Course Syllabus, 1/3/08

HuBio 590 "Medical Information for Decision Making" (MIDM)
(formerly "Critical Reading and Evaluation of the Medical Literature" - CREM)

Course Description:

Introduction to methods for: a) identifying and retrieving high quality, relevant documents for clinical decision making, b) applying rigorous criteria when reading primary research studies or reviews of primary studies or other medical information sources that report on the effectiveness of therapeutic or preventive interventions. Prerequisite: First-year medical student standing.

Note: This course is transitioning this year from a focus on critical reading and evaluation of the medical literature (CREM) to emphasizing finding and assessing information for medical decision making (MIDM) thus on your transcripts you will see it referred to as CREM.

Course Web Page:

- http://courses.washington.edu/midm

WWAMI Course Chairs:

- Alaska: Tim Silbaugh
- Idaho/WSU: Barbara McNeil
- Montana: Bob Flaherty
- Washington: Peter Tarczy-Hornoch
- Wyoming: Steve Bieber

Seattle Course Chair and Small Group Leads

- Peter Tarczy-Hornoch (Course Chair)
- Genevieve Pagalilauan (Group 1)
- William B. Hood (Group 2)
- Misbah Keen (Group 3)
- Maneesh Batra & David Loren (Group 4)
- Kristen Hayward & Carrie Heike (Group 5)
- David Masuda & Ron Schneeweiss (Group 6)
- Jennifer Hoock (Group 7)
- Isabella Knox (Group 8)
- Leilani St. Anna, Ellen Howard, Angela Lee, Sarah Safranek, Lisa Oberg, Amy Harper (Librarians for Session 2 on Mon Jan 7th)

Small Group Assignments and Small Group Rooms

- See web page for small group assignments and rooms
- Please bring your laptops to the small group sessions starting with the 2nd class session

Office Hours and Contact Information

- Peter Tarczy-Hornoch, I264A
- By arrangement – e-mail pth@u.washington.edu

Learning Objectives:

At the end of the course, you will be able to:

1. Describe the value of high quality medical information for clinical care (e.g. issues of safety, cost, quality of care)
2. Describe the range of factors that influence the clinical decision making process (e.g. evidence, guidelines, customs, experience, biases, personal & organizational values, patient factors/values)
3. Translate a clinical situation/scenario into a searchable question
4. Describe advantages and limitations of various medical information resources (e.g. Pubmed or UpToDate) and types of documents (e.g. systematic review or consensus guideline)
5. Find candidate documents from one or more medical information resource(s) that may address the clinical situation
6. Assess systematically the relevance and validity of a given document with respect to the clinical situation
7. Compare relevance and validity across two documents

Course Organization:

At the University of Washington for Winter 2007-8 there will be 5 sessions of the Medical Information for Decision Making (MIDM) course. Each 110 minute session will start with an introductory lecture by Peter Tarczy-Hornoch in the large lecture hall (T-435) covering the content for modules as specified in "Content for Each Session" below. The remainder of the time will be spent in small groups applying the material learned under the leadership of the small group leads.

Grading and Class Attendance

As described above under course organization the small group meetings will build on the material presented in class. To pass the course the following is required:

- Attendance at all five small group sessions. If you miss a small group session then a makeup assignment will be required.
- Passing the final exam. This means correctly answering a minimum of 70% of the questions on the final exam. The exam is a take-home, open book, web-administered exam. It will be made available at 5P on Fri Jan 11th and must be completed by 5P Fri Jan 18th. Feel free to use any resource you would like to use for the exam (readings, textbooks, syllabus, Web sites, etc.), as you could do when taking care of patients, but please do NOT work together with another student(s) or ask someone else for an answer.

Required Textbook/Readings

There is no required textbook for the Medical Information for Decision Making course this year. All the course material will be available on the web site.

University of Washington Schedule for 2007-8

- Rooms:
  i. Lecture: T-435
  ii. Small Groups: South Campus Center 246,248,250,254,348,350,222, 220B
- Dates/Times/Topics (see "**Content for Outline Each Session"** for details)
  i. Session 1, Friday January 4: 3:30-5:20
     1. Topic: **"Medical Information and Medical Decision Making"**
     2. Learning Objectives 1,2,3
     3. Small Group: Focus on Learning Objectives 2 & 3
  ii. Session 2: Monday January 7: 1:30-3:20
     1. Topic: **"Finding Medical Information in a Clinical Context"**
     2. Learning Objective 4 & 5 (Librarians co-teaching)
     3. Small Group: Focus on Learning Objective 5 (Librarians joining small groups)
  iii. Session 3: Tuesday January 8: 2:30-4:20
     1. Topic: **"Assessing a Document on Treatment"**
     2. Learning Objective 6, focus on evaluating articles/documents on treatment using PPICONSS model
     3. Small Group: Focus on applying material learned in lecture
  iv. Session 4: Thursday January 10: 3:30-5:20
     1. Topic: **"Assessing a Document on Diagnosis"**
     2. Learning Objective 6, focus on evaluating articles/documents on diagnosis using PPICONSS model
     3. Small Group: Focus on applying material learned in lecture
  v. Session 5: Friday January 11: 2:30-4:20
     1. Topic: **"Assessing Multiple Studies"**
     2. Learning Objectives 6 & 7, focus on evaluating articles/documents that are systematic reviews and on looking at more than one document
     3. Small Group: Focus on applying material learned in lecture

Content Outline for Each Session

Session 1, Friday January 4, "Medical Information and Medical Decision Making"

1. Learning Objective 1: Describe the value of high quality medical information for clinical care (e.g. issues of safety, cost, quality of care)
    a. Specific points related to Medical Information for Decision Making (MIDM)
        i. Difference between MIDM for diagnosis vs. for treatment vs. setting policy
        ii. Relationship of MIDM to core values in medicine (Hippocratic Oath)
        iii. Relationship of MIDM to safety issues in healthcare ("To Err is Human" report)
        iv. Relationship of MIDM to quality issues in healthcare ("Quality Chasm" report)
        v. Relationship of MIDM to rising healthcare costs
        vi. Relationship of MIDM to medicolegal climate in healthcare
2. Learning Objective 2: Describe the range of factors that influence the clinical decision making process (e.g. evidence, guidelines, customs, personal & organizational values, patient factors/values)
    a. Specific Points:
        i. General model of individualized decision making involving integration of patient specific information with general medical knowledge
        ii. Evidence (and explicitly the concept of Evidence Based Medicine)
        iii. Guidelines & policies (consensus vs. evidence based, national vs. local)
        iv. Customs
        v. Experience
        vi. Biases (recall bias in particular)
        vii. Personal & organizational values,
        viii. Patient factors (cost, outcome, values, convenience)
        ix. Availability of information (met/unmet known information needs, concept of unknown information needs)
3. Learning Objective 3: Translate a clinical situation/scenario into a searchable question
    a. Specific Points:
        i. PPICONSS approach
            1. **PICOS/PPICOS**
            2. **PPICONSS**: **P**roblem, **P**opulation, **I**ntervention, **C**omparison, **O**utcome, **N**umber of subjects, **S**tatistics, **S**ponsor
4. Small Group Portion:
    a. Small group leads to give examples of factors influencing their own decision making
    b. Small group leads to give examples of translating clinical situations/scenarios into a searchable question (using PICOS/PPICONSS framework)
    c. Small group to review example cases
    d. Students to give examples of clinical questions they have been asked or they have wondered about and together practice translating them into a searchable question using PICOS/PPICONSS framework)

Session 2: Monday January 7, "Finding Medical Information in a Clinical Context"

1. Learning Objective 4: Describe advantages and limitations of various medical information resources (e.g. Pubmed or UpToDate) and types of documents (e.g. systematic review or consensus guideline)
2. Learning Objective 5: Find candidate documents from one or more medical information resource(s) that may address the clinical situation
    a. Specific points
        i. Information resources and their advantages/limitations:
            1. PubMed database including Medline Plus
            2. Google/Google Scholar
            3. Up To Date clinical information resource
            4. MD Consult information resource
            5. Cochrane Library
            6. British Medical Journal (BMJ) Clinical Evidence
            7. Translating Research Into Practice (TRIP) database
            8. InfoPOEMS
            9. Agency for Healthcare Research and Quality National Guideline Clearinghouse
        ii. Types of documents and their advantages/limitations
            1. Pyramid model of information sources
            2. Primary, secondary, tertiary databases
            3. Primary literature (Treatment vs. Diagnosis)
            4. Review articles
            5. Systematic reviews
            6. Meta-analyses
            7. Guidelines
            8. Book chapters (textbooks vs. “spiral manuals”)
3. Small Group Portion:
    a. Small group leaders to give examples of recent clinical situations where they had to search for information & how they approached the search & what they found
    b. Students to come up with examples of clinical questions they have been asked or they have wondered about
    c. Small group together decides on a question to research together
    d. Librarians, students, and small group leaders together in parallel find different types of documents from different medical information resource(s) that may address the clinical question
    e. Time permitting repeat the exercise

Session 3: Tuesday January 8, “Assessing a Document on Treatment”

1. Learning Objective 6: Assess systematically the relevance and validity of a given document with respect to the clinical situation
    a. Specific Points:
        i. Critical appraisal techniques
            1. Difference between diagnostic and therapeutic studies
            2. Different studies (Case Series, Cohort Trial, Case Control, Randomized Controlled Trial, Systematic Review, Meta-analysis)
            3. Revisit PPICONSS

ii. Key statistical/quantitative measures
    1. Assessing sampling and measurements related to clinical questions
    2. Descriptive statistics: mean, proportions
    3. Levels of evidence
    4. p value (including limitations)
    5. Confidence intervals
    6. Treatment Statistics
        a. RRR: Relative Risk Reduction
        b. ARR: Absolute Risk Reduction
        c. NNT: Number Needed to Treat

2. Small Group Portion:
    a. Small group leads to give examples of recent clinical situations where they had to evaluate one or more documents related to treating a particular treatment
    b. Group to review and discuss multiple short examples related to treatments which will focus on:
        i. Confidence intervals
        ii. RRR
        iii. ARR
        iv. NNT

Session 4: Thursday January 10, "Assessing a Document on Diagnosis"

1. Learning Objective 6: Assess systematically the relevance and validity of a given document with respect to the clinical situation
    a. Specific Points:
        i. Critical appraisal techniques
            1. Pragmatism (role of guidelines, UpToDate and abstracts)
            2. Revisit PPICONSS
        ii. Key statistical/quantitative measures to assess a diagnostic test
            1. Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), Limitations of these measures
            2. Likelihood Ratios (Positive/Negative): LR+. LR-
            3. Concept of pre/post test probabilities
2. Small Group Portion:
    a. Small group leads to give examples of recent clinical situations where they had to evaluate one or more documents related to making a diagnosis
    b. Group to review and discuss multiple short examples related to diagnosis which will focus on:
        i. Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), Limitations of these measures
        ii. Likelihood Ratios (Positive/Negative): LR+. LR-

Session 5: Friday January 11, "Assessing Multiple Studies"

1. Learning Objective 6: Assess systematically the relevance and validity of a given document with respect to the clinical situation
2. Learning Objective 7: Compare relevance and validity across two documents
    a. Specific Points:

        i. Critical appraisal techniques
            1. Comparing two documents
            2. Need to assess quality/level of evidence and find the best evidence given a clinical context
    b. Key statistical/quantitative measures for systematic reviews
        i. Interpreting a systematic review
            1. Forest Plot
            2. Odds ratios (OR)
            3. Weighting
            4. Funnel Plot
        ii. Revisit: number needed to treat (NNT), relative risk (RR), confidence intervals (CI)
3. Small Group Portion:
    a. Small group leads to give examples of recent clinical situations where they had to evaluate one or more documents and/or a systematic review related to making a diagnosis or deciding on a treatment
    b. Group to review and discuss multiple short examples which will focus on:
        i. Interpretation of a forest plot in a systematic review
        ii. OR, NNT, and RR in the context of a systematic review
        iii. Comparing two documents related to the same diagnosis or therapy