place in the

context of complex relationships between and within NGOs, donors, and Ministries of Health. The degree of career success is often directly related to success in managing the resources of these organizations (especially finances and human resources) and managing these relationships between organizations and systems. This course is designed to help students develop skills to address these management challenges.

Course Objectives:

The broad goal of this course is to create an introductory management concept and skill foundation for the Global Health Leadership Management and Policy course sequence. Specific learning objectives for the course are included in the table below:

1. Explain core management, economic and organizational change concepts and theories within the distinctive systemic context of primary health care in low income countries (LICs).

2. Use strategic management and leadership perspectives developed within the course, with key 'mental models' presented and applied throughout the course: the 'Baldridge Model for Health Care Performance Excellence.'

3. Explain core principles and tools for human resource management, including planning, hiring, evaluation and team building.

4. Explain core principles and tools for financial management, including budget development and projections, budget variations and financial reporting. Develop strong personal presentation skills through successful completion of presentation projects.

5. Illustrate and integrate the application of core concepts of management theory and of management and organizational change processes within an understanding of the managerial role and the exercise of executive leadership required to achieve strategic program effectiveness and financial goals within an overall context of stakeholder accountability.

6. Actively participate in class assignments, class discussions and group activities, using that participation experience to develop a personal and professional value system for supporting personal leadership skills and guiding career development priorities.

7. Form judgments about the utility of developing and applying 'mental models' to guide management analysis and decision-making and their utility in creating 'heuristic tools and skills' supporting strategies to increase management effectiveness.

Learning Philosophy and Methods:

Philosophically, the course uses experiential and reflective learning methods wherever possible. *The use and integration of group and individual learning as well as experiential and reflective learning is encouraged throughout the course.* Students are expected to take responsibility for their learning within the context of their own experience and to share their learning and insight with others within class discussions and team-oriented learning projects. The instructors will facilitate and support the student-specific and team-based learning processes throughout the course. The intent is to create and support a collegial learning atmosphere.

2

Through this group learning mechanism students will be able to develop and apply their understanding of organizational, management, and leadership knowledge, skills, and competencies necessary for successful health care management practice within a global health context. Applying theory and principles from these readings within team projects and class discussions will allow students to explore their application in ways that magnify learning.

Course Requirements:

Although students are expected to learn the specifics of the topics within the course, the real emphasis will be on their ability to think critically, and to understand, interpret and apply their learning in actual context. Instructors will be looking for evidence of critical thinking, integration and application of theory to practice, and for active contributions to class discussion and group projects. Therefore, students will be challenged to interpret and apply course knowledge and concepts from their experience and from a variety of resources accessed throughout the course.

The student's grade for the course is based on the following:

- Individual written assignments – budget analysis and memo on HR issue   40%
- Team Case Assignment Presentations: (team grades)   40%
- Class participation in discussions   20%

WRITTEN ASSIGNMENTS: Students will be required to complete two individual assignments relating to a single case study regarding district-level primary health care strengthening in Mozambique.
- Assignment #1 is a 500 word memo analyzing human resource needs and issues in the district.
- Assignment #2 is an annual budget and budget narrative for a district

Both assignments will be presented and discussed in class. Additional information on the assignments will be given to students during the course.

TEAM CASE ASSIGNMENT (TCA) PRESENTATION: The Team Case Assignment (TCA) requires six (6) teams of 6 students to develop and deliver specific case study analyses in which the students demonstrate their ability to 'understand, interpret, and apply' specific knowledge elements and concepts. Each team is expected to deliver a 20-minute PowerPoint presentation in which the group demonstrates its ability to do this in relationship to the Mozambican case study used within this course.

Three teams [1 – 3] will analyze the Mozambican case study from the context of the adequacy of the Mozambican systemic framework and system operations to support achievement of systemic goals at the local level using the 'WHO Health Systems Framework.'

The other three teams [4- 6] will analyze work of the local delivery organization(s) within the Mozambican case study using the 'Baldridge Health Care Performance Model' to suggest how the Mozambican health system framework could be improved to better support local attainment of systemic goals.

All student teams will present recommendations regarding health system-level strategies for strengthening district level health system operations in Mozambique.

Presentations will be 20 minutes each in the final class session. Students will apply skills and concepts developed within the GH 523 class. The assignment is designed to use shared student experiences and real world application situations within a typical Ministry of Health.

In this assignment, each team is expected to focus on the real-world management situation presented within the Mozambican case study and to discuss the relationship between and among:

a) Teams 1 – 3 will each analyze the effect of 'The Systemic Framework' in creating an 'environmental context' (including Project Goals) to guide development and operations of local delivery organizations using the 'WHO' System Framework model or

b) Teams 4-6 will analyze the structure and operation of the local operating organization described within the Mozambican case study given using the elements of the Baldridge Model' [including its 1) Leadership, 2) Strategic Planning, 3) Marketing, 4) Workforce, 5) Process Management, 6) Measurement and 7) Outcome elements – with a focus on Human Resource and Financial Process elements]. Teams 4 – 6 will also focus on improvements in the Health System Framework [described using the WHO model] which may be necessary to improve the circumstances supporting local operation.

The assignment will provide an opportunity for each individual student and team to develop applied learning insights. Moreover, sharing of those insights with each other in an experiential context is expected to enrich the learning environment for the entire class.

The TCA is a collaborative effort between each student team and the instructor. To this end, the instructor is available for consultation to assist student teams in planning their case study approaches during the weeks preceding their scheduled presentations.

CLASS PARTICIPATION: Students are expected to attend class, develop a comprehension of assigned materials before class, come prepared for discussion, and to submit required assignments on time.

Course/Instructor Evaluation:

Each student is also requested to evaluate the course on a special form to be handed out during the quarter.

Disability Policy:

If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to the instructor and teaching assistant so we can discuss the accommodations you might need for class.

Plagiarism Policy:

4

Students at the University of Washington are expected to maintain the highest standards of academic conduct. The University of Washington and the School of Public Health and Community Medicine (SPHCM) have established clear guidelines on what constitutes plagiarism. Please visit the SPHCM website on plagiarism for a detailed explanation and additional resources:

http://sphcm.washington.edu/gateway/plagiarism.asp

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SESSION-SPECIFIC TOPICS & RESOURCES

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Session 1 – Wednesday, January 5

TOPICS: **Organizational Landscape** (Welton)
Global Health Management Landscape (Gloyd)

MENTAL MODELS:
- Holistic Enterprise Organizational Management Model (Brache)
- Baldridge Health Care Excellence Model (Baldridge NQP)
- World Health Organization (WHO) Leadership & Management in Health Systems Framework

READINGS AND RESOURCES:
- Gosling J., and H. Mintzberg, "The Five Minds of a Manager," Harvard Business Review, November, 2003.
- Kotter, J, "What Leaders Really Do," Harvard Business Review, May/Jun 1990; Vol. 68, Issue 3
- Gilerman GL. Closing the management competence gap. *Human Resources for Health.* 2003, 1:7 (http://www.human-resources-health.com/content/1/1/7)
- Egger et al., *Strengthening Management in Low Income Countries*, Department of Health System Policies and Operations, Evidence and Information for Policy – World Health Organization, Working Paper #1, 2005.

USEFUL RESOURCES FOR COURSE:
- *Everybody business: strengthening health systems to improve health outcomes: WHO's framework for action.* World Health Organization, 2007.
  [http://www.searo.who.int/LinkFiles/Health_Systems_EverybodyBusinessHSS.pdf]
- Baldridge National Quality Program, Health Care Criteria for Performance Excellence, 2009-1010 (http://www.quality.nist.gov/PDF_files/2009_2010_HealthCare_Criteria.pdf)

Session 2 – Wednesday, January 12

Human Resources: Components and approaches (Welton, Kala)
- HR management capacity
- HR planning
- Personnel policy and practice

- HR management data
- Performance management
- Training

Role of Culture and Values in Human Resource management (Monagan)

Guests –Manish Kala (Director of Human Resources, HAI), George Monagan (Assistant Director of Operations – Mozambique, HAI)

READINGS AND RESOURCES:

- Management Sciences for Health – Human Resource Management Assessment Tool (24 pages) (http://erc.msh.org/newpages/english/toolkit/hrd.pdf

- Management Sciences for Health – Human Resources Toolkit (http://erc.msh.org/mainpage.cfm?file=2.8.0.htm&module=hr&language=English)

- Management Sciences for Health – Tackling the Crisis in Human Capacity Development for Health Services. *The Manager*, 2003. Vol. 13, No. 2, (http://erc.msh.org/TheManager/English/V13_N2/V13_N2_En_Issue.pdf),

Session 3 – Wednesday, January 19

TOPIC: **Team Building Strategies** - *Ed Walker (Professor, Department of Health Services)*

READINGS AND RESOURCES: TBA

Session 4 – Wednesday, January 26

TOPIC: **Employee relations and incentive strategies**
- Supervision
- Personnel policy and practice
- Performance Management
- Conflict resolution

Guests –Manish Kala (Director of Human Resources, HAI), [Or Wilkinson?]

Assignment 1 – HR memo to Supervisor due 2/2

READINGS AND RESOURCES: TBA

Session 5 – Wednesday, February 2

TOPIC: **Challenges for Program Planning and Goals**
- 3-5 year cycles

- What is scale?
- Sustainability
- Diffusion of innovation

Guest – Dan Kraushaar (Management Sciences for Health, formerly Bill and Melinda Gates Foundation)

READINGS AND RESOURCES: TBA

Session 6 – Wednesday, February 9

TOPIC: **Developing budgets**
- Developing project proposals
- Pricing and costing
- Direct and indirect costs
- Fixed and variable costs

Guest –Eric Walker (PATH)

READINGS AND RESOURCES:

- Management Sciences for Health – Assessing Your Organization's Capacity to Manage Finances. *The Manager, 2003.* Vol. 12, No. 2.
  (http://erc.msh.org/TheManager/English/V12_N2/V12_N2_Issue.pdf)

Session 7 – Wednesday, February 16

TOPIC: **Managing and reporting budgets**
- Financial monitoring and tracking
- Tools – variance reports, pipeline analysis
- Quarterly and annual reports, financial projections
- Defining and managing indirect costs

Guests –Dan Chang (Director of Operations, HAI)

Assignment 2 - District budget template (due 2/23)

READINGS AND RESOURCES: TBA

Session 8 – Wednesday, February 23

Topic: **Donor management and coordination at Provincial and District Levels**
Coordination: Gloyd

Readings: TBD

Topic: **Monitoring and evaluation / Program Evaluation**
- Logic models
- Indicator selection
- Validation of data
- Decision making and policy

Guests – Sarah Gimbel (M&E, HAI)
Readings: TBA

Topics:
Final Team Case Assignment Presentations (Gloyd, Welton)
Course wrap-up and synthesis
Course evaluation

2011 COURSE PLAN
GH 590E Managing Global Health Programs for Success

	Content	Readings & Tools	Case Study	Assignments	Responsible person
Session 1 January 4 Intro.	Introduction to course flow Project framework Summaries of Case Study Projects	Case Study Overviews	N/A		Jackie Sherris & Eric Walker
Session 2 January 11 Partnering	Design • Selecting the partners Implementation • Engaging and working effectively with partners Project End • Handing off to partners/stakeholders	Case study partnering plans Creating and Sustaining Effective Collaboration Principles for private sector collaboration Grant making to other partners (short white paper on partnering with NGOs/CBOs)	HPV vaccines: Evidence for Impact (Jackie Sherris &/or Vivien Tsu)	Groups state case study choice for mid-course and final project.	Eric Walker
Session 3 January 18 Donor relations	Design • Scanning the landscape • RFP vs. LOIs • Managing donor response and finalization Implementation • Ensuring the right approvals/procedures (e.g. research ethics) • Interacting effectively with donors • Responding to donor concerns and changes Project End • Maximizing chances that findings are utilized	Case study proposals BMGF Proposal Guidelines US Fed Business Opps site (www.fbu.gov) and www.grants.gov	Ultra Rice (Carmen Forsman & Dan Grundy		Jackie Sherris

	Content	Readings & Tools	Case Study	Assignments	Responsible person
Sessions 4 January 25 **Work planning**	Design • Understanding the proposal sections • Crafting the technical plan • Assessing the proposal • Considering the proposal design Implementation • Establishing work plans • Responding to external project challenges – political, climactic, epidemiological, etc. • Reporting progress Project End • Final reports	Case study workplans BMGF annual report guidelines PATH work planning templates	Special lecture: USAID Overview (Eric Walker)		Eric Walker
Session 5 February 1 **Work planning (cont)**	As above. Discussion of mid-term case assessments.		Influenza Vaccine Project (Kathy Neuzil)	Mid-term case assessment assignment due	Jackie Sherris
Session 6 February 8 **Budgeting**	Design • Building the budgets Implementation • Financial stewardship and tracking Project End • Financial close out	Case study budgets and budget narratives PATH financial tracking tools	Designing Health Management Information Systems for Sustainability (David Lubinski)		Eric Walker
Sessions 7 February 15 **M&E**	Design • Designing the M&E framework Implementation • Establishing M&E plans • Managing with M&E plan • Disseminating findings and managing data during a project Project End • End of project evaluation • Disseminating results effectively (what worked and what did not work)	Case study M&E plans PATH M&E guidance PATH online M&E course	HPV vaccines: Evidence for Impact (Scott LaMontagne)		Jackie Sherris and Jeff Bernson

	Content	Readings & Tools	Case Study	Assignments	Responsible person
Session 8 February 22 **M&E** (cont)	As above – in-depth M&E guidance from Jeff Bernson Reserve 45 minutes for discussion/questions from teams on their cases – invite some project representatives to join.	PATH M&E guidance PATH online M&E course	All available case study representatives join for case study discussions		Jackie Sherris and Jeff Bernson
Session 9 March 1 **Teaming /staffing**	Design ▪ Finding key personnel ▪ Balancing staffing needs with funding constraints Implementation ▪ Forming strong teams ▪ Responding to internal project challenges – staffing, internal collaboration, communication, etc. ▪ Responding to external project challenges – political, climactic, epidemiological, etc. Project End ▪ Engaging staff in ongoing work and advocacy related to project findings.	Sample PATH teaming agreement	Special lecture from donor on partnering for effective implementation?		Eric Walker
March 8 – week 10	Group work session: Eric and Jackie unavailable (Extra session with PATH President Chris Elias and other professional related to project design, implementation, and completion will be arranged for another date)	N/A	N/A	N/A	N/A
Finals week session (TBD)	Final case presentations			Group presentation due Reflection paper due	Jackie Sherris, Eric Walker, Jeff Bernson

Global Health Project Life Cycle – Managing for Success
Project Framework

	Design	Implementation	Project End
Partnering	▪ Selecting the partners	▪ Engaging and working effectively with partners	▪ Handing off to partners/stakeholders
Donor relations	▪ Scanning the landscape ▪ RFP vs. LOIs ▪ Managing donor response and finalization	▪ Ensuring the right approvals/procedures (e.g. research ethics) ▪ Interacting effectively with donors ▪ Responding to donor concerns and changes	▪ Maximizing chances that findings are utilized
Work planning	▪ Understanding the proposal sections ▪ Crafting the technical plan ▪ Assessing the proposal ▪ Considering the proposal design	▪ Establishing work plans ▪ Responding to external project challenges – political, climactic, epidemiological, etc. ▪ Reporting progress	▪ Final reports
Budgeting	▪ Building the budgets	▪ Financial stewardship and tracking	▪ Financial close out
M&E	▪ Designing the M&E framework	▪ Establishing M&E plans ▪ Managing with M&E plan ▪ Disseminating findings and managing data during a project	▪ End of project evaluation ▪ Disseminating results effectively (what worked and what did not work)
Teaming/staffing	▪ Finding key personnel ▪ Balancing staffing needs with funding constraints	▪ Forming strong teams ▪ Responding to internal project challenges – staffing, internal collaboration, communication, etc. ▪ Responding to external project challenges – political, climactic, epidemiological, etc.	▪ Engaging staff in ongoing work and advocacy related to project findings

BIOST/EPI 536
CATEGORICAL DATA ANALYSIS IN EPIDEMIOLOGY
AUTUMN 2005

PREREQUISITES: BIOST 513 and EPI 514; or BIOST 517 and EPI 514; or BIOST 515; or permission of the instructor

HOURS: Lecture: Tuesday, Thursday 1:30-3:20, Health Sciences T-733
Discussion: Tuesdays 12:30-1:20, Health Sciences T-733
(Oct. 4, Oct. 11, Classroom C, HS Microcomputer Lab)

INSTRUCTOR: Barbara McKnight, Ph.D.
Professor
Department of Biostatistics
F-672 Health Sciences; 543-1044
e-mail: bmck@u.washington.edu

Office Hours: Tuesday, 10:00-11:00 (except Nov 22).
Thursday, 10:00-11:00
or by appointment

TEACHING ASSISTANTS:
Yea-Hung Chen
Office: HS Microcomputer Lab
Email: yeahung@u.washington.edu
Office Hours:
Monday 10:30-12:00
Wednesday 10:30-12:00

Eva Wong
Office: HS Microcomputer Lab
Email: evawong@u.washington.edu
Office Hours:
Tuesday 10:30-12:00

Vicky Chia
Office: HS Microcomputer Lab
Email: vmc2@u.washington.edu
Office Hours: Thursday 3:30-5:00

REQUIRED TEXTS: Breslow N. and Day N., <u>Statistical Methods in Cancer Research, Volume 1: The Analysis of Case Control Studies</u>. IARC Scientific Publications No. 32, Lyon, 1980. A small number of these are available at the University Bookstore (medical branch). The text can also be ordered at a 30% student discount plus shipping from the IARC (see http://www.iarc.fr/IARCPress/general/howtoorder.pdf for information), and I have put a copy on reserve in the library.

Lecture notes available on the class Web site and in class.

RECOMMENDED BOOKS: Clayton & Hills: <u>Statistical Models in Epidemiology</u>. Oxford, 1993.
(on reserve in library)   Collett: <u>Modelling Binary Data, 2nd ed.</u>. CRC Press, 2002.
Hosmer and Lemeshow: <u>Applied Logistic Regression, 2nd ed.</u>. Wiley, 2000.

EXTRA HANDOUTS: Extra handouts from class sessions will be available in a file cabinet near the receptionist's desk in the Department of Biostatistics, F-600. They are filed by date under "McKnight/Biostat 536" (purple headers). If the handout you seek is gone, please ask the secretary for the course, Jennifer Hopkins (marlowe@u.washington.edu), to make you another copy. Jennifer's desk is in the hallway next to F649.

VIDEOTAPES: Videotapes of class sessions are available at the Health Sciences Reserve desk for 4 hour check-out.

COMPUTER SOFTWARE: We will be using Stata 9.0 in the Health Sciences Microcomputer Laboratory. Discounted personal copies of Stata 9 are available for UW Health Sciences faculty students and staff via the Stata web site at:
http://www.stata.com/info/order/new/edu/gradplans/gp3-order.html
If you purchase a copy of Stata, I recommend getting <u>Intercooled</u> Stata 9.

CLASS WEBSITE: Homework assignments and many lecture notes will be available on the class website: http://courses.washington.edu/bs536. A class discussion board, maintained by the TAs and the instructor, will also be available there.

DISABILITY: If you would like to request academic accommodations due to a disability, please contact Disability Resources for Students, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disability Resources for Students indicating you have a disability that requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need for class.

HOMEWORK POLICY: I view the homework in this class as an important part of the <u>process</u> of your <u>learning</u>, and not as a part of the <u>evaluation</u> of your <u>learning</u>. Thus, you do not need to give a correct answer for the questions, but you do need to provide evidence of your thought processes on <u>each question</u>, so that graders can tell that you made an effort. Also, because the material in this course is sequential, it is important that you complete homework and turn it in <u>on time</u>, at the <u>beginning</u> of class on the day it is due, so that you are ready for the discussion and new material that follow it. If you cannot attend class on the day a homework assignment is due please email your homework to the instructor and to all three TAs <u>before</u> class. Late homework will <u>not</u> be accepted.

EMAIL: I am happy to answer email questions when I have time, but can only guarantee to read and respond to email on Tuesday, Wednesday and Thursday mornings.

LEARNING ENVIRONMENT: I take seriously my role as an advocate for your learning in this class. In addition to providing information, assignments and activities that I hope will support your learning, I will do my best to help us maintain the classroom as a supportive learning environment. To that end, I ask that we all commit to showing respect to each other both inside and outside of class. One way we can do this is by avoiding behavior that might be offensive or distracting to others in the classroom. For example:

- Please listen respectfully to other students' comments during discussions and avoid interrupting them.
- Please avoid conversations when another student or the instructor is speaking.
- If you disagree with another student's opinion, please do so respectfully and constructively.
- Please turn off all cell phones before entering class.
- Please place any pagers on vibrate mode before entering class.
- If you might need to leave during class, please sit on the aisle near the door so that you minimize any disruption when you leave.
- Please try to arrive in enough time to be settled when class begins.
- If you are late to class, please perform any necessary unpacking in the hallway before entering the classroom.
- Please avoid chewing crunchy food or rattling food wrappers or other papers during class.

COURSEWORK:

Daily Homework	
Quizzes (closed book, open calculator)	Tues Oct. 11; Tues Oct 25; Tues Nov 8; Tues Nov 22; each, one-half hour in class
Data Analysis Project 1	Due Tuesday, Nov. 15
Data Analysis Peer Review	Due Tuesday, Nov. 29
Data Analysis Project 2	Due Thursday, Dec. 8
Final Exam (closed book, open calculator)	Friday, Dec. 16, 2:30-4:20 p.m. T733, or (if class is unanimous), Thursday December 15, 10:30-12:20, T733.

No make-up quizzes or exams will be given.

GRADING: Numerical class grades will be based on the final exam (35%), best 3 of 4 quiz scores (30%), project peer review (10%), and project 2 (25%).

In addition, homework will be marked check or minus, for whether or not it represents a good faith effort to answer all the questions. Answers need not be correct if a good faith effort was made. The course grade will be computed based on quiz, exam, project and peer review grades as detailed above, and then adjusted downward according to the chart below if an insufficient number of homework assignments were turned in on time as good faith efforts.

Percent of Homeworks handed in on time as good faith efforts:	Maximum grade possible:
85% or greater	4.0
75%-84.9%	3.6
65%-74.9%	3.3
<65%	3.0

BIOST 540 Spring 2010
Correlated Data Regression

Syllabus

Introduction to Correlated Data

Examples of correlated data are common: in household surveys, responses from two or more members of the same household are obtained; in toxicology, responses to a toxic agent are observed on individual animals from the same litter; in longitudinal studies, outcomes at several different times are observed on the same patient; in ecological studies, disease risks are compared across time or space. When outcomes are clustered (by household, litter, or patient), we use the term "clustered data" to describe data sets like these. The key feature of clustered data is that the *outcomes* on the related individuals or things from the same cluster are likely to be correlated (not statistically independent). Terms used to describe such data include "clustered data", "correlated data", and "dependent data". Proper analysis of clustered data requires taking the clustering into account -- it is **NOT OKAY** to ignore the clustering.

Intended Audience

The intended audience for this course is graduate students who have had an introduction to biostatistics, and who [a] understand basic probability concepts, such as random variables, expectation, variance and correlation; [b] understand basic statistical concepts such as the distinction between populations and samples from a population, parameter estimation, standard errors, hypothesis tests and confidence intervals, and [c] are able to carry out statistical analyses such as linear regression, analysis of covariance and logistic regression, and explain them to an epidemiological audience. Familiarity with standard epidemiologic study designs and their analysis is beneficial, as is previous experience with the statistical software package STATA.

Prerequisites

BIOST/EPI 536 and BIOSTAT 518; or premission of instructor.

Rationale for this Course

The rationale for the study of correlated data, and for this course, is described briefly below:

1. Correlated data is ubiquitous across all of the health sciences disciplines (not to mention many other disciplines outside of the health sciences).

2. Ignoring the clustering is (most often) disastrous. To obtain correct statistical inference, it is essential to acknowledge the clustering, both in study design and in statistical analysis.

3. Although correlated data are common, principles and methods for handling them receive little attention in most courses in biostatistics, statistics, or epidemiology. Consequently, without a course such as this one, there would be a gap in the training of students in these fields, virtually all of whom will encounter clustered data many times in their professional careers.

Purpose and Learning Objectives

The aims of this course are:

1. to introduce the concepts of correlated data, to describe the basic structures of correlated data, and to explain how correlation arises in common study designs;

2. to contrast the behavior of correlated data with uncorrelated data and to show how the behavior of correlated data influences design and statistical analysis;

3. to show how to analyze correlated data arising from several common correlated data structures using statistical computing packages such as STATA and SAS; and

4. to introduce more advanced topics in the analysis of correlated data.

As suggested by these aims, the course seeks to develop an *understanding* of correlated data, including how it arises, its implications for statistical inference, and how to accommodate it in statistical analysis. At the end of the course, the student should

1. be able to recognize correlated data and explain how it arises;

2. understand the impact of correlated data on design and statistical analysis;

3. know the basic structures of correlated data;

4. be able to formulate models for real-life correlated data and correctly interpret the parameters of the model;

5. be able to choose appropriate analysis methods for correlated data and explain them to a non-statistical audience;

6. know how to perform several methods of analysis of correlated data using statistical packages and be able to recognize situations that cannot be addressed by these techniques and that require expert assistance; and

7. be familiar with some of the key references on correlated data and be prepared for the study of more advanced correlated data methods.

Course Web Page and Email

http://faculty.washington.edu/yanez/b540/.

This page will be used for posting announcements, datasets and extra material as needed. Course notes will primarily be handed out in class.

Lectures, Homeworks, Assignments, Exams, and Grading

Class time will consist of lectures and class discussion of assigned readings and discussion assignments. Discussion assignments will be given approximately weekly and will include assigned readings, critiques of journal articles, data analyses, and detailed presentation and interpretation of results. Some assignments will require the use of the statistical package STATA (available in the Health Sciences Library computing lab), and other assignments can be done using a package of the student's choice (SAS, R and Splus may be useful in addition to STATA). There will be two exams: an in-class midterm exam on MAY 3, and a take-home final exam that will be distributed on JUNE 4. The examinations will include questions that test knowledge of definitions and concepts covered in the notes, understanding of these

concepts, knowledge of appropriate methods of analysis in a given situation, and ability to correctly interpret results of a data analysis based on computer output. The final course grades will be based on the following components: Midterm Examination (50%), Final Examination (50%).

The final exam will be due Wednesday, JUNE 9 -- the day of the scheduled course final exam -- at 12:00 p.m.

Course Notes

Course notes will be handed out on a weekly basis throughout the course. The notes will form the basis for the required readings for the course, and will be augmented by assigned readings from statistical and epidemiological journals. There is no required text book for this course. However, the following books are recommended as useful references for future or for supplementary material for this course.

Diggle, P.J., Heagerty, P.J., Liang, K.-Y., and Zeger, S.L. (2002). *Analysis of Longitudinal Data (2nd ed.).* Oxford: Oxford University Press. *(This is an excellent text that gives some mathematical theory as well as practical aspects and applications of methods for the analysis of longitudinal data. If you have the first edition, that will do quite well, though there are two excellent new chapters in the second edition on advanced material.)*

Fitzmaurice, G.M., Laird, N.M., Ware, J.H. (2004). *Applied Longitudinal Analysis* Wiley. *(This text provides an introductory presentation of longitudinal data methods suitable for graduate level work.*

Important Dates

March 29: First Lecture.

May 3: Midterm Exam.

June 4: Final Exam distributed.

June 9: Final Exam due (12 p.m.)

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Last Updated:
03/29/10

Appendix C: Examples of Curriculum for PhD Students in Global Health: Metrics and Implementation Science

Example #1: Curriculum for a PhD Student in Global Health: Metrics and Implementation Science with Area of Emphasis in Implementation Science

Year	Autumn	Winter	Spring
1st	Doctoral Seminar (2)* CS&SS 501 (4)* EPI 512 (4)* Elective (3-4)	CS&SS 503 (4)* EPI 513 (4)* Impact Evaluation (4)*	Doctoral Seminar (2)* GH 541 (5)* GH 533 (4)* Elective (2-3)
2nd	Doctoral Seminar (2)* HSERV 523 (4) ** GH 590 (2)**	GH 538/HSERV 521 (3)** GH 531/EPI 539 (4)** HSERV 524 (4) **	Doctoral Seminar (2)* Dissertation *** Elective (4)
3rd	[On leave - data collection]	[On leave - data collection]	[On leave - data collection]
4th	Dissertation ***	Dissertation ***	Dissertation ***
5th	Dissertation ***	Dissertation ***	Dissertation ***

*Core courses

**Area of emphasis courses

*** Dissertation will account for a minimum of 27 credit hours

Example #2: Curriculum for a PhD Student in Global Health: Metrics and Implementation Science with Area of Emphasis in Metrics

Year	Autumn	Winter	Spring
1st	Doctoral Seminar (2)* CS&SS 501 (4)* EPI 512 (4)* Elective (3-4)	CS&SS 503 (4)* EPI 513 (4)* Impact Evaluation (4)*	Doctoral Seminar (2)* GH 541 (5)* GH 533 (4)* Elective (2-3)
2nd	Doctoral Seminar (2)* HSERV 523 (4) ** GH 522 (2)** Elective (4)	CS&SS 510 (5)** GH 523 (2)** HSERV 524 (4) ** Elective (2-3)	Doctoral Seminar (2)* Biostat 540 (3)** CS&SS 527 (4)** HSERV 525 (4)
3rd	Dissertation ***	Dissertation ***	Dissertation ***
4th	Dissertation ***	Dissertation ***	Dissertation ***

*Core competency courses

**Area of emphasis courses

*** Dissertation will account for a minimum of 27 credit hours

Appendix D: Global Health Program Comparisons

Institution	School	Department/Center	PhD Options
John Hopkins University	Bloomberg School of Public Health	Department of International Health	1. Global Disease & Epidemiology Control 2. Health Systems 3. Human Nutrition 4. Social & Behavioral Interventions
Harvard University	School of Public Health	Department of Global Health and Population	1. Economics 2. Health Systems 3. Population & Reproductive Health 4. Health Policy
Tulane University	School of Public Health & Tropical Medicine	International Health & Development	International Health & Development
Tulane University	School of Public Health & Tropical Medicine	Tropical Medicine	Parasitology
San Diego State University	School of Public Health and Department of Family and Preventative Medicine		PhD in Global Health (This is a Track)
University of North Carolina	Gillings School of Global Health	Office of Global Health	1. Health Behavior & Education 2. Epidemiology 3. Health Policy & Management 4. Maternal & Child Health 5. Biostatistics
University of South Florida	College of Public Health	Department of Global Health	Global Communicable Disease
University of Queensland	School of Population Health		PhD or MPhil available
University of Sydney		George Institute for International Health	PhD research program available
University College London		Centre for International Health & Development	PhD or MPhil available

Polytechnique Federale de Lausanne Switzerland			Molecular Biology of Cancer and Infection
University of Melbourne	School of Population Health	Australian International Health Institute	1. Tobacco Control Development 2. HIV/AIDS, Youth Health 3. Maternal and Child Health
University of Leeds	Leeds Institute of Health Sciences		PhD or MPhil available
University of Liverpool	School of Population, Community & Behavioral Science	Division of Public Health	PhD in Public Health: Improvement and Maintenance of Health
University of Aberdeen	College of Life Sciences and Medicine	Department of Public Health	PhD available
Swiss Tropical Institute		Swiss Centre for International Health	PhD in Public Health 1. Cost Effective Interventions 2. Optimizing Health Systems
University of Edinburgh	The Centre for International Public Health Policy		PhD in International Public Health Policy: 1. Globalisation and Health 2. Comparative Health Systems 3. Public Private Partnership and Marketisation 4. Health Services 5. Child Injury Surveillance
Erasmus University	Medicine and Health Sciences	Department of Public Health	PhD in Public Health
Tokyo University	School of International Health	Department of International Health, School of Public Health and Medicine	PhD in Public Health PhD in Social Medicine PhD in International Health
Hong Kong University	Li Ka Shing Faculty of Medicine	School of Public Health	PhD is available

Appendix E: Letters of Support

SCHOOL OF PUBLIC HEALTH

UNIVERSITY *of* **WASHINGTON**

Office of the Dean

June 13, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

I am writing to convey my enthusiastic support for the development of a Ph.D. in Global Health: Metrics and Implementation Science within the School of Public Health. In global public health, measuring the magnitude of health problems across countries, tracking the progress of health systems in delivering preventive and curative interventions, and designing, implementing, and evaluating health interventions and programs, remain pressing challenges, in need of evidence-based solutions. This Ph.D. program will be instrumental in promoting relevant research across a range of scientific fields, and in training a cadre of skilled scientists, to fill that need.

In addition to filling global scientific and health needs, this Ph.D. makes strong programmatic sense for the University of Washington. It will complement strong existing teaching programs in Global Health, including the undergraduate minor, the graduate certificate, Masters degrees, and the Ph.D. Our School of Public Health, a top-tier school nationally, is already highly regarded in Global Health; this innovative program will further solidify our reputation in health metrics and implementation science. This program will allow us to recruit leading candidates within the field and foster innovative training opportunities while retaining faculty of the highest quality. Finally, this program will leverage excellence at other UW schools, ranging from business to medicine, and will dovetail with strong efforts locally and statewide to foster Global Health as a major economic presence.

The Department of Global Health is the ideal venue for this program. The Department has committed $100,000 per year to its operation.

In summary, the proposed Ph.D. in Global Health: Metrics and Implementation Science supports the best interest of the University of Washington's faculty and students and will be an outstanding opportunity for leaders in the global health field.

Sincerely,

Howard Frumkin, M.D., Dr.P.H.
Dean, School of Public Health

Box 357230 Seattle, WA 98195-7230
Phone: 206-543-1144   Fax: 206-543-3813   Web: sph.washington.edu
Emblem: a Northwest Coast Indian symbol of physical and mental well-being. Artist: Marvin Oliver

UW Medicine

Office of the Dean
Research and Graduate Education

John T. Slattery, Ph.D.
Vice Dean
Professor of Pharmacology and Medicine
Box 358048
815 Mercer Street
Seattle, WA 98109-4714
Phone: (206) 543-6116
Fax: (206) 221-8911
jts@u.washington.edu

May 23, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health: Metrics and Implementation Science

Dear Dean Baldasty:

I am writing in very strong support of the proposed Doctorate of Philosophy in Global Health: Metrics and Implementation Science. After reviewing the proposal, I believe that this PhD program, which includes the collaboration of the Schools of Public Health and Medicine, is instrumental in promoting research in a number of scientific fields related to measuring the magnitude of major health problems across countries, tracking the progress of health systems delivering preventive and curative interventions, and monitoring effectiveness with which health interventions and programs are implemented.

The Department of Global Health is housed in both the School of Public Health and the School of Medicine, and it is important for you to know that the School of Medicine believes that this program is completely consistent with our mission to improve the health of the public by advancing medical knowledge, providing outstanding primary and specialty care to the people of the region, and preparing tomorrow's scientists and other health professionals. In addition to training PhDs students, this new program will be available to medical students who wish to pursue a PhD in global health under the Medical Scientist Training Program (MSTP). UW Medicine's teaching and research programs are ranked among the best in the country in the 2011 rankings by *U.S. News & World Report*, and this new PhD program, if approved, would contribute to our continued excellence in research and teaching.

The School of Medicine confirms that the Department of Global Health is the appropriate department to house this new PhD program, and this program will not require additional funding from our school. Approval of this new PhD program will serve the best interests of the University of Washington's faculty and students, and will be an outstanding opportunity for developing new leaders in the global health field.

Best regards,

John Slattery, PhD
Vice Dean for Research & Graduate Education
School of Medicine

JTS/dec

UNIVERSITY of WASHINGTON

DEPARTMENT OF GLOBAL HEALTH

June 9, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

This letter is to express my strong support for the establishment of a PhD program in Global Health: Metrics and Implementation Science. The Department of Global Health is in a unique position to offer our expertise and skilled faculty to further advance programs in the field of global health at the University of Washington. I have read and had input into the proposal and find it to be a well-conceived program that would greatly enhance the graduate education and research opportunities in Global Health at the University of Washington.

A PhD program in Global Health: Metrics and Implementation Science will be instrumental in promoting research in a number of scientific fields related to measuring the magnitude of major health problems across countries, tracking the progress of health systems delivering preventive and curative interventions, and designing, implementing, and evaluating health interventions and programs. As the PhD program is first of its kind, it will allow us to recruit leading candidates within the field and foster innovative training opportunities while retaining faculty of the highest quality.

Regarding funding of this program, the Department of Global Health is presently able to commit $100,000.00 to the PhD program per year. These funds will be reallocated from within the Department of Global Health for program administration and operations and faculty support. We will hire a .5 FTE staff to provide dedicated administrative support to the program. In addition, other professional and support staff in the Department of Global Health, the Institute for Health Metrics and Evaluation and Health Alliance International will provide assistance to the program, as needed. Specifically, the staff of the Education and Curriculum Office of DGH and IHME will be resources available to help when needed.

In summary, I fully support this proposal for a PhD program in Global Health: Metrics and Implementation Science by the Department of Global Health. I am confident that funding required for this program will be available and that this proposal suits the best interest of the students, faculty, and the University.

Sincerely,

King Holmes, MD, PhD
William H. Foege Endowed Chair of the Department of Global Health

UW SCHOOLS OF MEDICINE AND PUBLIC HEALTH

Harborview Medical Center, 325 9th Avenue, Box 359931   Seattle, WA 98104-2499

TEL 206-744-8493 • FAX 206-744-3693

www.depts.washington.edu/deptgh

IHME

June 30, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

This letter is to express my strong support for the establishment of a PhD program in Global Health: Metrics and Implementation Science. The Institute for Health Metrics and Evaluation is well-positioned to bring its own expertise to bear in this program. Our faculty, already part of the Department of Global Health, would be pleased to contribute their expertise through multiple avenues – teaching, acting as dissertation advisors, and engaging students as research assistants in their ongoing work. IHME concentrates specifically on multi-disciplinary quantitative research and works with a variety of partners across the globe. The substantive research, the connections between relevant disciplinary streams, and the real world policy questions to which IHME is seeking answers complement completely such a PhD program. Indeed, I am quite certain that once the program is up and running it would enhance our engagement with students and our ability to mentor budding scholars in honing their academic skills. It would also provide an invaluable source of highly-qualified candidates for our post-graduate fellows program which would in turn afford students a viable stepping stone to faculty positions while gaining experience in a team-oriented research environment.

By measuring health, tracking program performance, finding ways to maximize health system impact, and developing innovative measurement systems, IHME provides a foundation for informed decision-making that ultimately will lead to better health globally. We bring cutting-edge science to timely and relevant policy questions. A PhD program in Global Health: Metrics and Implementation Science is instrumental to sustaining such efforts. It would help to wed the multiple fields of interest that are required to analyze and understand complex challenges in global health.

To encourage this vital connection between researchers-in-training and the growing field of health metrics and evaluation, IHME is committed to fund 2-3 PhD students per year by offering them

positions as Research Assistants (RAs). The researcher assistants will become members of the IHME community and work closely with IHME faculty, fellows, and staff. Their efforts will be integral to producing a multitude of research results critical to IHME's mission and also expose them to a range of analytic methods and approaches that build naturally, though ambitiously, from their coursework. In addition, other professional staff at IHME will provide assistance to the program, as needed.

The Institute for Health Metrics and Evaluation strongly believes that this program will assist in training global health researchers for careers in academic institutions, international organizations, and national agencies such as Ministries of Health, foundations, non-governmental organizations, and the private sector. That objective is critical to support and dovetails perfectly with IHME's mission. I enthusiastically give my personal support for this program and commit IHME's organizational resources to help make the program successful.

Sincerely,

Christopher JL Murray, MD, DPhil
Institute Director, Institute for Health Metrics and Evaluation
Professor of Global Health, University of Washington School of Medicine

HEALTH
ALLIANCE
INTERNATIONAL

June 8, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

This letter is to express my strong support for the establishment of a PhD program in Global Health: Metrics and Implementation Science. The Department of Global Health is in a unique position to offer our expertise and skilled faculty to further advance programs in the field of global health at the University of Washington. I have read the proposal and find it to be a well-conceived concept that would greatly enhance the graduate education and research opportunities within public health. I believe that the program will also integrate quite well with service learning opportunities within Health Alliance International, one of the service-oriented centers of the Department of Global Health.

A PhD program in Global Health: Metrics and Implementation Science is instrumental in promoting research in a number of scientific fields related to measuring the magnitude of major health problems across countries, tracking the progress of health systems delivering preventive and curative interventions, and monitoring effectiveness with which health interventions and programs are implemented.

Health Alliance International has committed to fund 1-2 Research Assistants (RAs) per year on faculty research grants. HAI is in the 2nd year of a 7-year program to strengthen health systems in Mozambique that provides funding for an RA. HAI has nearly 25 years of continuous funding of projects in Mozambique. In addition, HAI has projects in Cote d'Ivoire, Timor Leste, and Sudan, all of which may provide potential opportunities for RAs in this PhD program in the future – and should help strengthen HAI's activities in these countries.

Health Alliance International strongly believes that this program will assist in training global health researchers for careers in academic institutions, international organizations, and national agencies such as Ministries of Health, foundations, non-governmental organizations, and the private sector.

Sincerely,

Stephen Gloyd, MD, MPH

Executive Director
Health Alliance International

Professor
Departments of Global Health and Health Services
Schools of Medicine and Public Health
University of Washington

UNIVERSITY OF WASHINGTON
INTERNATIONAL AIDS RESEARCH AND TRAINING PROGRAM

June 10, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

I am pleased to have this opportunity to state my strong support for the establishment of a PhD program in Global Health Metrics and Implementation Science. This PhD program has been developed in the context of what other departments in the Schools of Public Health and Medicine offer in terms of training and it clearly fills an important gap in graduate education. I believe the program will be instrumental in promoting research in a number of scientific fields related to measuring the magnitude of major health problems across countries, tracking the progress of health systems delivering preventive and curative interventions, and monitoring effectiveness with which health interventions and programs are implemented.

As Director of the UW International AIDS Research and Training Program (IARTP), I am especially excited about the launch of a new PhD program in global health which will address research training needs in resource-limited settings where the UW has a number of collaborative projects. The IARTP has been training scientists and clinicians in several countries at the UW for the last 23 years. More than 75 trainees have completed a doctoral degree or master's in public health degree at the UW with IARTP support. I anticipate that IARTP trainees in the future will be very interested in pursuing this program because of its focus on metrics and implementation science. The IARTP would be enthusiastic about funding these students and I believe that many of the faculty in our Kenya Research Program will be eager to support students in the program as research assistants who will work with us on individual projects.

Sincerely,

Carey Farquhar, MD, MPH
Associate Professor,
Departments of Medicine, Epidemiology, and Global Health
Director, International AIDS Research and Training Program

325 Ninth Ave Box 359909 Seattle, Washington 98104-2499 USA (206) 543-4278   FAX: (206) 543-4818   Email: iartp@u.washington.edu

University of Washington
DEPARTMENT OF GLOBAL HEALTH

June 17, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

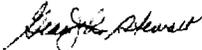RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

This letter is enthusiastic support of a PhD program in Global Health: Metrics and Implementation Science. I have read the proposal and find it to be a carefully designed program that serves an important need; the PhD program would greatly enhance the graduate education and research opportunities at University of Washington and benefit Seattle-based health organizations.

A PhD program in Global Health: Metrics and Implementation Science will provide new trainees with skills to measure the magnitude of major health problems globally, to track the progress of health systems in delivering preventive and curative interventions, and to monitor effectiveness with which health interventions and programs are implemented. The new program has potential to equip global health researchers for careers in academic institutions, international organizations, and national agencies such as Ministries of Health, foundations, non-governmental organizations, and the private sector.

The new *UW Global Center for Integrated Health of Women, Children and Adolescents* aims to develop discovery, new leaders, and collaborations in order to improve the health of women, children, and adolescents. Both Metrics and Implementation Science are critical to effective translational public health in these groups. The *UW Global Center for Integrated Health of Women, Children, and Adolescents* will support research that global health PhD candidates will be conducting and we anticipate our Center will potentially support a PhD student in the program as a research assistant and will aim towards training grant support mechanisms to enable this.

Sincerely

[signature]

Grace John-Stewart MD, PhD
Professor
Departments of Global Health, Epidemiology, Medicine, Pediatrics

UW SCHOOLS OF MEDICINE AND PUBLIC HEALTH

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I-TECH
International
Training & Education
Center for Health

June 13, 2011

Dr. Gerald Baldasty, Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building, Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

This letter is to express I-TECH's strong support for the establishment of a PhD program in Global
Health: Metrics and Implementation Science. I have read the proposal and find it a well-conceived
program that will greatly enhance the graduate education and research opportunities within the field of
public health. It is also of clear benefit to Seattle-area public health and global health organizations.

A PhD program in Global Health: Metrics and Implementation Science will be instrumental in promoting
research in a number of scientific fields related to measuring the magnitude of major health problems
across countries: tracking the progress of health systems delivering preventive and therapeutic
interventions and designing, implementing, and evaluating the effectiveness of health interventions and
programs.

I-TECH. a center with the UW Dept. of Global Health, is one of the largest university-based global health
service and technical assistance organizations in the world and will benefit directly from this degree
program. Our mission of *working with local partners to develop skilled health care workers and strong
national health systems in resource-limited countries* aligns closely with the goals of the proposed PhD
program. I-TECH provides technical assistance, capacity building, and clinical training to strengthen
health systems in over 30 countries in Africa, Asia, and the Caribbean Region. I-TECH also has
considerable responsibility for evaluating the effectiveness of systems strengthening interventions, and it
is logical that we would want to support a PhD program with this focus. It will provide much-needed
training for global health researchers who are interested in careers in academic institutions. international
organizations. and national agencies such as Ministries of Health, foundations, non-governmental
organizations, and the private sector.

We enthusiastically commit to providing annual support for at least one student through completion of
his/her degree. We expect and encourage this student to participate in research and implementation
science work associated with I-TECH programs worldwide.

Sincerely,

Ann Downer, EdD
Executive Director

cc: King K. Holmes, MD, PhD; Chair, UW Department of Global Health
    Scott Barnhart, MD, MPH; Director, I-TECH Global Programs Division
    Jaime Johnstone, MPH/MSW; Director, I-TECH Global Support Division

University of Washington
Center for Statistics and the Social Sciences

C-19 Padelford, Box 354320
206-685-8488 (Office) 206-685-7419 (FAX)
E-Mail: tsr@stat.washington.edu

June 27, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770

Dear Dean Baldasty,

Re: PhD Program in Global Health Metrics and Implementation Science

I am writing to express my strong support for the proposed Doctorate of Philosophy in *Global Health: Metrics and Implementation Science*. As has been well-understood since the time of Francis Bacon, accurate measurement is the first step towards solving any problem. The proposed PhD program will be instrumental in promoting research and methodology aimed at measuring the magnitude of major health problems across countries, and in addition, tracking the progress and effectiveness of preventive and curative interventions within national health systems. The goal of the program is to train global health researchers for careers in national agencies such as Ministries of Health, foundations, non-governmental organizations, academic institutions, and the private sector. Though there is an obvious and growing demand for people trained to deal with health issues from the perspective of health metrics and systems, internationally there are only 11 PhD programs in the entire field of global health, of which only four are in the United States, and none are in the Pacific Northwest. Furthermore, none of the existing programs has a focus on metrics or implementation.

The proposed program fits very naturally into the mission of The Center for Statistics and Social Sciences (CSSS) which aims to promote the teaching and development of modern quantitative methods within the social sciences, viewed broadly. CSSS promotes this mission by offering a menu of advanced graduate courses and by fostering inter-disciplinary research. CSSS is already actively involved in the Global Health area, both in research[1] and teaching (post-doctoral and post-baccalaureate students associated with the Center regularly take classes in CSSS). If the Global Health PhD program is approved, CSSS would collaborate with Global Health to develop a PhD track within the new program; we currently offer tracks within nine existing PhD programs on campus.[2]

I strongly support this proposal and believe that courses offered by the Center for Statistics and Social Sciences will contribute to ensuring that the PhD students in global health receive rigorous training and quantitative skills that will prepare them to take leading roles in global health research. I do believe that this proposal supports the best interest of the University of Washington's faculty and students and will be an outstanding opportunity for leaders in the global health field.

Best regards,

Thomas Richardson

Dr. Thomas S. Richardson
Director & Professor
Center for Statistics and Social Sciences

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[1] The work of Professors Clark and Raftery for the UN on projections, including HIV, fertility and populations are good examples, see:
http://www.washington.edu/news/articles/new-united-nations-world-population-projections-based-on-uw-research

[2] These are: Anthropology, The Evans School, Geography, Nursing, Political Science, Social Welfare, Sociology, Statistics and Urban Design & Planning.

SCHOOL OF PUBLIC HEALTH

UNIVERSITY *of* WASHINGTON
Department of Health Services

June 17, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health Metrics and Implementation Science

Dear Dean Baldasty:

I am writing a letter in support for the Doctorate of Philosophy in Global Health: Metrics and Implementation Science. A PhD program in Global Health: Metrics and Implementation Science is instrumental in promoting research in a number of scientific fields related to measuring the magnitude of major health problems across countries, tracking the progress of health systems delivering preventive and curative interventions, and designing, implementing, and evaluating health interventions and programs. Ultimately, this program will train global health researchers for careers in academic institutions, international organizations, national agencies such as Ministries of Health, foundations, non-governmental organizations, and the private sector.

Despite this increased demand, across the world there exist only 11 PhD programs in the entire field of global health, of which only four are in the United States (none in the Pacific Northwest). None of the existing programs has a focus on metrics or implementation science. I believe the proposed Global Health: Metrics and Implementation Science program and the Health Services curriculum are complementary, not duplicative, and can and will work together, integrating curricula for the programs and seeking efficiencies and synergies.

The Department of Health Services agrees to provide support for the new PhD program by offering access to faculty and courses, core faculty who will participate actively through teaching, training and service and associate faculty who will have secondary responsibilities, serving as advisers, contributing to teaching, and serving on dissertation committees.

I support this proposal and believe that our Department of Health Services can offer coursework in related advanced research methods, economic evaluations, and assessment of health outcomes to strengthen the research, and quantitative and qualitative analysis skill sets required to better understand the metrics and implementation science fields of research. I do believe that this proposal supports the best interest of the University of Washington's faculty and students and will be an outstanding opportunity for leaders in the global health field.

Best regards,

Larry Kessler, Sc.D
Professor and Chair
Department of Health Services

UNIVERSITY OF WASHINGTON

May 23, 2011

Dr. Gerald Baldasty
Vice Provost and Dean
University of Washington Graduate School
G-1 Communications Building
Box 353770
Seattle, WA 98195-3770

RE: PhD Program in Global Health: Metrics and Implementation Science

Dear Dean Baldasty:

I am writing a letter in support of the proposed Doctorate of Philosophy in Global Health: Metrics and Implementation Science. A PhD program in Global Health: Metrics and Implementation Science is instrumental in promoting research in a number of scientific fields related to measuring the magnitude of major health problems across countries, tracking the progress of health systems in delivering preventive and curative interventions, and monitoring the effectiveness with which health interventions and programs are implemented. Ultimately, this program will train global health researchers for careers in academic institutions, international organizations, national agencies such as Ministries of Health, foundations, non-governmental organizations, and the private sector.

Despite this increased demand, across the world there are only 11 PhD programs in the entire field of global health, of which only four are in the United States (none in the Pacific Northwest). None of the existing programs has a focus on metrics or implementation science, which makes the proposed program unique. The increasing emphasis of the National Institutes of Health on measurements of effectiveness makes the development of this program very timely. A large number of today's students are very interested in formal training in Global Health and in being an active part in improving the health of the global community. Our own Pathobiology students tell us that they have chosen our PhD program over more traditional Microbiology or Immunology programs because of our focus on diseases that have global importance. Our students benefit from the cross-disciplinary approach to training that is possible in collaboration with the Department of Global Health. We look forward to the development of programs and courses that synergize between the biological focus of Pathobiology and the expertise of the new Metrics and Implementation Science program. Students from both programs will benefit.

I strongly support this proposal, and Pathobiology's courses can provide Global Health PhD students necessary elective training to assist them in their dissertation research, specifically focusing on infectious diseases, scientific writing, and survival skills in scientific research. This proposal supports the best interests of the University of Washington's faculty and students, and will be an outstanding opportunity to develop the next generation of leaders in the global health field.

Best regards,

Lee Ann Campbell, Ph.D.
Professor
Director, Interdisciplinary PhD Program in Pathobiology

Appendices Available Upon Request

APPENDIX F – Biosketches of Program Personnel

APPENDIX G – Biosketches Core Faculty

APPENDIX H – Biosketches of Associate Faculty

These appendices are available upon request from Mark Bergeson at 360-753-7881 or markb@hecb.wa.gov.

Appendix I: External Reviews and Response

Graduate School of
Public Health
College of Health and
Human Services
San Diego State University
5500 Campanile Drive
San Diego CA 92182 - 4162
Tel: 619 - 594 - 6317
Fax: 619 - 594 - 6112

SAN DIEGO STATE
UNIVERSITY

June 17, 2011

James S. Antony
Associate Vice Provost and Associate Dean for Academic Affairs
The Graduate School, University of Washington
G-1 Communications Building - Box 353770
Seattle, WA 98195

c/o Augustine McAffery, amccaf@uw.edu

Dear Sir:

Thank you very much for the opportunity to review the *Proposal to Establish the Degree of Doctor of Philosophy in Global Health: Metrics and Implementation Science in the Department of Global Health.* I currently serve as Professor and Associate Director for Border and Global Health in the Graduate School of Public Health at San Diego State University, and I am the Co-Director of the Joint PhD Degree Program in Global Health at San Diego State University/University of California, San Diego. Previously, I served as Professor in Residence of Epidemiology and Biostatistics and Education Coordinator at Global Health Sciences of the University of California, San Francisco. I have worked in Global Health within government, multi-national organizations, and academia for more than 20 years. Consequently, I was most interested to participate in this review, and I am very enthusiastic about the proposal the University of Washington has so thoughtfully prepared.

It is clear that there is a growing demand for multi-disciplinary professionals and leaders in Global Health, and yet what specific training should be provided to these persons is still unclear. As a general comment, the focused approach of this proposal on metrics and implementation is very appropriate. These are visible priorities for funders, governments, and partner nations in the dynamic arena of Global Health, and thus the overall emphasis of this proposed program sets it apart from most other existing doctoral programs in public health. What is also clear is that Seattle is indeed a nexus of health metrics expertise and leadership. Thus, a Global Health PhD program in your academic environment will be able to take advantage of unique resources not found elsewhere.

In the following pages, I will offer specific responses to the required questions from the Higher Education Coordinating Board. Although I will be working abroad until July 9, I would be able to provide clarification or additional comments if needed through email or Skype.

Thank you again for this opportunity, and I wish all the best to the planners of this exciting PhD program.

Sincerely,

Thomas E. Novotny, MD MPH
Professor and Associate Director for Border and Global Health
Graduate School of Public Health, San Diego State University

Specific Evaluation Questions and Responses
Thomas E. Novotny, MD MPH

Proposal to Establish the Degree of Doctor of Philosophy in Global Health: Metrics and Implementation Science in the Department of Global Health

1) Does the program demonstrate a coherent design, reflecting appropriate depth and breadth, curriculum, sequencing of courses, synthesis of learning, and assessment of learning outcomes?

The program design is heavily weighted to analytic methods and quantitative approaches. This is clearly needed in implementation science and in the growing sense of accountability for global health investments by governments and donors. This orientation certainly draws on the strengths of the cooperating institutions involved in the proposed program. The learning objectives described on Page 16 reflect this emphasis, but lack some of the cultural, contextual, and qualitative directions necessary for ethical and 'country oriented' global health professional capacities. Students should also be evaluated on their ability to work in multi-cultural, multi-ethnic, and politically diverse environments. These subjects may not be taught in the classroom, but are certainly a key set of skills on which the graduates might be evaluated. Moreover, experiential learning is an important way these skills may be acquired. This does not just mean classroom case studies; it requires that students work directly within multi-national organizations, field projects, or diverse political environments. This is not specifically addressed in either course requirements or field practica requirements. Many existing programs at both masters and doctoral levels have such field requirements. As written, the curriculum offers extraordinary depth in quantitative learning but little direct cultural, political, or organizational content. I am sure that most if not all the applicants will be drawn from an experienced pool of professionals, but it would still seem appropriate that the synthesis of learning along the lines of international ethics, culture, context, and real world politics needs to be spelled out more completely.

2) How does the program compare to other institutions' programs? Is it traditional? Is it innovative ("cutting edge") in some way(s)?

The program seems far stronger in the areas of health metrics, economics, and evaluation. This is appropriate given the resources in Seattle and is definitely a cutting edge, comparative advantage over existing programs. Notwithstanding the comments above regarding cultural and political context for such work, the program promises to train some very capable people who can measure, evaluate, cost-out, and manage global health investments. They just need to be able to do this with cultural and political insight and not just with excellent econometric and statistical methodology.

3) Does the program respond to current trends in the field?

The program responds very well to the growing need for accountability and measurement in global health investments. In fact, I would say much of this trend has been driven by the IHME, a key partner in the proposed program. This orientation is heavily emphasized by the Bill and Melinda Gates Foundation (e.g. Dr. Yamada's quotes in the proposal) and by the US Global Health Initiative (GHI). The principles underlying the foundation of GHI are the following:
- Implement a woman- and girl-centered approach
- Increase impact through strategic coordination and integration
- Strengthen and leverage key multilateral organizations, global health partnerships and private sector engagement

- Encourage country ownership and invest in country-led plans
- Build sustainability through health systems strengthening
- *Improve metrics, monitoring and evaluation*
- *Promote research and innovation*

Clearly these last two priorities resonate with the focus of the proposed program. However, there does seem to be a heavy orientation towards the AIDS, TB, Malaria fields; this is the case for most international health programs. This was even emphasized in the quotes from the UW Presidents address, but global health is much more than HIV/AIDS, malaria, and TB in fact. As will be highlighted in the upcoming UN Special Session on Non-communicable Diseases (NCDs), Global Health programs and interventions do not sufficiently address NCDs. UW might want to make special note of this, and hopefully include specific curricular content on NCDs. The global burden of these diseases surpasses that of infectious diseases, yet most Global Health Funding, (even in the GHI) flows to infectious disease research and programs. This is really behind the curve in terms of curricular innovation.

4) Are student learning outcomes appropriate and clearly defined?

See comments in No. 1 above. Learning outcomes need to emphasize ethical skills, cultural competence, political sensibilities, international experiences, and perhaps even language competency. Those involving quantitative skills are very clearly defined. In addition, students really need to be able to understand the global health governance system…who are the players, how and to whom are they accountable, what are the instruments of collaboration and commitment, and how does evidence inform policy at multiple levels. This set of knowledge must be included in order to distinguish multidisciplinary global health programs from traditional public health programs.

5) Is the student assessment system adequate, stellar, innovative? Why?

The assessment system does not seem innovative. It relies on standard course evaluations, meetings with advisors, and other fairly routine academic processes. It goes a bit further in attempting to follow graduates' progress and professional accomplishments as they move into their careers, but lots of training grants use this metric. Given the intensity of mentoring needed, as well as the diversity of learning required of a Global Health PhD, UW might like to consider more innovative, yet tested, methods of evaluation and monitoring of student progress. These metrics should emphasize the development of individual learning goals and their achievement. For example, e-portfolios are used in educational doctoral programs to keep both subjective and objective records of learning. Sharepoint, a fairly labor intensive collaborative management system used in business, may also be an option as it allows sharing of data and documents among students, mentors, and program administrators. Electronic records of individual learning objectives, experiences, mentorship, etc, may be managed by such systems such that student's self-learning progress and output can be more accurately recorded and evaluated. It just seems as though the technological capacity present in Seattle could be mobilized to develop a more creative monitoring and evaluation system for the proposed program.

The dissertation requirement is very standard, but given what is rewarded in the academic global health world, publications should be encouraged for all the students. A three-paper type dissertation might actually be preferable to a book-length dissertation in terms of preparing students for academia. Perhaps this is permitted within the Graduate School requirements.

6) Is the program assessment system adequate, stellar, innovative? Why?

Again, the program monitoring system seems fairly standard and is not described in sufficient detail. Periodic faculty reviews, steering committee oversight, etc., are all fairly routine. Reference is made to the requirements of the Graduate School, and this is certainly paramount, but a Global Health PhD program is a bit of a different animal. The focus of this program is well described in terms of the specific skills that graduates are expected to acquire, but I suspect the applicants selected will be very self-motivated and experienced. Thus, allowing for the establishment of their own individual learning goals and assessing the program's ability to meet these goals may require a bit more creative thinking. It is not clear what data will be collected in the program assessment outside of post-graduate professional accomplishments of the students using social media and email surveys. It might be advisable to involve outside reviewers or an external advisory committee that could do key informant interviews with the students and graduates with a real-world perspective. Given the availability of such resources in Seattle (and nationally) this 'outside view' of the program might be more appropriate for a Global Health Program evaluation.

7) Are the resources (faculty, administrative, facility, equipment) appropriate?

The Faculty resources are stellar. As with many Global Health Programs, there is strong representation in infectious disease expertise (HIV/AIDS especially), and it is a little less clear that courses and research on NCDs are a part of the program. Nevertheless, both the academic and practicing professionals available to this new program will assure the mentorship, technical training, and research productivity of the scholars enrolled. The administrative resource commitments to the program are fairly modest, but probably adequate for program initiation. It is wise to limit the number of students as described, but consideration should be given to the specific administrative needs for experiential learning and the financial support for such learning. There is no mention of the availability of travel funds for research, presentations, or externships. This should be included in the operating costs of the program. Again, Global Health is a different animal, and the trainees should be exposed to the complexities of this field through international conferences and field experiences, and this is all expensive. In addition, the support for student stipends (Research Assistantships) is committed from various research entities such as the IHME and PATH, and this is great. However, specific assurances are needed such that students will not be required to work more than 50% time for their stipend support. Written mentorship/supervisory agreements should be established, reviewed annually, and updated for each of these RA opportunities. Perhaps this is within the requirements of the Graduate School already, but it would be important for the student commitments and requirements to be transparent and periodically reviewed. There is always the risk that work will override learning for graduate students, and thus the program needs to have some specific guidelines on this.

8) What are the program's strengths and weaknesses?

The program strengths are:

- The extensive faculty resources and highly qualified leadership

- The terrific specific opportunities for training and mentorship in the Seattle area

- The specific focus of the training offered (this will assure future employment of the graduates)

The program weaknesses are:

4

- Little description is offered of the cultural, ethical, political training needed to prepare Global Health professionals for leadership positions. It is not enough to train competent analysts; in order to fully engage in implementation science, the graduates must be thoroughly versed in cultural anthropology, history, politics, and governance.

- Insufficient attention is paid to experiential learning. Students in the program need to attend and be part of multi-national organizations, meetings, non-governmental organizations, and government agencies. Their future careers will depend on these experiences, and the opportunities for them should be assured in this planned program.

- Teaching is given scant attention. Not all great analysts are great teachers, and some specific attention might be paid to the training needed to teach effectively. How to set learning goals, develop syllabi, evaluate learning by students, etc, can be part of an academic program, and students should be required to demonstrates their skills in teaching. The graduates of this program will go on to other academic positions in all likelihood, and thus some specific requirements for teaching would be advisable.

9) What are your recommendations?
- This program should be approved. It will be a unique and valuable addition to the University of Washington, Washington State, and the global health community. The focus on metrics and implementation science will distinguish this program, and will make good use of the available local resources and international collaborations in place within the DGH.
- Additional attention should be paid to experiential learning
- A teaching requirement might be spelled out and supported as part of the curriculum
- Additional attention may be needed in terms of cultural, ethical, and political learning.
- More innovative, technology-based evaluation tools might be considered to monitor student progress and post-graduate success.
- External sources for program evaluation over time may be quite helpful in assuring relevance of the program.

Department of Global Health Policy
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Professor James S. Antony
Associate Vice Provost and Associate Dean for Academic Affairs
University of Washington, WA
USA

30 June 2011

RE: Proposal to Establish a PhD in Global Health

Dear Professor Antony;

I would like to thank you very much for giving me the opportunity to review the proposal for this truly important, innovative and ambitious doctoral degree program at the Department of Global Health at the University of Washington. In addition, I would also like to congratulate the faculty members and administrative staff who have prepared this proposal for their excellent work. Below is my review of the proposed doctoral degree program based on the guiding questions for new degree proposals set by the Washington State Higher Education Coordinating Board.

1) Does the program demonstrate a coherent design, reflecting appropriate depth and breadth, curriculum, sequencing of courses, synthesis of learning, and assessment of learning outcomes?

Globally, 10 per cent of total gross national income is spent in the health sector. Donor agencies transfer US$26 billion for health programs in developing countries each year. These figures represent an unprecedented increase in funding for health, and as a result, the global health landscape is unrecognizable from a decade ago. The Millennium Development Goals (MDGs) have revitalized interest in global health issues, and the influx of new money and multiple stakeholders has opened the way to innovative structures, networks, partnerships, and alliances beyond traditional health and development models. This attention has been accompanied by a greater demand for more and better information to track performance and ensure accountability. There is growing global interest in health information, particularly in metrics and evaluation, as exemplified by the MDGs and major global health initiatives (such as performance-based financing). This unprecedented interest has increased the pressure on countries and agencies to generate high-quality and timely data, and increased the focus on the capacity to collect, analyze and use better data for policy-making.

Furthermore, in an era of global partnerships to scale up cost-effective interventions and strengthen health systems to deliver them, there is a growing demand for implementation research. The proposed doctoral degree program is highly inter-disciplinary and cross-cutting by bringing together major-related fields such as statistics, epidemiology, economics, engineering and operation research; the program is unique in focusing specifically on metrics and implementation science in global health where the demand is most acute; the curriculum covers all the core elements that are necessary for the conducting of high quality research in metrics and implementation science; and the way the course is constructed – synthesizing available data using advanced quantitative methods –reflects the high degree of synthesis and integration of the learning processes in this proposed program. The assessment of learning outcomes as well as that of the program itself is well designed with clear quantifiable indicators.

2) How does the program compare to other institutions' programs? Is it traditional? Is it innovative ("cutting edge") in some way(s)?

The proposed program is probably the first of its kind. It is innovative in bringing together different disciplines to monitor and evaluate health interventions and health systems particularly in developing country settings. There are PhD programs in impact evaluation and econometrics, health policy and evaluation, or operational research, but a program specializing in metrics and implementation science at the global level from within a single department has never been done.

3) Does the program respond to current trends in the field?

As noted earlier, the area of metrics and evaluation is the most rapidly growing and in demand discipline in global health. I expect that this trend will continue as more resources will be spent on global health and donors and taxpayers will demand more transparency and accountability in such investments.

4) Are student learning outcomes appropriate and clearly defined?

Yes; learning objectives, core curriculums, mentorship and the research process, and methods to monitor and evaluate the progress of students are well described in the proposal.

5) Is the student assessment system adequate, stellar, innovative? Why?

The student assessment described in the proposal is traditional and adequate as it follows the standard written and oral examination as well as dissertation.

6) Is the program assessment system adequate, stellar, innovative? Why?

The program assessment is very innovative with clear and quantifiable indicators.

7) Are the resources (faculty, administrative, facility, equipment) appropriate?

The proposed program is well resourced with leading faculty members with diverse disciplines and research topics in global health together with excellent administrative support. Furthermore, the program will be able to take advantage of the rich resources available at the University of Washington and institutions and foundations in the Seattle area.

*8) What are the program's strengths and weaknesses?*

The major strengths include the faculty members who have an excellent track record in research on metrics and evaluation together with the resources available at the UW. The weaknesses include a lack of field experience, particularly in developing country settings, and the limited prospects of partnership with other academic institutions, government agencies, and international organizations where global health policy is developed. I hope to see more support for doctoral candidates from developing countries that lack both the incentives and capacity to collect, share, analyze, and interpret better quality data so that both top-down and bottom-up approaches to metrics and evaluation in global health will be promoted.

9) What are your recommendations?

I strongly recommend that the program should be established as I believe it has the potential to become one of the flagship programs at the UW.

I hope that my review is helpful. Please do not hesitate to contact me should you have any questions.

Yours Sincerely,
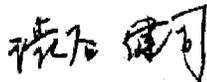
Kenji Shibuya, MD, DrPH
Professor and Chair
Department of Global Health Policy
Graduate School of Medicine
University of Tokyo
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DEPARTMENT OF GLOBAL HEALTH

July 5, 2011

To: Gerald J. Baldasty, Vice Provost and Dean
        James S. Antony, Associate Vice Provost and Associate Dean for Academic Affairs
        The Graduate School, Box 353770

From: Emmanuela Gakidou, Associate Professor
        Department of Global Health

Re: External Reviews of the Proposal to Establish the Degree of Doctor of Philosophy in Global
        Health: Metrics and Implementation Science in the Department of Global Health

Thank you very much for providing us with the opportunity to respond to the two external reviews of
our proposed PhD program. The proposal was reviewed by Professor Thomas Novotny, San Diego State
University, and Professor Kenji Shibuya, University of Tokyo.
We found the reviewers' comments very thoughtful and insightful and we greatly appreciate the time
and effort they put into their comprehensive review of our proposed PhD program. In response to the
comments by the two reviewers, we have made several changes to the proposal, which we summarize
below:

1) We have modified and expanded the learning objectives and competencies of the PhD program
   to ensure that our students will develop the skills to assess, appreciate and take into account in
   their work the cultural, ethical and political context of the areas where they work. These
   learning objectives and competencies will be achieved both through the new doctoral seminar
   which is being proposed as part of this program, and also through research projects that
   students will undertake with their mentors.

2) We have clarified in the proposal that doctoral students will be strongly encouraged to acquire
   substantial field experience in low-resource settings, which will contribute to their experiential
   learning.

3) We have expanded the student assessment to include the establishment of individual learning
   goals and experiences which will be jointly decided upon by each student and their mentor.

4) We have modified the section on the program assessment to clarify that the 5-year external
   review will be conducted by reviewers outside of the program and also to specify that the
   External Advisory Board of the Department of Global Health will also be assessing the PhD
   program as part of their mandate.

5) We have expanded the section of the proposal that refers to informal training opportunities for doctoral students. The section now makes explicit references to acquiring teaching skills, attending conferences and seminars, and making connections and establishing collaborations with distinguished individuals in other academic institutions, international organizations, foundations and non-governmental organizations.

6) We have clarified that the dissertation may be in the format of a three-paper or a book-length dissertation.

It is worth noting that the external reviewers did not receive a copy of the proposed PhD program's competencies or the course syllabi. The points raised by the reviewers with respect to synthesizing learning in terms of the ethical, cultural and political context of global health research and understanding the global health governance system are addressed in the syllabus of the proposed doctoral seminar (see Appendix B of the proposal). The proposed doctoral seminar also has a heavy emphasis on non-communicable diseases, an area that was highlighted by Professor Novotny as being neglected by most doctoral programs.

Finally, with respect to the comment raised by Professor Novotny regarding implementing electronic records of individual student learning objectives and experiences, we would like to note that at present the Department of Global Health does not have the software to enable us to incorporate this into our program. Given the current funding situation, we remain skeptical that the funds will become available in the next couple of years to invest in such a system. Nevertheless, should the opportunity arise, we would be very keen to shift from the more traditional ways of monitoring student performance to a more innovative, electronic, monitoring and evaluation of students.

Thank you for the opportunity to improve our PhD program proposal by incorporating the thoughtful and helpful suggestions by the two external reviewers.

Sincerely,

Emmanuela Gakidou (signature)
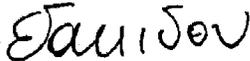
Emmanuela Gakidou, Associate Professor
Department of Global Health

cc:
John Slattery, Vice Dean, Research and Graduate Education, School of Medicine
Howard Frumkin, Dean, School of Public Health
King Holmes, Chair, Department of Global Health, School of Medicine and School of Public Health
Dane Boog, Education Program Manager, Institute for Health Metrics and Evaluation