**KHC 302 Interdisciplinary Perspectives on Global Challenges: Global Health Syllabus Spring 2018, 4 credits**

**Course meets MWF 8:00–9:45 am, KCB 101**

**Unless otherwise noted in the syllabus, lectures will be from 8-8:45 in KCB 101**

**Typically, discussions will be held from 9-9:45 in KCB 101 (A and B), KCB 102 (C), PRB 148 (D), and KHC Seminar Room (E)**

**Faculty**

 **Carrie Preston Muhammad Zaman Chris Gill**

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Kilachand Hall Rm 315 Crosstown Center

Rm CT373

Office hours: M 2:00-3:00 pm M 10:00-12:00 pm By appointment

 W 10:00-11:00 am

**Teaching Fellows/Discussion Leaders**

**Saundria Moed** **sandeem@bu.edu** Office: 44 Cummington Mall, Rm 301. M 10-11 am

**Robert Seager** **rseager@bu.edu**Office: 36 Cummington Mall, Rm 309. T 11 am-12 pm

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**Course Overview:**

What is health and wellness, and do these terms mean the same thing in various scholarly disciplines and to human beings across the globe? How can we promote health around the world as well as in our own cities and homes? How do different fields – namely engineering, public health, and cultural studies – approach questions about health and wellness?

Doctors, especially infectious disease specialists like Professor Gill, work to stop the spread of communicable diseases and find ways to prevent, treat and hopefully cure them. When faced with a new and mysterious virus, as they were by HIV/AIDS in the 1980’s, what are the processes by which they study, define, prioritize, and marshal resources toward treatment?

Engineers, like Professor Zaman, like to build things, big and small, and use them to solve problems. From hanging bridges to nanotechnology, engineers through their tools continue to shape and transform our daily life. But can they use some of the same principles to build tools to solve some of the most pressing problems in modern medicine?

Specialists in culture and gender studies, like Professor Preston, use mostly critical and speculative methodologies, as distinguished from the primarily empirical approaches of the natural sciences. They focus on expressions of the human mind, including the great collective expressions that contribute to the diversity of human cultures. Can humanists contribute not only to the understanding of, but also solutions to, problems in global health?

This course will seek to break down the barriers that divide academic work from work in the so-called “real world.” We offer a problem-based curriculum rooted in actual cases, and students in interdisciplinary teams will confront challenges in global health and develop practical solutions.

**Learning Outcomes Related to Scientific Inquiry**

1. You will use HIV/AIDS as a case study for exploring a global public health concern. You will learn how the medical and public health community developed research plans, gathered evidence, and designed interventions to slow the spread of HIV.

2. You will study the etiology, treatment, symptoms, outcomes, research, education, and prevention efforts surrounding HIV/AIDS and how all are impacted by the cultural context of the disease.

3. Using what you have learned about HIV/AIDS and other case studies in global health, you will evaluate the interventions of medical institutions, governments, and non-governmental organizations.

4. You will develop hypothetical public policies related to HIV/AIDS and other health crises, acknowledge potential adverse consequences of these due to the shifting of a finite set of resources, and defend these allocations to your peers in terms of ethics and effectiveness.

5. Working in groups, you will develop a plan for how to focus additional but limited resources when faced with a health crisis. How would you create a responsible and effective intervention in various social and cultural contexts?

**Learning Outcomes Related to Global Citizenship**

1. You will compare HIV/AIDS in the American and African contexts, considering how culture impacts understanding of the virus, treatment regimens, educational and preventative measures, and the rhetorical life of the disease.

2. You will consider the challenges of international aid efforts that seek to assist populations impacted by the disease. You will evaluate how these efforts shaped by understandings of race, gender, and sexuality.

**Learning Outcomes Related to Teamwork/Collaboration**

1. You will attend the Kilachand teaming workshop where you will learn about the features of a successful team and the challenges that frequently arise for teams. You will examine your past experiences of teamwork and consider your strengths and weaknesses as a team member.

2. All of the assignments for this course are team projects and each will involve a group reflections and collective evaluation. You will be placed in diverse and interdisciplinary teams to study a health challenge, develop interventions, and present your findings.

**Course Format and Pedagogy**

This course is part of the Kilachand two-semester sequence, “Interdisciplinary Perspectives on Global Challenges.” The basic premise of this sequence is that to understand the global challenges we face as a civilization, much less to begin to resolve them, we will need the perspectives, methodologies, and tools of every discipline. The courses are team-taught and adamantly interdisciplinary. Our meetings on Monday, Wednesday, and Friday mornings will include a mix of lectures, discussions, group projects, and labs. You will need to refer to the course calendar for explicit instructions on the activities, readings, and assignments for each class meeting. You will also need to read your email regularly for updates from the faculty and teaching fellows.

**Lab Day/Times and locations**

 You will sign up for lab time twice during the semester.

**Books and Course Materials**

 The following books will be available at the BU Barnes and Noble:

Kushner, Tony. *Angels in America*. New York: Theatre Communications Group, 1995.

Other course readings will be posted:

**Course website:** learn.bu.edu

**Grading and Assignments**

Class Participation (in lecture and discussion): 10%

Op Ed: 10%

Allocation of Scarce Resources: 10%

Engineering Video: 10% [Cut assignment]

Lab Reports: 10%

5 million dollars: 10%

Discursive Biography of a Disease: 10%

Angels Project: 10%

Global Health Hackathon Project: 20%

 \*The 302 team is committed to equitable and transparent grading. If necessary, we will adjust the distributions of the various discussion sections to assure consistent average grades. Assignment details are provided at the end of the syllabus.

A=94%-100%, A-=90%-93%, B+=87%-89%, B=84%-86%, B-=80%-83%, C+=77%-79%

**Accommodations and Resources**

Students needing academic accommodations are encouraged to contact the Office for Disability Services (353-3658). If you require special accommodations, please notify me within the first two weeks of class so that I can make arrangements in a timely manner.

**Office of Disability Services**

19 Deerfield Street, 2nd Floor

(617) 353-3658

<http://www.bu.edu/disability/>

**Educational Resource Center**

*One-on-one peer tutoring, study skills help, and writing assistance.*

100 Bay State Road, 5th Floor

(617) 353-7077

www.bu.edu/erc

**Writing Center**

*You can use the Writing Center on a walk-in basis for one-on-one writing assistance, but you may not reserve appointments.*

100 Bay State Road, 3rd Floor
 (617) 358-1500

<http://www.bu.edu/writingprogram/the-writing-center/>

**Course and University Policies**

 **Attendance:** Class attendance is required. If you miss more than one meeting, your course grade may be lowered by 1/3 of a letter grade per missed class. If you have a special obligation that will require you to miss several classes (e.g., varsity athletics, religious observances) please talk with us at the beginning of the semester. Your participation grade is partially based on attendance and partially on your contribution to class discussions by asking relevant questions and offering responses. Disruptive behavior (e.g. cell phone use, chatter in class or online) will severely affect your participation grade.

 **Tardiness:** Regularly arriving late to class will be cause for a private conversation with the instructors, followed by participation grade penalties if appropriate.

 **Late and Incomplete Assignments:** Assignments may not be submitted late without our prior permission. There is a penalty of 1/3 of a letter grade per 24 hours past the first missed deadline.

 **Office Hours & Contacting Faculty:** We prefer that you contact us via respectfully composed emails at the addresses listed above. Please include KHC 302 in the subject line of the email. We read and respond to email daily and expect you to do the same. *Email may have suddenly become old-fashioned but it is still the primary means of communication for most educational and business institutions*.

 **Cellphones, Devices, and Laptop Usage:**Friendly and fruitful classroom exchange is disrupted by the use of cellphones, devices, and other technology in the classroom. *We prohibit all devices during lectures and discussion.* You should take notes by hand; strong pedagogical research shows that you retain information better when you write by hand than when you type on a device.[[1]](#footnote-1) On days when you are working on group projects, we will allow the use of laptops and/or tablets in class; you will receive advance notice of those days when laptops and/or tablets will be allowed.

**Academic Conduct Statement:**

 All Kilachand Honors College students are expected to maintain high standards of academic honesty and integrity. Every Kilachand student must follow [Boston University’s Undergraduate Academic Conduct Code](http://www.bu.edu/academics/policies/academic-conduct-code/) regarding “academic misconduct,” which is “conduct by which a student misrepresents his or her academic accomplishments, or impedes other students’ opportunities of being judged fairly for their academic work. Knowingly allowing others to represent your work as their own is as serious an offense as submitting another’s work as your own.” Furthermore, Kilachand students must meet all [Kilachand Honors College Academic Standards](http://www.bu.edu/academics/khc/policies/academic-standards/). These policies and procedures should guide students in achieving their educational goals.

**Course Calendar (subject to revision)**

**F Jan 19** – **Introduction:** Interdisciplinary Approaches to Global Health

Faculty Panel (30-45 mins)

**Discussion sections (led by TFs 9 am):**

How do each of the professors understand and define HIV/AIDS? What experiences – if any – have you had knowing people living with HIV? At the start of the course, what do you think and know about AIDS? What does it mean to you? How do you imagine others think about AIDS?

**M Jan 22** – Why should a public health practitioner work on health problems? Plus, an introduction to key concepts in infectious disease epidemiology

**Readings:**

1. Nelson K, Infectious disease epidemiology. Chapters 1-2: to be distributed

**Discussion sections (led by TFs 9 am)** Using the beta\*kappa\*delta model of disease transmission (nothing to do with fraternities), the discussion sections will walk through a series of infectious diseases and discuss practical applications of this model to develop disease control strategies. There is nothing you are required to prepare in advance, but the diseases that will be considered are:

1. Syphilis
2. SARS
3. Salmonellosis (Typhoidal and non-Typhoidal, separately)
4. Yellow fever

**W Jan 24** – Why should an engineer work on health problems?

**Readings:**

1. Biomedical Engineering for Human Health.
2. The Social Responsibility of the Scientist
3. Op-Ed: How can Biomedical Engineers Help in Global Crises? (Huffington Post, 2015)

**Discussion sections (led by TFs at 9 am):**

Can Engineers do something about pressing global health problems? When are they helpful and when are they not? Which problems in global health problems do and do not require quantitative and technical solutions?

**F Jan 26** – **Discussion section (led by TFs at 8 am in the Lab in 36 Cummington Rd)**: Lab Tour led by BME TFs, discussion about lab, basic practices of safety, and expectations from lab work and analysis.

**M Jan 29** –

**Lecture:** Why should a humanist work on health problems?

**Readings:**

1. Kushner, *Angels in America* “Millennium Approaches”(1993) Act I
2. Recent Op-Eds: Jennifer Finney Boylan, “Trump, the C.D.C. and the Peek-a-Boo Doctrine, *New York Times* (12.18.17)<https://www.nytimes.com/2017/12/18/opinion/trump-cdc-transgender.html?_r=0>
3. Washington Post Editorial Board, Medicaid work requirements are a solution in search of a problem, *Washington Post* (1.12.18)<https://www.washingtonpost.com/opinions/medicaid-work-requirements-are-a-solution-in-search-of-a-problem/2018/01/12/bfdbe676-f708-11e7-b34a-b85626af34ef_story.html?utm_term=.bedc5abd0b7a>
4. Optional FYI:<https://www.nytimes.com/2017/09/28/opinion/the-flag-is-drenched-with-our-blood.html?rref=collection%2Fcolumn%2Fcharles-m-blow>**;** [**http://www.courant.com/opinion/op-ed/hc-op-barreca-7-dirty-words-cdc-cannot-say-20171221-column.html**](http://www.courant.com/opinion/op-ed/hc-op-barreca-7-dirty-words-cdc-cannot-say-20171221-column.html); <https://www.nytimes.com/2018/01/14/opinion/hunger-college-food-insecurity.html?emc=edit_th_180115&nl=todaysheadlines&nlid=39002302&_r=0>

**Discussion sections (led by TFs 9 am):** What do the disciplines presented in this course offer to the study of global health? What do we mean by the *interdisciplinary* study of global health?

**Discuss Op-Ed Assignment**

**W. Jan. 31** – The origins and spread of the HIV pandemic

**Lectures:**

1. How HIV made the species jump, and
2. How it became a global pandemic

**Discussions (Led by TFs at 9AM): The surprising importance of circumcision and sexual networks to the spread of HIV**

**Readings:**

1. [Potts M](https://www.ncbi.nlm.nih.gov/pubmed/?term=Potts%20M%5BAuthor%5D&cauthor=true&cauthor_uid=18467575)1, [Halperin DT](https://www.ncbi.nlm.nih.gov/pubmed/?term=Halperin%20DT%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Kirby D](https://www.ncbi.nlm.nih.gov/pubmed/?term=Kirby%20D%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Swidler A](https://www.ncbi.nlm.nih.gov/pubmed/?term=Swidler%20A%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Marseille E](https://www.ncbi.nlm.nih.gov/pubmed/?term=Marseille%20E%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Klausner JD](https://www.ncbi.nlm.nih.gov/pubmed/?term=Klausner%20JD%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Hearst N](https://www.ncbi.nlm.nih.gov/pubmed/?term=Hearst%20N%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Wamai RG](https://www.ncbi.nlm.nih.gov/pubmed/?term=Wamai%20RG%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Kahn JG](https://www.ncbi.nlm.nih.gov/pubmed/?term=Kahn%20JG%5BAuthor%5D&cauthor=true&cauthor_uid=18467575), [Walsh J](https://www.ncbi.nlm.nih.gov/pubmed/?term=Walsh%20J%5BAuthor%5D&cauthor=true&cauthor_uid=18467575). public health. Reassessing HIV prevention. [Science.](https://www.ncbi.nlm.nih.gov/pubmed/18467575?dopt=Abstract) 2008 May 9;320(5877):749-50. doi: 10.1126/science.1153843.
2. Miiro G et al. Soccer-based promotion of voluntary medical male circumcision: A mixed-methods feasibility study with secondary students in Uganda. PloS ONE 2017 :12 (10) doi: 10.1371/journal.pone.0185929

**F. Feb. 2** – PerformingAIDS I

**Readings:**

1. Kushner, *Angels in America* “Millennium Approaches”(1993) Acts 2-3

**Discussion sections (led by TFs 9 am):** Reading/seeing theater – Is theater exceptional? Is *Angels* exceptional?

**Due: Op-Ed**

**M. Feb. 5** – Engineering better solutions for global health challenges.

**Interactive Lecture only**: Engineering in Global Health

**Readings:**

1. Lancet review on new technologies (<https://secure.jbs.elsevierhealth.com/action/getSharedSiteSession?redirect=http%3A%2F%2Fwww.thelancet.com%2Fcommissions%2Ftechnologies-for-global-health&rc=0&code=lancet-site>)
2. Study of Local Boston Company. Daktari: Failure, Near-Miss or Pivot?

**W. Feb. 7** – What is health? Is health a disabling norm?

How do health professionals define health and disease? How do patients define these terms?

**Readings:**

1. McRuer, “Compulsory Able-Bodiedness and Queer/Disabled Existence,” from *Crip Theory: Cultural Signs of Queerness and Disability* (NY: New York UP, 2006): pp. 1-32

**Discussion sections (led by TFs 9 am):** Evaluating Crip Theory: What are the potential, drawbacks, even inadequacy of the “Crip” theoretical paradigm? Is the “medical establishment” making “health” compulsory? Would that be a bad thing?

**F. Feb. 9** – What is a drug? What is a good drug?

**Readings:**

1. IOM Report on poor quality drugs
2. Zaman book chapter on “Age Old Problem”

**M. Feb. 12** – The Global Health Crisis of Substandard Drugs

**Interactive lecture** on counterfeit and sub-standard drugs

**Readings:**

1. Newton et al, Lancet. [http://www.thelancet.com/article/S1473-3099(06)70581-3/abstract](http://www.thelancet.com/article/S1473-3099%2806%2970581-3/abstract)

**Discussion sections (led by TFs at 9 am):** How do we measure the impact of bad drugs? Where would technology fit in? Is big pharma making the problem worse?

**W. Feb. 14 – No Lecture or discussion – Lab**

**F. Feb. 16 – No Lecture or discussion – Lab**

**M. Feb. 19** **President’s Day – No class**

**T. Feb 20** – How HIV harms its host

**Lecture:**

Part 1) A brief overview of the human immune system and

Part 2) why AIDS presents the way it does.

1. Pachner AR. Immunology for the non-immunologist. A primer of neuro-immunological diseases. Springer publishing, 2012.
2. Moore RD, Chaisson RE. Natural history of opportunistic disease in an HIV-infected urban clinical cohort. Annals of internal medicine 1996, 124(7): 633-42.

**Discussion:** No discussion today, though professor will stay to take questions and answers on HIV/AIDS or any other issues that have come up so far.

**W. Feb 21** – HIV/AIDS and the Origins of Queer Theory I

**Readings:**

1. Bersani, “Is the Rectum a Grave,” in *October* 43 (1987), 197-122.

**Discussion sections (led by TFs 9 am):** What does it mean to theorize about disease? What is a “disease of discourse”?

**F. Feb 23** - HIV/AIDS and the Origins of Gay Activism

**Readings:**

1. Edelman, “The Mirror and the Tank” from *Homographesis* (1994)
2. Stephen Vider, “Surrender Donald! A Queer Call to Action Since 1989,” in *Slate* (Dec. 1, 2016).<http://www.slate.com/blogs/outward/2016/12/01/an_act_up_protest_of_donald_trump_in_1989_shows_how_queers_recognized_his.html>

**Discussion sections (led by TFs 9 am):** Is analysis and theory in the face of an epidemic an “indefensible luxury”? What is activism? Is “Surrender Donald” a form of activism?

**Due: Lab Report I**

**M. Feb. 26** - All about tuberculosis

**Lecture part 1).** A primer on TB, how it is diagnosed, controlled, and treated

**Lecture Part 2).** The malignant synergism between HIV and TB and how this affects TB control and TB treatment among patients with HIV/AIDS

**Readings:**

* Blanc FX et al. Earlier versus later start of antiretroviral therapy in HIV-infected adults with Tuberculosis. NEJM 2011: 365(16): 1471-81
* Getahun H, et al. HIV infection-associated tuberculosis: the epidemiology and the response. Clinical Infectious Diseases, 2010: 50 (S3): S201-07.

In class Q and A with professor and TAs, but students will stay together.

**W. Feb. 28** – Controlling TB in the era of HIV/AIDS and the emergence of MDR and XDR TB

**Lecture:** Applying what you know: how do we control TB in populations? How does this become more difficult in communities with high HIV prevalence?

**Discussion Sections (led by TFs at 9 am):** What happened at Tugela Ferry?

**Readings:**

* Gandhi NR et al. Extensively drug-resistant tuberculosis as a cause of death in patients co-infected with tuberculosis and HIV in a rural area of South Africa. Lancet 2006: 368, p 1575-1580.
* Andrews et al. Exogenous reinfection as a cause of multidrug-resistant and extensively drug-resistant tuberculosis in rural South Africa. Journal of Infectious Diseases 2008: 198(11): 1582-89

**F. Mar. 2** – No class

**Spring Break March 3-11**

**M. Mar 12** – Lecture: How HIV drugs work, and the growing problem of ART resistance

**Assign: Allocation of Scarce and Fixed Resources**: how would you reprogram 10 million dollar’s worth of resources, without replacement?

**Discussion Sections (led by TFs at 9 am):** Work on Group Projects

**W. Mar 14** – Moralizing HIV/AIDS – Guest Lecture by Anthony Petro

**Readings:**

1. Petro A. Introduction: AIDS, sexuality, and moral citizenship. *After the Wrath of God*. NY: Oxford, 2015. 1-17.

**Discussion sections (led by TFs 9 am):** Are all diseases tied to morality? Is HIV exceptional? Compare to: HPV, cancer, obesity, addiction, malaria, etc

**F. Mar 16** – Drug Quality: Why is drug quality a scientific problem?

**Readings:** Zaman Book Chapter “The Life of a Pill”

**Discussion Section (led by TFs at 9 am)**: The scientific challenges of drug testing.

**Assign Discursive Biography of a Disease, Drug, Carrier, or Cure**

**M. Mar. 19** – **Due: Group presentations on Allocation of Scarce and Fixed Resources; meet in discussion sections (led by TFs) at 8 am in these locations: KCB 101 (A and B), KHC Commons (C and D), and KHC Seminar Room (E)**

**W. Mar. 21** – Adherence: the Achilles Heel of HIV treatment.

**Lecture Part 1:** Adherence and its importance in antiretroviral therapy

**Lecture Part 2:** Research on promoting adherence to ART through technology

**Readings:**

1. Sabin LL,Hamer DH, Keyi X, Zhang J, Li T, Wilson IB, Bachman-DeSilva M, **Gill CJ.** Effect of EDM feedback on adherence to antiretroviral therapy among Chinese AIDS patients. AIDS and Behavior, 2010, 14: 580-589.
2. **Gill CJ**, Hamer DH, Simon JL, Thea DM, Sabin LL. No room for complacency about adherence to antiretroviral therapy in sub-Saharan Africa. AIDS 2005, 19(12): 1243-49.
3. **Gill CJ,** Bachman DeSilva M, Hamer DH, Xu K, Zhang J, Wilson IB, Sabin L. Novel approaches for visualizing and analyzing dose-timing data from electronic drug monitors, or “How the ‘Broken Window’ theory pertains to ART adherence”. AIDS and Behavior, 2015: DOI:10.1007/s10461-015-1065-3

**F. Mar. 23** –Engineering Adherence

**Readings:** Tackling TB with Technology. <https://www.theguardian.com/journalismcompetition/tackling-tb-with-technology>

**Discussion Section (led by TFs at 9 am):** Why are adherence technologies likely to fail?

**Assign: ‘What would you do with 10 million dollars to spend on HIV/AIDS?’**

**M. Mar. 26** – No Lecture or discussion- Lab – Work on group assignments (Zadie Smith Lecture)

**Due: Discursive Biography of a Disease, Drug, Carrier, or Cure**

**W. Mar. 28** – HIV/AIDS and the Race of Activism I: The U.S. Context

**Readings:**

1. Optional: Cathy Cohen, “Punks, Bulldaggers, and Welfare Queens: The Radical Potential of Queer Politics” in *GLQ* 3.4(1997): 437-65.
2. Sanyu A. Mojola, “A Stubborn Disparity” in *Love, Money, and HIV: Becoming a Modern African Woman in the Age of AIDS* (Los Angeles: University of California Press, 2014).

**Discussion sections (led by TFs 9 am):** Work on group projects.

**F. Mar. 30** – HIV/AIDS and the Race of Activism II: The African Context

**Readings:**

1. Sanyu A. Mojola, “Consuming Women, Modernity, and HIV Risk” in *Love, Money, and HIV: Becoming a Modern African Woman in the Age of AIDS* (Los Angeles: University of California Press, 2014).

**Discussion sections (led by TFs 9 am):** What happens when we shift the theoretical conversation about AIDS from the U.S. to Africa? Are there blind spots in our U.S.-centric perspective, even one as intersectional as Cohen’s?

**M. Apr. 2** – Beyond Adherence: The problem of retention and the ‘cascade of care’

**Readings:**

1. Rosen S, Fox MP, **Gill CJ**. Patient retention in antiretroviral therapy programs in sub-Saharan Africa. PLOS-Medicine, 2007, 4(10): 1-11.
2. Rosen S, Fox MP. Retention in HIV Care between Testing and Treatment in Sub-Saharan Africa: A Systematic Review. PLoS Medicine 2011, July 19, 2011 <https://doi.org/10.1371/journal.pmed.1001056>

**Discussion:** Students work in small groups on their proposals for the next session.

**W. Apr. 4 – Presentations: ‘What would you do with 10 million dollars to spend on HIV/AIDS?’ in Sections at 8 am in these locations: KCB 101 (A and B), KHC Commons (C and D), and KHC Seminar Room (E)**

**F. Apr. 6 – HIV exceptionalism**

 **Due: Lab Report II**

**Panel:** There’s more to global health than HIV/AIDS. Is HIV exceptional?

**Discussion Sections (led by TFs) at 9 am**

Please read the two papers as an introduction to this debate. There are many voices here, and you should feel free to range beyond these cherry-picked readings (one of which is shamelessly self-indulgent – apologies in advance). What we want is for each of you to come to the morning class with some opinions, some questions, some concerns, and something to share and voice with your colleagues. One of the key aspects of the HIV response is that it is by no means complete. The debate we will have is one that is ongoing across the public health community now. Not long in the future some of you may well be moving into public health or medicine or related fields, and will likely find yourselves in the middle of this issue. You have a voice, a right to an opinion, and I would argue a responsibility to participate. That responsibility starts now. Please come with thoughts and questions in hand and ready to wade into these issues.

Some rhetorical questions JUST TO GET YOU STARTED:

* How does HIV differ from other public health threats?
* What challenges does it offer that justify its unique status as a public health priority?
* What has our response to HIV taught us about our ability to potentially manage other public health challenges?
* Has our response been well calibrated?

**Readings:**

1. Smith JH, Whiteside A. The history of AIDS exceptionalism. J Intl. AIDS Soc. 2010. 13:47. doi: 10.1186/1758-2652-13-47.
2. **Gill CJ,** Young M, Schroder K, Carvajal L, McNabb M, Aboubaker S, Bhutta ZA, Qazi S. Bottlenecks, Barriers and Solutions: a qualitative analysis from multi-country consultations on reducing childhood diarrhea and pneumonia deaths. *The Lancet* 2013, 381 (9876): 1487-98.

**M. Apr. 9 –** Three great questions day

**Lecture:** Can humans be resistant to HIV? Is HIV ever curable? Why don’t we have an HIV vaccine?

**Readings:**

1. Sharp PM, Hahn BH. Origins of HIV and the AIDS pandemic. Cold Spring Harbor Perspectives in Medicine 2011, 1(1), doi: 10.1101/cshperspect.a006841.
2. [Hütter G](https://www.ncbi.nlm.nih.gov/pubmed/?term=H%C3%BCtter%20G%5BAuthor%5D&cauthor=true&cauthor_uid=19213682)1, [Nowak D](https://www.ncbi.nlm.nih.gov/pubmed/?term=Nowak%20D%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Mossner M](https://www.ncbi.nlm.nih.gov/pubmed/?term=Mossner%20M%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Ganepola S](https://www.ncbi.nlm.nih.gov/pubmed/?term=Ganepola%20S%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Müssig A](https://www.ncbi.nlm.nih.gov/pubmed/?term=M%C3%BCssig%20A%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Allers K](https://www.ncbi.nlm.nih.gov/pubmed/?term=Allers%20K%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Schneider T](https://www.ncbi.nlm.nih.gov/pubmed/?term=Schneider%20T%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Hofmann J](https://www.ncbi.nlm.nih.gov/pubmed/?term=Hofmann%20J%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Kücherer C](https://www.ncbi.nlm.nih.gov/pubmed/?term=K%C3%BCcherer%20C%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Blau O](https://www.ncbi.nlm.nih.gov/pubmed/?term=Blau%20O%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Blau IW](https://www.ncbi.nlm.nih.gov/pubmed/?term=Blau%20IW%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Hofmann WK](https://www.ncbi.nlm.nih.gov/pubmed/?term=Hofmann%20WK%5BAuthor%5D&cauthor=true&cauthor_uid=19213682), [Thiel E](https://www.ncbi.nlm.nih.gov/pubmed/?term=Thiel%20E%5BAuthor%5D&cauthor=true&cauthor_uid=19213682). Long-term control of HIV by CCR5 Delta32/Delta32 stem-cell transplantation. [N Engl J Med.](https://www.ncbi.nlm.nih.gov/pubmed/?term=chimera+HIV+NEJM) 2009 Feb 12;360(7):692-8. doi: 10.1056/NEJMoa0802905.
3. Haynes BF, Burton DR. Developing an HIV Vaccine. Science 17 Mar 17, 355 (6330): 11289-1130, doi 10.1126/science.aan0662

**Discussion sections (led by TFs 9 am):**

**W. Apr. 11** – PerformingAIDS III

**Readings:**

1. Kushner, *Angels in America* “Perestroika”(1993) Acts 1-2

**Discussion sections (led by TFs 9 am):** After lecture, students are free to work on Angels Project

**F. Apr. 13** – PerformingAIDS IV**;** AIDS and the Ends of History

**Readings:**

1. Kushner, *Angels in America* finish “Perestroika”(1993)

**Discussion sections:** After lecture, students are free to work on Angels Project

**M. Apr. 16** –Holiday No Class

**W. Apr. 18** – No lecture or discussion: Angels Project group work

**F. Apr. 20** – ***Angels* Presentations in Discussion Sections at 8 am in these locations: KCB 101 (A and B), KHC Commons (C and D), and KHC Seminar Room (E)**

**M. Apr. 23** – Technologicalapproaches and their limitations to test drug quality. Engineering better solutions for global health challenges.

**Readings:**

1. Popular Science and Scientific American Stories on combating counterfeit and substandard drugs.
2. Zaman Book Chapter: The Technology Fix?

**W. Apr. 25** –Operational aspects to the public health response to HIV/AIDS, or 'How to eat an elephant'. Plus, why we do what we do.

**Reading assignment**.

1. Please read about one of the individuals from today's lecture and experience something that this individual created.

**Assign Global Health Hackathon Challenges – After lecture, students are free to work on Global Health Hackathon**

**F. Apr. 27** –Work on Global Health Hackathon in KCB 101 \*We will have donuts and bagels available (bring your own coffee) and faculty will consult on your projects. Please have five potential solutions ready to discuss.

**Sunday. Apr. 29**  - 2 pm Global Health Hackathon Presentations followed by a Pizza Party in Kilachand Commons

**M. Apr. 30** – No class

**W. May 2** – Course Conclusion in lecture and discussion

**A note on readings:** We offer a variety of readings in this course from dramatic texts to Op-Eds to theoretical essay and primary medical literature. This diversity of readings reflects interdisciplinary nature of the course. Additionally, while there are now textbooks that have synthesized HIV/AIDS knowledge, doctors and researchers did not have textbooks to guide them at the time that these events were occurring. What they had were papers in peer reviewed journals, media reports, and reports from public health agencies (such as CDC). Therefore, our teaching team has made a very conscious decision to present you with the same sorts of unfiltered, un-synthesized, original material as was used to make decisions at each stage of the HIV/AIDS pandemic.

Readings are linked to daily lectures, and we encourage you to read them all as the information they contain will be highly pertinent to that daily topic and help you be better prepared to discuss these issues in class. We assure you that you will get much more out of the course if you actively participate in learning as you go. We will let you know if there are any readings you can skim.

Some of the readings are specifically linked to discussion problem sets, and without reading these there is no way that you will be able to answer the questions. Moreover, you will quickly realize as you read these papers that often the information within the paper is insufficient to answer all of the questions. In such cases, you may find it helpful to consult other published works. A particularly good place to start looking for such papers are the bibliographies of the papers that you were assigned originally. You are not expected to read all of these citations. But some indeed will be helpful to you. Again, this is a conscious decision to put you more in control of your education, to encourage lateral learning, and to in some sense mimic how scientific discourse is actually conducted. In other words, it is far better to delve, probe, read, and explore than it is to passively receive information.

We have also included a number of general references that we would recommend if you find this topic interesting.

**Optional readings and resources**

Literary and historically focused readings, highly recommended:

Randy Shilts. And The Band Played On. 1987, St Martin’s Press. While a bit dated, and recently criticized for its perceived narrative bias, this is nonetheless a compelling and moving account of the early stages of the AIDS pandemic’s effect on the gay communities in San Francisco and New York in the pre-HAART era. It was also highly influential among the early HIV activism movement, and led to a far greater acceptance of HIV among the general population, de-stigmatization, and mobilization of resources in the US.

Abraham Verghese. My Own Country: A Doctor’s Story. AV was an Indian medical graduate who trained in ID at Boston City Hospital (now called BMC) in the 90s. This is a moving depiction of AIDS as it affects rural poor populations in the US in the period immediately before HAART became widely available.

Pepin, Jacques. The Origins of HIV. Cambridge University Press, 2011. This is likely the definitive work tracing the molecular origins of HIV from the jump across the species barrier to world wide dissemination. The story is one part molecular, one part gum-shoe epidemiology, and one part a history of Africa in the post-colonial era. Detailed and sometimes a bit dry, but overall fascinating and very persuasive.

As a useful general reference:

1. Kenrad Nelsen: Infectious Disease epidemiology – Theory and Practice, 2005.
	1. Ch 2: Epidemiology of infectious diseases
	2. Ch 14: Tuberculosis
	3. Ch 18: The epidemiology of HIV/AIDS

Also useful, clinical care guidelines by professional societies:

1. Kaplan et al. Guidelines for the prevention and treatment of opportunistic infectious in HIV-infected adults and adolescents: recommendations from CDC, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. MMWR 2009, 58 (RR04), 1-198.
2. Aberg JA et al. Primary Care Guidelines for the management of persons infected with HIV: 2013 Update by the HIV Medicine Association of the Infectious Diseases Society of America. Clinical Infectious Diseases 2013, 1-34.
3. Thompson MA et al. Antiretroviral treatment of adult HIV infection: 2012 recommendations of the International Antiviral Society-USA Panel. JAMA 2012, 308(4), p 387-402.

**Assignments**

**A note on group work**: Theater, like public health, engineering, and team-teaching, but unlike much humanistic research and writing, offers the joys and frustrations of group work. We sympathize with the frustrations and believe that most of the work you’ll be doing beyond college involves teams. We’ll work on collaboration now.

1. **Labs** (details of individual labs will be provided separately) (10% of grade)

From a big picture perspective, labs in the Sophomore class (Spring term) are designed to:

1. Emphasize the importance of careful experimentation and analysis.
2. Introduce basic lab safety skills with regards to biological materials.
3. Develop a familiarity with biomedical instrumentation and measurement and limitations of various experimental techniques in providing quantitative information.

Through the lab, we expect *all* students to:

1. Perform experiments in triplicate and understand the statistical significance of multiple experiments.
2. Analyze results quantitatively.
3. Compare results with control experiments and discuss results in light of existing literature.

**I. KHC Engineering – Lab Report Guidelines**

This is an individual assignment – everyone is expected to hand in their own lab report, although you are encouraged to discuss the results with your lab mates. Use your lab handouts and discussions with the TAs to help, but everything needs to be written in your words.

**Topic**: You should draw the topic from two or more of the purposes of the experiments from Labs 2 and 3. The lab report should encompass any of the data, observations, and discussion you gathered in lab. However, you are not expected to present all the data you gathered, but rather, choose data that will help support your hypothesis.

Example topics include: quantitative vs qualitative, 2D vs 3D cell culture, imaging techniques, cell morphology and cancer, low-cost testing, fluorescence

**Length**: 5 pages including figures.

**Format**: A formal, scientific lab report. Use the past tense when referencing any experiment or data analysis you did. Be precise, concise, and clear.

Use the following headings in your report –

Title (2%)– Briefly describes the hypothesis/topic. Titles such as “Lab #3” are unacceptable. Something along the lines “Quantitative analysis of XXXX” would be ok.

Introduction (15%) –The bulk of the intro should describe the motivation, significance, and background of the topic you chose. What is the big question here? Then briefly summarize the key experiments you did, and the purpose of the experiment (e.g. hypothesis). Define any terms that you will use later.

Materials & Methods (15%) – In a brief paragraph, describe the materials, methods, and techniques used that are relevant to your lab report. This includes the name of cell types, imaging technique, proteins, image-processing, etc.

Results (25%) – Present all your data and observations that are relevant to your analysis/discussion. Be clear, precise, and label any figures correctly. Adjust your images in Image J as necessary. There is no need to get trapped in the jargon. Use simple language and clear writing.

Analysis/Discussion (30%) – Interpret your results and if they make sense. If not, discuss that as well. How did the results affect your hypothesis? Were the results as you expected? If not, discuss possible explanations why. Did any pieces of data seem to disagree? Why could that have been? What other data/experiments could corroborate your results? Refer to the protocols you received for each lab for some additional discussion points.

Conclusion (10%) – A short summary of your findings and its significance (how does this relate to “the big picture”, e.g. cancer, biomedical engineering, research, drug therapy?)

References (3%) – List any citations you use in your report here. Citation format should be:

**II. Op-Ed:** Write an op-ed that you might be able to send to the *New York Times*, *Boston Globe*, or other newspaper. Your paper should be approximately 800 words and aimed at a general audience. You might argue whether or not engineering has solved global health challenges, if wealth equals health (and if it should), or if political rhetoric in this country is changing for the better or worse. Whatever your position, you must defend it with convincing evidence. Check out the tips here: <https://www.nytimes.com/2017/08/25/opinion/tips-for-aspiring-op-ed-writers.html>

**III. Allocation of Scarce Resources:** how would you reprogram 10 million dollar’s worth of resources, without replacement? (10% of grade)

*Students in each discussion section will be assigned to a working group (with all members from the same section). Each group will create a 5-minute digital video presentation that outlines their problem, their proposal, and a high level summary of their rationale for their proposal. You are encouraged to base your recommendation on medical, logistical, financial, ethical and feasibility considerations. Videos will be viewed by all members of the discussion section during the assigned discussion time. Once all videos have been witnessed, we will open the topic up to a general debate for the remainder of the discussion section time.*

**Topic:** The year is 1995. You are the minister of health in African or Asian Country X (*and you are to choose a country of your interest, so long as 1) HIV/AIDS was a problem or at risk of becoming a problem in 1995; and 2) that the country has limited resources*). HIV/AIDS has become a growing concern of the leader of your country, and you have been asked for recommendations about your country’s response. In broad terms, you have been asked to reprogram 10 million dollars from your country's health budget towards prevention efforts for HIV/AIDS. What this means is that you have NO NEW ADDITIONAL FUNDS. Thus part of your task is deciding where you will take these funds from within the MOH's budget, which also means that you cannot fund this by taking funds away from another ministry's budget. So the question is what will you do and at the expense of what instead.

But, there are some constraints on this:

**First, because this is happening in 1995, there are, as yet, NO effective treatments for HIV/AIDS.** The studies that will demonstrate the efficacy of combination antiretroviral therapy are still ongoing – and you, like the rest of the planet, have no idea what they will show. Thus, your options cannot yet not include antiretroviral therapies.

**Second, the proposal must be based in reality**. There was no vaccine in 1995, nor is there one now. So, arguing to put your entire health budget into vaccine research is not realistic. Instead you should focus on practical things that could be done to mitigate the burden and impact of HIV/AIDS in your country, based on what was known in 1995.

**Third, the proposal must be based in the context of the country you choose, as it existed in 1995.** What was the HIV prevalence and incidence in 1995? What were the major transmission pathways? What were the high-risk populations? And what kinds of other public health challenges is your country facing because. . . .

**. . . . (Fourth) your health budget is flat.** As noted above, this means that you are NOT receiving additional funds to conduct this work, but instead are reallocating from existing HEALTH programmes. Which means that every dollar spent on your HIV/AIDS response is a dollar NOT being spent on maternal health programmes, infant vaccines, care for the elderly, etc.

Remember the golden rule of public health, “*No good deed ever goes unpunished*.”

**IV. What would you do if you had another 10 million dollars? (10% of grade)**

The year is now 2014. In comparison with the 1995 era presentation you made earlier in the course, you now have far more options for managing the HIV/AIDS pandemic, and this includes of course ARV medications.

But the challenges and priorities have also changed since 1995. For the first time in the history of the pandemic, UNAIDS has actually reported that the global prevalence of HIV has slightly declined and that the rate of new infections seems to be receding. On top of that, we have just come through a global recession and donor fatigue is starting to set in. What this all translates to is a heightened demand by donors and funding agencies to see tangible results and to be ever more efficient with the use of precious resources.

For your group projects, you have recently applied for and received a 10 million-dollar program project grant. The funds are unrestricted, meaning that they can be used in any way that you deem appropriate. However, there is an expectation the funds be spent judiciously and that measurable and relevant health benefits are achieved, without which future funding from this donor would be unlikely.

For your project, your group is to select one country to focus on. In that country, you are to outline a health program that you feel would provide the optimum yield for investment of this donor’s funds. You are to make a presentation outlining the specific challenges you are focusing on, why you prioritize these challenges over others, and an executive level summary of what your program will do, what the expected outcomes would be, and why it is worth funding.

This will be done as an oral presentation during our allotted discussion section times.

Working in small groups (we will post the assignments in advance), you will have exactly 10 minutes to make your pitch plus 5 minutes for Q and A.

You will be graded on the following:

1. Ability to succinctly articulate a specific area of unmet public health need related to the HIV/AIDS pandemic
2. The degree to which you persuasively argue for this intervention/area of need over other possible problems
3. The feasibility and plausibility of your proposed intervention
4. The importance of the endpoints you choose to measure as your ultimate metric of programmatic success or failure
5. And overall, your ability to be terse, clear and to the point.

**Some advice:** DON'T waste a lot of time talking about the background or basics of HIV or immunology – assume that your audience is a bunch of folks that just had 13 lectures on HIV and already get it. Don’t waste time telling them stuff they all already know. Be efficient, be punchy, be factual, and get to the point fast. Keep it short and remember that less is more.

For these presentations, we will reserve a presentation space for three consecutive hours. We encourage you to be present for as much of this time as your class schedules allow. You will be providing the scores and feedback to the presenting groups, and these will be used to assign grades for this final assignment.

**V. Biography of a Disease, Drug, Carrier, or Technology** (10% of grade)

Professor Zaman titled one of vy chapter, “The Life of a Pill,” and wrote a biography that revealed the many “hands” at work in the process that brings a pill from an idea in a lab to the mouth of a patient. Edelman described HIV/AIDS as a “plague of discourse” and pointed out that even a 14-page government definition failed to present a coherent referent for the disease. Bersani analyzed “examples of what might be called a frenzied epic of displacements in the discourse on sexuality and on AIDS…" Both Edelman and Bersani analyzed the discourse, that is, the writing, popular media, and conversations surrounding HIV/AIDS and the ways the disease *lives* as a cultural construct. In many ways, they were writing a discursive biography of HIV/AIDS.

For this paper, analyze the discursive construction of some aspect of HIV/AIDS, TB, or another disease (perhaps a drug, treatment plan, method of infection, or related technology). Use course readings, but also studies in scientific journals, articles in the popular press, policy papers, treatment guidelines, and critical/theoretical analyses, when available. How does the aspect you chose *live* in these discourses? What do they reveal about the ethical dimensions of disease? How does the discourse surrounding your chosen aspect impact how we study, treat, and insure those who are infected?

Your discursive biography should be 3-5 pages (1 in. margins) of double-spaced, Times New Roman, 12 pt. font. Feel free to be imaginative: Perhaps a drug is telling its life story to its “generic” offspring. Perhaps a treatment plan is mourning the unfaithful patients who dump it. But, please cite your references, using the style with which you are comfortable.

**VI. *Angels* Presentation/Performance** (10% of grade)

For this group presentation and performance, you will analyze one of the problems addressed in our course by adding a scene to Tony Kushner’s play, *Angels in America*. Your group will select several characters from *Angels* and write a scene in which the characters face a problem or discuss one of our readings. What would Roy Cohn say to Joe Pitt about Edelman’s “Is the Rectum a Grave”? If Harper were discussing Petro’s “Moralizing HIV/AIDS” with Mr. Lies, what would they say and do? What would the Angel do with ten million dollars?

The scene should be approximately ten minutes in length when you assign roles and perform itfor the class. Not everyone needs to act; you might decide to cast a director, designer, choreographer, head writer, or dramaturg. While this presentation will likely produce a theater of ideas, please remember that scenes with conflict and action are more interesting. Humans tend to be more moved by stories than by ideas (for better and worse).

Your group will turn in a one-page discussion of the goals and performance strategies of the piece, an annotated bibliography of 3-5 works you consulted to help you create your scene (at least two of these should not be course readings), and a brief description of how you divided up the work amongst the members of your team.

**VI. Global Health Hackathon** (20% of grade)

On Wednesday, April 25, you will be placed in groups and presented with a Global Health Challenge. You might invent a device, develop an educational plan, write a new policy, design an experiment or longitudinal study. Be creative and inventive!

 You need to consider such factors as:

 funding (how will you pay for your solution)

 ethical considerations

 cultural impediments

 the relationship between, for example, governments, NGO’s, paid employees, and volunteers

 retention/adherence, etc.

On Sunday, April 29, beginning at 2 pm, your group will present your plan to deal with the challenge. You will need to develop effective presentation materials such as a poster, powerpoint, theatrical scene, or website. How will you sell your Global Health solution to your audience? Your audience that afternoon will consist of your fellow students, professors, and other Kilachand students.

Following the Global Health Hackathon, we will enjoy a celebratory party together. Food and drinks will be provided!

**Global Health Projects**

Several opportunities to get involved in global health projects will be announced throughout the semester. These are voluntary but highly-encouraged projects that will give you the opportunity to apply your learning to real-world problems beyond the classroom, implement tools and methodologies from a variety of disciplines, and gain valuable experience in team-building and collaboration. If you participate in one of these projects, we invite you to write your op-ed and your discursive biography paper about your work.

1. Pam A. Mueller, “Take Notes by Hand for Better Long-Term Comprehension” in *Association for Psychological Science* (April 24, 2014). http://www.psychologicalscience.org/news/releases/take-notes-by-hand-for-better-long-term-comprehension.html [↑](#footnote-ref-1)