

HEALTH POLICY & CLINICAL PRACTICE

SYLLABUS: SPRING 2018

MWF @ 10:10 – 11:15AM, THURSDAY X-PERIOD 12:15 – 1:05PM

Professor:

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Office hours Mon, Fri 2-4pm (Tuck 203B)

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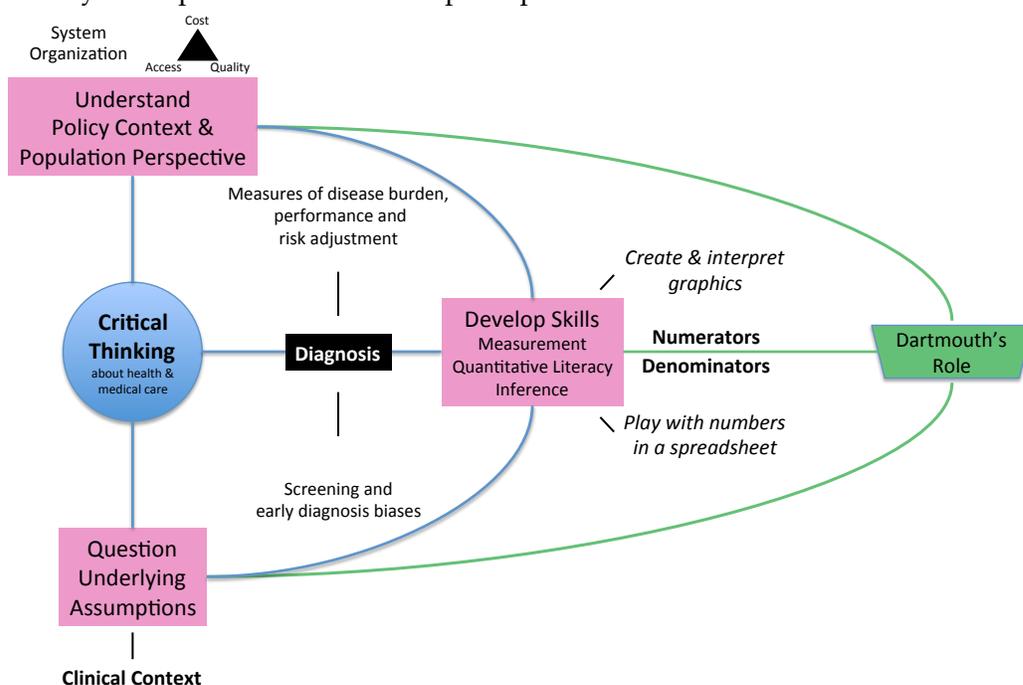
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Course Description:

This course provides an overview of medical care in the United States. But it's really a course about critical thinking – which requires a basic skillset, an understanding of the context and the ability to question assumptions. We begin with a Skills Boot Camp: enhancing your facility with numbers & graphical displays, while enabling you to carefully consider measures and think critically about inferences in medical care. This is essential to understanding the many claims about American medicine and health policy that we encounter daily as practitioners, scholars, and citizens. At the same time, we consider the policy context: an introduction to the common health problems facing Americans as well as the problems of the complex (and haphazard) system that has evolved to address them.

We move on to explore the origins of the "Dartmouth School" of health policy: geographic variation and patient preference. In this spirit, the second half of the course will be all about questioning assumptions: *Does more medical care always mean better health? Is early diagnosis always better? Do treatments either "work" or "not work"? Do patients either "have" or "not have" a disease?* Students will develop their quantitative reasoning skills through the critical assessment of clinical data. Doing so will help prepare students to become both informed citizens and discerning consumers when assessing health policy and medical care.

Here's my attempt at a course "concept map":



Objectives:

Knowledge-based – Students will become familiar with:

- common health problems and the common medical interventions to address them as well as the basic structure of the health care system, its financing and its incentives
- how inferences are made about cause and effect (how we know what we know), basic study designs and their limitations
- the spectrum of baseline risk, the distinction between treatment of the sick vs. prevention in the well, the biases associated with early diagnosis, the problem of overdiagnosis
- Dartmouth's contributions to health policy and options for the future

Skills-based – Students will develop their ability:

- to think critically about measurement (both in terms of the construct being measured and how it is operationalized algebraically)
- to calculate rates, risks and absolute & relative measures of change
- to consider the problems of confounding, overdiagnosis, and risk adjustment
- to construct high-quality graphics and perform simple data analyses in Excel

Audience & Mechanics:

This is an introductory course on a topic not commonly taught to undergraduates – how to critically evaluate U.S. medical care. While I believe the material is relevant to all students (as most all are destined to use the system), the course is targeted to those likely to be directly engaged in the system: either in a managerial role (business), political role (government) or clinical role (medicine or other health profession).

The only prerequisite is the ability to have fun. Seriously. There will be frequent (daily, early in the course) short, assignments: Canvas-based directed tasks (e.g. making a graph, doing problems, reviewing articles, interpreting data). Shockingly, attending class will also be important – we will use virtually all our **x-periods** (see schedule on next page).

The course is quantitative – we will use numbers a great deal. But there is no need for higher math (since I don't know any). All that is needed is a facility with basic arithmetic and simple algebra. I expect students to develop their Excel skills and we will focus on this the first two weeks (see Skills Boot Camp). The Dartmouth College Honor Code is in effect – I will not tolerate cheating/plagiarism of any kind.

Requirements

Students are required to bring their smart phone to class (*assuming you have one, which I don't*). This is not for the purpose of communicating with friends, but rather for me to try Poll Everywhere to establish your understanding (single right answer questions) or get a sense of your values (no right answer questions) in the classroom.

In addition, you are required to read (*and enjoy*) my book:

Welch HG. **Less Medicine More Health: 7 Assumptions that Drive Too Much Medical Care** Beacon 2015

As Donald Trump might say, "It's a great book" (possibly even fantastic). Journal articles and videos will be posted on Canvas.

Student Assessments

Assignments (30%)

Two mid-term exams (20% each)

Final exam (30%)

Class Schedule

Day	Date	Class Content
Monday	March 26	Overview
Wednesday	March 28	Graphics lab
Thursday	March 29	Cost
Friday	March 30	Access
Monday	April 2	Quality
Wednesday	April 4	Absolute Numbers
Thursday	April 5	Numbers & Change I
Friday	April 6	Numbers & Change II
Monday	April 9	p values & 95% CIs
Wednesday	April 11	EXAM 1
<i>Thursday</i>	<i>April 12</i>	<i>no class</i>
Friday	April 13	White - Population view
Monday	April 16	Wennberg - Vermont
Wednesday	April 18	Wennberg - Maine/Boston - New Haven
Thursday	April 19	Small groups
Friday	April 20	Wennberg on Wennberg
Monday	April 23	#1 All risks can be lowered (signal/noise, confounding)
Wednesday	April 25	#1 All risks can be lowered (chocolate, U-shaped curves)
Thursday	April 26	Confounding - Repetitive calculations lab
Friday	April 27	#2 It's always better to fix the problem (spectrum of risk, RCTs)
Monday	April 30	#3 Sooner is always better (health promotion, overdiagnosis)
Wednesday	May 2	#3 Sooner is always better (signals of overdiagnosis – 3 cases)
Thursday	May 3	#4 It never hurts to get more information (incidental detection)
Friday	May 4	#4 It never hurts to get more information (limits to knowledge)
Monday	May 7	Changing diagnostic practices – misleading feedback
Wednesday	May 9	Variable diagnostic practices – challenges for risk adjustment
<i>Thursday</i>	<i>May 10</i>	<i>no class</i>
Friday	May 11	EXAM 2
Monday	May 14	#5 Action is always better than inaction
Wednesday	May 16	#6 Newer is always better
Thursday	May 17	TBD
<i>Friday</i>	<i>May 18</i>	<i>Green Key no class</i>
Monday	May 21	# 7 It's all about avoiding death
Wednesday	May 23	Fisher - What is an ACO?
Thursday	May 24	TBD
Friday	May 25	Final Thoughts FINAL Friday June 1 @ 8am

Skills Boot Camp: Detailed Objectives & Schedule

Overarching goal: to become more facile in manipulating and interpreting graphical displays & numbers.

This boot camp will enable you to carefully consider measures, develop your quantitatively literacy and begin to think more critically about inferences in medical care.

Objectives – Skill-based

Be able to:

1. construct a creative, stand alone, informative graphical display of quantitative information.
2. evaluate incentives associated with insurance, cost sharing, fee-for service, fee schedules, prospective payment, and capitation.
3. *play with numbers*TM in a spreadsheet to understand magnitude and explore the relationship between measures. Specific skills:
 - a. Convert units - %, per 1000, per 100,000
 - b. Calculate absolute change and the number needed to treat.
 - c. Calculate relative change using a ratio and converting to % increase/decrease
 - d. Understand the person-year, the distinction between risk & rates and how to accumulate a rate to produce a risk.
4. interpret p values & 95% CIs and understand how the two are related

Objectives – Content-based

1. know the common causes of death and the basic mechanics of cardiovascular disease
2. know the approximate magnitude of medical expenditures using a variety of metrics
3. know the major federal interventions to expand medical care access and understand their efforts to control cost
4. appreciate the challenge of measuring quality and how the US stacks up against other countries
5. appreciate the challenge of expressing small numbers and the importance of baseline risk

Skills Boot Camp: Schedule Key

Videos (to watch)

Assignments (a series of tasks to do before class in Canvass)

Graphical Displays (one of the tasks that might be in an assignment)

Before Class Videos Assignments Graphs	Date	Session Themes
<i>Not Applicable</i>	Monday March 26	Course Overview
Graphical Displays video	Day 1 Wednesday March 28	Graphical Displays lab Assignment 1 (in class) Lung cancer incidence & mortality in women & men
Assignment 2 3 NHE graphs (total, per capita, % GDP)	Day 2 Thursday March 29	Costs are going up (until recently) <i>Measures matter/Incentives matter</i>
Assignment 3 State level graph (uninsured, Medicaid share & expansion)	Day 3 Friday March 30	Access is uneven; Costs are challenging to control <i>Policy matters</i>
Assignment 4 Creative graph using OECD data (% GDP, uninsured, LE)	Day 4 Monday April 2	Quality is hard to measure <i>But we in the US don't have a lot to brag about...</i>
Assignment 5 Creative illustration to help remember relationships	Day 5 Wednesday April 4	Big numbers are easier to digest than small ones <i>Denominators matter</i>
Converting ratios to percentage change Assignment 6	Day 6 Thursday April 5	When numbers are small, relative changes feel bigger than absolute changes [and when they are big, the reverse] <i>Measures really do matter</i>
Absolute/Relative change Assignment 7 Table and 2 graphs	Day 7 Friday April 6	There are some subtleties here <i>There is always more to learn...</i>
p values & 95% CI videos Assignment 8	Day 8 Monday April 9	While inferential statistics are challenging to calculate, they are easy to interpret

Dartmouth Week: Detailed Objectives & Schedule

Overarching goal: to understand the origins of Dartmouth’s contributions to health care policy

Objectives – Skill-based

Be able to:

1. Assign geographic units to a Hospital Service Area (HSA)
2. Determine what counts (evaluate the numerators and denominators of population-based rates)

Objectives – Content-based

Understand why:

1. geographic variation unrelated to patient need highlights that the scientific basis of medicine is weak
2. critical evaluation of the scientific basis for intervention in a discrete clinical condition – benign prostatic hyperplasia – highlights the role of patient preferences in medical decision making
3. geographic variation is largely explained by variations in the supply of medical resources

Schedule Key

Videos (to watch)

Assignments (a series of tasks to do before class in Canvass)

Before Class Videos / Assignments	Date	Session Themes
Assignment 9	D Day 1 Friday April 13	Take a Population Perspective
Assignment 10 <u>Defining Geographic Areas/</u> <u>Calculating Population-based Rates</u>	D Day 2 Monday April 16	Measuring Geographic Variation in Vermont: Determining the Population-base <i>Hospital Service Areas/Population-based Rates</i>
Assignment 11	D Day 3 Wednesday April 18	Maine & Boston vs. New Haven What varies – and why?
Assignment 12 Benign Prostatic Hyperplasia Prostatectomy vs. Watchful Waiting	D Day 3 Thursday April 19	Patient Preferences/Questions for Jack
	D Day 4 Friday April 20	Wennberg on Wennberg

Question Assumptions I: Detailed Objectives & Schedule

Overarching goal: to become more confident in analyzing data and more able to question assumptions.

Objectives – Skill-based

- Illustrate the problem of confounding – and explain why it is particularly likely in observational data on the effectiveness of preventive interventions.
- Differentiate linear and U-shaped relationships – and argue why the distinction is important for patients.
- Define basic epidemiological measures of disease: incidence, mortality (disease-specific vs. all cause), and survival.
- Recognize the population-based signals of overdiagnosis.
- Calculate the effect of lead-time and overdiagnosis on cancer survival statistics (i.e. 5- and 10-year survival).
- Recognize the limits to knowledge: how efforts to change low probability events require humongous sample size to demonstrate effectiveness.

Objectives – Content-based

- Explain why all risks are not equal – both in terms of their magnitude and their certainty.
- Develop some humility about medical care’s ability to lower all risks.
- Articulate why “success stories” following a medical intervention or early detection can be so misleading.
- Delineate the potential benefits and harms of screening.
- Describe the heterogeneity in what is labeled “cancer” and develop an approach to explain cancer “overdiagnosis” others.
- Explain the spectrum of baseline risk/ abnormality/ diagnosis and how this spectrum influences the potential benefit of intervention.
- Recognize the potential for a deluge of biometric data as well as the forces behind it. Struggle with the categorization of data, information and useful knowledge.
- Develop a healthy skepticism towards risk adjustment.

Schedule Key

Less Medicine, More Health reading

Videos (to watch)

Assignments (a series of tasks to do before class in Canvass)

Before Class Reading Videos Assignments	Date	Session Themes
Intro & Assumption 1 <u>Observational Studies & Confounding</u>	Q Day 1 Monday April 23	All risks can be lowered (signal/noise, confounding)
Asgmt. 13 – Chocolate, Graph Risk Calculator	Q Day 2 Wednesday April 25	All risks can be lowered (chocolate exercise, U-shape curves)
	Q Day 3 Thursday April 26	Confounding - Repetitive calculations lab
Asgmt. 14 – Confounding Assumption 2 <u>Spectrum of Baseline Risk</u>	Q Day 4 Friday April 27	#2 It’s always better to fix the problem (spectrum of baseline risk, RCTs)
Assumption 3 <u>Heterogeneity of Cancer</u> Asgmt. 15 – Korean Graph	Q Day 5 Monday April 30	#3 Sooner is always better (health promotion vs. early detection, overdiagnosis)
<u>Signals of Overdiagnosis</u> Asgmt. 16 – 3 Cases What’s your inference?	Q Day 6 Wednesday May 2	#3 Sooner is always better (signals of breast/prostate cancer overdx – 3 cases)
Assumption 4	Q Day 7 Thursday May 3	#4 It never hurts to get more information (data do not necessarily constitute useful knowledge)
<u>Big data, little useful knowledge</u>	Q Day 8 Friday May 4	#4 It never hurts to get more information (limits to knowledge/testing policy options)

<p><u>Lead time Bias</u> <u>Overdiagnosis Bias</u> Asgmt. 17 – Why Early Dx Always Improves Survival</p>	<p>Q Day 9 Monday May 7</p>	<p>Changing Diagnostic Practices – misleading feedback (Early Diagnosis Biases)</p>
<p>Asgmt. 18 – Geographic Variation in Diagnosis Frequency</p>	<p>Q Day 10 Wednesday May 9</p>	<p>Variable Diagnostic Practices – challenges for risk adjustment</p>
	<p>Exam 2 Friday May 11</p>	<p style="text-align: center;">Exam 2</p>

Question Assumptions II & Summary
 (Schedule forthcoming)