Fall 2015 Global Burden of Disease: Methods and Applications

DRAFT SYLLABUS

Instructors:  
Rumi Kato Price, PhD, MPE (pricer@psychiatry.wustl.edu) Course Master  
Manan V. Shroff, MBBS, MPH (shroffma@wusm.wustl.edu)

Guest Lectures (alphabetical listing):  
Peter Benson, PhD, Department of Anthropology, College of Arts and Science  
Graham Colditz, MD DrPH, Division of Public Health Sciences, Department of Surgery,  
School of Medicine  
Amanda Colegrove, MA, Coalition against Human Trafficking and Exploitation,  
Anne Glowinski MD MPE, Department of Psychiatry, School of Medicine  
Steve J. Lawrence, MD, Division of Infectious Diseases, Internal Medicine, School of  
Medicine  
Carolyn Lesorogol PhD, School of Social Work  
Rebecca Lester, PhD, MSW, Department of Anthropology, College of Arts and Science  
Daniel Mamah, MD MPE, Department of Psychiatry, School of Medicine  
Mark J. Manary MD, Department of Pediatrics, School of Medicine  
Bradley Stoner MD PhD, Department of Anthropology, College of Arts and Science  
Adetunji Toriola, MD PhD, Division of Public Health Sciences, Department of Surgery,  
School of Medicine

Course Duration:  
Fall 2015, August 27 to December 10, 2015

Date and Time:  
Thursdays, 1 pm – 4 pm

Classroom:  
Institute for Public Health, Medical Campus TAB Bldg. (Scott & Taylor), Richmond  
Room (subject to change)

Course Credit:  
3 credits

Course Description and Objectives:  
This transdisciplinary course provides an overview of quantitative and narrative methods and their applications for studying the global burden of diseases. The area topics include infectious diseases, non-communicable chronic medical illnesses and behavioral disorders. Students will learn basic methods used for global health research and major trends in the global burden of diseases; they will be able to apply the knowledge of measurements to forecast the future of the global burden of specific diseases and develop needed policy recommendations. Students will also be able to address prevention and intervention strategies targeted to specific nations or regions using a transdisciplinary approach. Students will learn dimensions of sociocultural and economic factors that affect global and regional distributions of major disease categories and how disease burdens are linked to global economy. The transdisciplinary knowledge and hands-on skills learned from this course will assist students with an interest in health research and practice in the international as well as local arena.

Competencies:

1. Final syllabus will be distributed on the first day of the course.
1. Develop a critical understanding of the concepts and measures used in studies of global burden of infectious, chronic medical, psychiatric, and behavioral diseases.
2. Understand regional and national patterns of global burden of major infectious and chronic medical diseases and their risk factors including major differences in demographic, economic, and sociocultural factors such as cultural practices and national and regional policies.
3. Apply measures used in global burden studies to empirical data, field work, or interpretation of results in literature.
4. Apply critical knowledge in global burden studies to disease monitoring, intervention, and health promotion in topical areas.
5. Identify and pursue a future global health research topic based on empirical evidence derived from global burden of disease data analysis and topical discourse.
6. Acquire a deeper understanding of transdisciplinary thinking toward illness experiences and global health research.

**Prerequisites:** This course is open to postgraduate scholars, fellows, and graduate students. This course assumes knowledge of basic medical or behavioral science study design and statistics. An equivalent to an introductory epidemiology, a behavioral/social science quantitative method, or a biostatistics course is very helpful; otherwise obtain course master approval.

**Course activities and student products:** Lectures, class exercises, discussion and other in-class participation, homework, short reports, final group presentations, and a short term paper. Additional analysis of an empirical dataset can be arranged individually.

**Note:** Use of cell phones, texting and email communications, and web surfing are prohibited during lectures and student presentations, except for emergencies. This course may be audiotaped for educational purposes.

**Course evaluation: letter grade or pass/fail with Course Master’s permission**

- 20% Attendance
- 20% In-class discussion and participation
- 20% Homework, in-class exercises, and short reports
- 20% Class presentation
- 20% Term paper based on the class presentation

1. **The total point of 100 will be converted to letter grades according to an established norm:** grades will not be normalized. Pass/Fail is optional but requires advance permission from course master.
2. **Attendance** is required for all classes. Planned absences for reasons other than acute illness need to be excused in advance by course master. Absences will typically be excused for reasons such as religious holidays, career development activities, or illness. Students who miss more than four classes may be expected to withdraw from the class.
3. **Required readings** should be completed prior to appropriate sessions.
4. **Homework and in-class exercise products and short reports** will be due upon specified date, but no later than one week after when assigned.
5. **Final class presentation** will be planned and carried out by student groups. The final presentation should be of professional quality, similar to a short presentation at a national or regional professional meeting. Use of power point or similar media is highly recommended. The quality of the presentation will be judged based on how well it meets a majority of the six competency criteria.
6. **Term paper** should be of professional quality to serve as a first draft of subsequent manuscript submission to a professional peer-review journal. Students should aim for a brief empirical report, review paper, or perspective opinion paper based on empirical knowledge. Students should choose to complete a paper by each group with specific individual roles specified. Individual student may opt to write his/her own paper with permission from course master.

**Course Reading Materials:**

**Required:**


**Recommended:**


2. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010 (pp. 2163-2196).

Note: Required reading pdf copies are uploaded to BlackBoard (BB), or available with URLs. Weekly lectures will be listed and made available in BB. The required and recommended books can be purchased at the campus bookstore on the medical school campus; a copy of each book will be available form the Price Lab.

Course Organization: The didactic component of this course is organized to conceptually progress in six segments.

(1) Introduction to global health and global burden of disease and quantitative and qualitative methodologies of GBD. This segment will be led by Drs. Colditz, Price, Benson, and Toriola.
(2) Practicing GBD measures and learning global, regional and local GBD trends, both disease specific and combined disease groups. This segment will be led by Drs. Price and Shroff.
(3) Introduction to global, national and local trends and sociocultural factors in the infectious diseases and GBD. This segment will be led by Dr. Powderly, Stoner, and Price.
(4) Introduction to non-communicable chronic medical diseases, trends, risk factors, and prevention. This segment will be led by Drs. Colditz, Toriola, and Manary.
(5) Introduction to global psychiatric and addiction diseases and trends in burden of diseases, risk factors, and prevention. This segment will be led by Drs. Price, Glowinski, Mamah, and Lester.
(6) The last segment focuses on research practice in global health. Dr. Lesorogol takes the lead on community-based research; Dr. Price will take the lead on ethical issues in global health research.

Week 1: Thursday, August 27, 2015

Lecturers: Graham Colditz MD DrPH; Rumi Kato Price PhD MPE; Manan Shroff, MBBS, MPH

Introduction to Studies of Global Burden of Disease
  o Washington University perspective on global health research
  o Historical background for global health and global burden of diseases
  o Epidemiologic concepts
  o Examples of medical and psychiatric disease burden
  o Millennium development goals
  o Transdisciplinary perspective on global health research and practice
  o Discussion: Why global health, why global burden of disease?

Recommended readings:


Week 2: Thursday, September 3, 2015
Lecturer: Peter Benson, PhD
Qualitative Considerations for Global Health Research

- Illness experiences
- Overview of qualitative methods and measures
- Anthropological methods and ethnography
- Core concepts in medical anthropology
- Discussion: contrasting biomedical and humanistic approach to global burden of disease

Recommended readings:


Week 3: Thursday, September 10, 2015
Lecturers: Rumi Kato Price PhD MPE; Adetunji Toriola, MD PhD
Examples of Global Heath Related Studies

- Major WHO-initiated studies
- The global burden of disease, injuries and risk factors 2010, introduction
- Basic model of global burden of disease
- Examples of medical and psychiatric disease burden (dynamic presentation, Institute for Health Metrics and Evaluation (IHME))
- Gapminder introduction
- Group practice and report: IHME tools and Gapminder

Recommended readings:


Week 4: Thursday, September 17, 2015
Lecturer: Rumi Kato Price PhD MPE
Basic Epidemiologic Measures of Global Burden of Disease

- International disease classification systems
Review of basic epidemiological measures (incidence, prevalence, mortality, life expectancy, risk ratio, population attributable risk and fraction)

- GBD basic measures: years of life lost (YLL); disability weights; years of life lost due to disability (YLD); disability-adjusted life years (DALY)
- Other commonly used health metrics: Healthy life years (HeaLY); quality-adjusted life years (QUALY)
- DisMod-II to DisMod-MR
- Discussion & homework assignment (DisMod-II instructions)

**Recommended readings:**

- Lancet 2012, #1, #2, #3.

**Week 5: Thursday, September 24, 2015**

**Lecturer:** Manan Shroff MBBS MPH

**Measures Used in the Studies of Global Burden of Disease. Practice Session**

- Class exercise using DisMoD II, chronic disease examples
- Computations of YLL, YLD and DALY
- Group presentation, YLL, YLD, DALY

**Recommended readings:**

- DisMoD II Tutorial.
- Namwat C., DISMOD II (ppt presentation).

**Week 6: Thursday, October 1, 2015**

**Lecturers:** Rumi Kato Price PhD MPE; Manan Shroff MBBS MPH

**Comparative Risk Assessment and Bayesian Estimation Basics**

- Comparative risk assessment (CRA) concepts and model
- Computation of CRA
- Group presentation, CRA
- Bayesian regression basics

**Recommended readings:**


Week 7: Thursday, October 8, 2015
Lecturers: Bradley Stoner MD PhD; Manan Shroff MBBS MPH; Rumi Kato Price PhD MPE

Studies of Global Burden of Infectious Diseases (1)
- Sexually transmitted infections
- Malaria and other mosquito-born diseases
- Pandemic influenza
- Global warming and infectious diseases
- Class discussion – environmental intervention pros and cons for whom?
- Discussion: group presentation topics

Recommended readings:
- TBA: global warming and mosquito-born disease prevention
- TBA: global travel patterns and H1N1 and evolution of flu shots

Week 8: Thursday, October 15, 2015
Lecturers: Bradley Stoner MD PhD; Steve J. Lawrence, MD

Studies of Global Burden of Infectious Diseases (2)
- Biomedicine as a cultural system
- Heterodox medical system
- Ethnographic fieldwork – cross-cultural perspective
- Global examples and emerging infectious diseases
- Tuberculosis (TB)
- Ebola
- Prevention and control
- Instruction and Q&A: short report #1

Recommended readings:
- HIV/STIs in Peru- TBA
- Ebola - TBA

Week 9: Thursday, October 22, 2015
Lecturers: Graham Colditz MD DrPH; Adetunji Toriola, MD PhD
Studies of Global Burden of Non-communicable Chronic Diseases (1)
  o Major chronic diseases in developed countries: adult and geriatric diseases (cancer, obesity, cardiovascular diseases)
  o Prevention and intervention studies of major diseases and eradicating underlying conditions
  o Health promotion in developed countries
  o Integrating biomarkers in chronic disease identification and prevention
  o Best buys and obstacles for prevention
  o Infant and maternal mortality and morbidity measures
  o Maternal and child health in developing countries

Recommended readings:

Week 10: Thursday, October 29, 2015
Lecturers: Mark Manary MD; Rumi Kato Price PhD MPE
Studies of Global Burden of Non-communicable Chronic Diseases (2)
  o Eliminating child malnutrition – a success story
  o Health care and cultural practices of reproductive systems in developing countries
  o Discussion on chronic medical diseases
  o Instruction and Q&A: short report #2
  o Discussion on paired presentation topics and format

Recommended readings:

Week 11: Thursday, November 5, 2015
Lecturer: Rumi Kato Price PhD, MPE
Studies of Global Burden of Psychiatric and Addiction Diseases (1)
  o Global trends in major psychiatric disorders
  o Selected addiction and substance abuse global trends
  o Impact of psychiatric and addiction disorders on infectious and chronic medical illnesses
Global monitoring, prevention, intervention, and health promotion
Consultation for final presentation
Instruction and Q & A: short report #3

**Recommended readings used:**

**Week 12: Thursday, November 12, 2015**
Lecturers: Anne Glowinski MD MPE; Daniel Mamah, MD MPE; Rebecca Lester PhD MSW

*Studies of Global Burden of Psychiatric and Addiction Diseases (2)*
- Suicide, injury and violence
- Cross-cultural psychiatry – Kenyan experience
- Eating disorder – cultural notion of gender, agency and moral personhood
- Discussion

**Recommended readings**
- Eating disorder - TBA

**Week 13: Thursday, November 19, 2015**
Lecturers: Carolyn Lesorogol PhD; Amanda Colegrove MA; Rumi Kato Price PhD MPE

*Ethical Considerations in Global Health Research*
- Community-based participatory research
- Capacity building community programs in developing countries
- Cultural competency
- Informed consent in international research
- Ethical issues in genetics research
- Placebo controlled trials in underserved and vulnerable populations
- Responsible conduct as a global citizen
- Discussion
- Instruction and Q &A: paired presentation for Weeks 15 & 16

**Recommended reading:**
• The Global Slavery Index 2014. Hope for Children Organization Australia, 2014.

Week 14: Thursday, November 26, 2015 – NO CLASS, Thanksgiving

Week 15: Thursday, December 3, 2015
Final Class Presentation (1)
  o Final presentation
  o Term paper – final reminder and Q&A

Week 16: Thursday, December 10, 2015
Final Class Presentation (2)
  o Final presentation
  o Warp-up
  o Course evaluation

Term paper due: December 13, 2015, 11:59 pm CDT

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