MILI/PUBH 6589
MEDICAL TECHNOLOGY EVALUATION AND MARKET RESEARCH
Medical Industry Leadership Institute
Carlson School of Management
and
The Division of Health Policy and Management,
School of Public Health
University of Minnesota, Twin Cities
CSOM 1-143, 3:45 to 5:25
2 Credits
Professor: Stephen T. Parente, Ph.D.

Catalog Description:

Innovations in medical technologies are one of the leading areas of economic growth in the world. Whether new technologies take the form of pharmaceutical, medical device, biotechnology, information technology or some combination of these innovations, the opportunities for both private enterprise and social welfare are substantial. However, these innovations are not without cost, and require reimbursement from either a privately or publicly financed health care delivery system to enter the marketplace. Thus, the strong demand for the evaluation of new medical technologies continues to grow due to the confluence of an aging society seeking new therapeutic agents to enhance health and productivity and unyielding medical care price inflation. This course aims to provide knowledge of the skills, data and methodology required to critically evaluate new medical technologies in order to meet financial investment as well as regulatory compliance objectives, such as FDA approval. The course is designed to provide the analytic tool kit for a manager of a new medical technology to formulate the evaluation necessary for this enterprise as well as effectively disseminate results in order to get a new product to market.

Course Objectives:

? To identify a population to be served by a medical technology.

? To use existing health care data to evaluate a medical technology.

? To inventory the costs of using a new medical technology and its alternative(s).

? To complete a meta-analysis of an emerging medical technology.

? To understand the design process of an evaluation.

? To complete a cost/benefit and cost/effectiveness analysis of a new technology.

? To describe the strategy for medical technology results dissemination and marketing.

? To understand the reimbursement systems financing medical technology use.

? To understand the role of government and regulatory agencies in the development and use of new medical technologies.

Method of Evaluation:

Two exams, a midterm and final, will be given. These will account for 50% of the final grade. All exams will be
closed book and focus on analytic methods. A group-developed class project describing the design and execution of an evaluation of a new medical technology will account for 40% of the final grade. The remaining 10% of the grade will be assigned for participation in weekly recitations.

Readings:

A course packet, consisting of journal articles and other relevant readings will be downloadable from the course web site.

Gold readings:
- Chapter 4
- Chapter 6
- Chapter 7
- Chapter 8

Course Logistics

- The course will meet once a week throughout a semester.
- Several classes will have 10 to 15 minute active learning exercises with actual case information.
- Re-usable data mining algorithms will be supported by the ehealthcon.hsinetwork.com web site.

Group Project

Teams of no more than five students will work on the group project. The group project will be commissioned by a combination of class participants and industry leaders mid-way through the course. You can identify a topic for vote at this time including an analysis of a chemical compound or medical technology in active development at the start of the course. A superior grade will result from clever, effective and clear use of data sources including, when appropriate, de-identified health insurance data made available for the course by the instructors. Professional-quality team presentations will conclude the course. Presentations must be made in 10 minutes and only five additional minutes of Q & A will be allowed.

Helpful library indexes include Medline, Pubmed, and Econlit. You can get to them by going to www.lib.umn.edu, and then click on Articles and Indexes.

Policy

To avoid plagiarism, please be sure to give credit when you use another person’s idea or theory, other information that is not common knowledge, or statistics. This includes both web-based and traditional sources. You should cite it in the text of the paper, as well as include a full citation on a reference page. Refer to the MLA Handbook for formatting.

The instructors will enforce the policies issued by the University of Minnesota with respect to the Student Code of Conduct.

MBA Policy

The Carlson School defines academic misconduct as any act by a student that misrepresents the student's own academic work or that compromises the academic work of another. Scholastic misconduct includes (but is not limited to) cheating on assignments or examinations, plagiarizing, i.e., misrepresenting as one's own work any work done by another, submitting the same paper, or substantially similar papers, to meet the requirement of more than one course without the approval and consent of the instructors concerned, or sabotaging another's work. Within this general definition, however, instructors determine what constitutes academic misconduct in the courses they teach. Students found guilty of academic misconduct face penalties ranging from lowering of the course grade or awarding a grade of F or N for the entire course, to suspension from the University.
Course Secondary Data Resources

- Diagnosis (ICD9) Code Spreadsheet
- Procedure Code Spreadsheet

SQL Server with data extracts

- Link to ehealthcon server
- Userid: MILI6589; password: puppydog
- NEW: SQL code examples for Diabetes Care

- SQL Diabetes Statements

- Databases available on server (scan databases by using command:
  select * from [database]
  - Anon_xdb (<65 lab result data from diabetic patients)
  - Hos_ps_sum (all US hospitals patient safety data by CMS ID)
  - Leaphosp (all US hospital EMR install info & mortality rates)
  - Med25 (medical claims <65, dx, cpt, $$)
  - Rx25 (pharmacy claims <65, ndc, $$)
  - One day (all claims for one large health plan for one day)
  - Phy_prac (CMS physician claims)
  - Inp_Prac (CMS inpatient claims)
  - Rx_sel (revent <65 rx data)

NEW Data sources for projects Inventory

Course Instructor

- Stephen T. Parente, Ph.D., Professor, Department of Finance, Carlson School of Management; Director, Medical Industry Leadership Institute

Office hours will be by appointment with instructor. Appointments are best made by e-mail: sparente@umn.edu

Course Project Templates

Project Presentations
- Stroke Treatment Technology
- Asthma Technology
- Carelink Technology
- NEW from 2010: Medical Device Tax
- NEW from 2010: Bundled Payments

Project Reports
- Stroke Treatment Technology
- Asthma Technology
- Carelink Technology
- NEW from 2010: Medical Device Tax
- NEW from 2010: Bundled Payments

MEDICAL TECHNOLOGY EVALUATION
AND MARKET RESEARCH
SYLLABUS
Week 1: (1/23) Course Overview – Principals & Agents in Medical Technology Evaluation

Topics to discuss:

? Why do we need cost effectiveness analysis?

? Who are the actors in the medical technology industry and what are their incentives?

? Why have health care costs been increasing?

? Do new technologies reduce long term medical expenditures?

Readings:

? Economists’ Letter to Obama on Health Care Reform, NY Times, 11/17/09

Week 2: (1/30) The Medical Technology Economy

Topics to discuss:

? Information demand – who is demanding evidence?
   • FDA.gov (the FDA tour)
   • Health Affairs, Richard Merrill, 1999

? What is the ‘supply chain’ of information dissemination?

? How are new medical technologies reimbursed?

? Why are we creating evidence?

Readings:

? McClellan & Tunis, 1/20/2005, NEJM

? Gold, Chapter 1


Week 3: (2/6) Introducing Cost-Effectiveness Analysis

Topics to discuss

? Identifying clinical alternatives

? Using existing data to alternatives

Readings:

? Gold, Chapter 6
Week 4: (2/13) Cost-Effectiveness Analysis Overview Summary & COURAGE Case

Topics to discuss
- How technologies are compared
- Cost-effectiveness plan
- The COURAGE Study
- Measuring Costs

MUST READS:
- WSJ: A Simple Health-Care Fix Fizzles Out, February 11, 2010
- Boden et al., “Optimal Medical Therapy with or without PCI for Stable Coronary Disease, NEJM, 2007
- Comparative Effectiveness, NYT, 2-16-2009

Topics to discuss:

Week 5: (2/20) Using Secondary Data for Market Research

Topics to discuss
- Estimating the demand for new technologies
- Measuring the burden of illnesses of disease
- Using administrative insurance records to estimate market demand & market research

- Cost versus charges
- Measuring costs

Readings:
- Bridges et al, JAMA 2000. - - - READ THIS

Week 6: (2/27) Midterm – Closed Book

Week 7: (3/5) Measuring effectiveness

Topics to discuss:
- Health States 101
- Specifying clinical outcomes
- Measuring outcomes

Use of decision trees in effectiveness analysis

Readings:
- Gold, Chapter 4

Week 8: (3/19) Medical Technology Leadership Roundtable – Active Learning

- Guest speakers:
  - Richard Justman, MD, United Health Group
  - Amaza Reitmeyer, Medtronic
  - Jade Sadosty, Mayo Clinic

Topics to discuss:
- What evaluations are of interest to health insurers?
- How do medical providers get new services to the market? What supporting analysis do they need?
- What are the common interest of medical technology firms, providers and insurers?

Week 9: (3/26) Medical Technology Market Research & Channels

Topics to discuss:
- Getting the right price in the market
- company promotion of economic evidence

Readings:

Week 10: (4/3) Advanced Topics 1

Topics to discuss
- Cost/Benefit Ratios
- Cost/Effectiveness Ratios
- Sensitivity analyses
- Uncertainty
Monte Carlo simulation

Readings:

Week 11: (4/9) Project Start-up and Advanced Topics 2

Topics to discuss
- Monte Carlo simulation

Readings:
- Gold, Chapters 7 & 8

Week 12: (4/16) Cost-effectiveness for Medical Technology Development

Reading:

- Medicare coverage center
- Health Technology Assessment international links

Week 13: (4/23) Final Exam – Closed Book

Week 14: (4/30) Presentations & Closing