

**HuBio 590 “Medical Information for Decision Making” (MIDM)**

**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.

**Course Web Page:**

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

**WWAMI Course Chairs:**

- Alaska - Ryan McGhan (replacing Tim Silbaugh)
- Idaho - Barbara McNeil with Linda Shippert (WSU librarian)
- Montana - Bob Flaherty
- Washington - Seattle - Peter Tarczy-Hornoch, Leilani St. Anna (Information Management Librarian)
- Washington - Spokane – Barbara McNeil with Bob Pringle (Spokane librarian) and Jonathan Potter (also Spokane Librarian)
- Wyoming - Steve Bieber

**Seattle Course Chair and Small Group Leads**

- Peter Tarczy-Hornoch (Course Chair)
- Leilani St. Anna (Librarian for Lecture on Tuesday October 22<sup>nd</sup>)
- Lisa Oberg, Ellen Howard, Amy Harper, Terry Ann Jankowski, Nanette Welton, Janet Schnall, Leilani St Anna (Librarians for Small Group Session on Monday October 27<sup>th</sup>)
- Genevieve Pagalilauan and Lin DiGennaro (Group 1)
- Jenny Wright and Karlee Ausk (Group 2)
- Carol Collins (Group 3)
- Isabella Knox and Annie Nguyen-Vermillion (Group 4)
- Shane O’Mahony (Group 5)
- Zubin Vasavada (Group 6)
- Inge Falk von Royen and Carrie Heike (Group 7)

**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 2<sup>nd</sup> class session

**Office Hours and Contact Information**

- Peter Tarczy-Hornoch, I264A
- By arrangement – e-mail [pth@u.washington.edu](mailto: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 Fall 2008-9 there will be 6 sessions of the Medical Information for Decision Making (MIDM) course. Each session there will be both a lecture in T-435 and time spent in small groups applying the material you have learned. See “University of Washington Schedule for 2008-9” below for times and locations since order of lecture/small group sessions changes. See “Content Outline for Each Lecture” for more detail on material covered. **See the course web page for slides and for other material supporting each lecture and small group session at <http://courses.washington.edu/midm/schedule.htm>.** This supporting material will be updated as the course progresses

### **Grading and Class Attendance**

As described above under course organization the small group sessions will build on the material presented in lecture and on the assignments. To pass the course the following is required:

- Attendance at all six 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 Wednesday November 5<sup>th</sup> and must be completed by 5P Wednesday November 12<sup>th</sup>. 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.
- Assignments will be given after Lectures 1-5 to prepare for small group sessions but these assignments will not be graded.

### **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 2008-9

- Rooms:
  - Lecture: T-435
  - Small Groups: T538, T540, T543, T546, T548, T547 and T549
- Dates/Times/Topics (see “**Content for Outline Each Lecture**” for details)
  - Session 1, Tuesday October 21 (Lecture 1:30-2:30, Small Group 2:40-3:20)
    - i. Lecture Part I: “**Medical Information and Medical Decision Making**”
    - ii. Lecture Part II: “**Statistics 101**”
      - 1. Learning Objectives 1,2,3
    - iii. Small Group Focus: Introductions and review of assignment for 10/22
  - Session 2, Wednesday October 22 (Small Group 2-2:50, Lecture 3:00-3:50)
    - i. Small Group Focus: Translating a clinical question into a searchable one
      - 1. Learning Objective 3
    - ii. Lecture: “**Finding Medical Information in a Clinical Context**”
      - 1. Learning Objectives 4,5 (Lecturer: Leilani St. Anna, MLIS, AHIP)
  - Session 3, Monday October 27 (Small Group 2-2:50, Lecture 3:00-3:50)
    - i. Small Group Focus: Hands on session searching on-line databases
      - 1. Learning Objectives 4,5 (Librarians to join small group leads)
    - ii. Lecture: “**Assessing a Document on Treatment**”
      - 1. Learning Objective 6, focus on evaluating articles/documents on treatment using PPICONSS model
  - Session 4, Wednesday October 29 (Small Group 2-2:50, Lecture 3:00-3:50)
    - i. Small Group Focus: Review of sample problems and discussion of real world examples of interpreting articles on treatment
      - 1. Learning Objective 6, focus on evaluating articles/documents on treatment using PPICONSS model
    - ii. Lecture: “**Assessing a Document on Diagnosis**”
      - 1. Learning Objective 6, focus on evaluating articles/documents on diagnosis using PPICONSS model
  - Session 5, Monday November 3 (Small Group 2-2:50, Lecture 3:00-3:50)
    - i. Small Group Focus: Review of sample problems and discussion of real world examples of interpreting articles on diagnosis
      - 1. Learning Objective 6, focus on evaluating articles/documents on diagnosis using PPICONSS model
    - ii. Lecture: “**Assessing Multiple Studies**”
      - 1. Learning Objectives 6 & 7, focus on evaluating articles/documents that are systematic reviews and on looking at more than one document
  - Session 6, Wednesday November 5 (Small Group 2-2:50, Lecture 3:00-3:50)
    - i. Small Group Focus: Review of sample problems and discussion of real world examples of interpreting a systematic review and comparing two documents/articles
      - 1. Learning Objectives 6 & 7, focus on evaluating articles/documents that are systematic reviews and on looking at more than one document
    - ii. Lecture: “**Applying MIDM Concepts in the Real World**”

## Content Outline for Each Lecture

### **Lecture Tuesday October 21, Part I: “Medical Information and Medical Decision Making”**

### **Lecture Tuesday October 21, Part II: “Statistics 101”**

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 professionalism 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, publication bias, sponsorship bias)
    - vii. Personal & organizational values,
    - viii. Patient factors (cost, outcome, values, convenience, socioeconomic, cultural)
    - 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: Problem, Population, Intervention, Comparison, Outcome, Number of subjects, Statistics, Sponsor**
4. Learning Objective 6: Assess systematically the relevance and validity of a given document with respect to the clinical situation (**Statistics 101 portion**)
  - a. Specific Points:
    - i. Critical appraisal techniques
      1. Difference between diagnostic and therapeutic studies
    - ii. Key statistical/quantitative measures
      1. Assessing sampling and measurements related to clinical questions
      2. Mean, Standard Deviation
      3. p value (including limitations)

## 5. **Small Group Wednesday October 22**

- 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 assignment
- d. Students to give examples of clinical questions they have been asked or they have wondered about and present their translation of them into a searchable question using PICOS/PPICONSS framework)
- e. Small group to choose 1-2 topics to all do searches on as the assignment in preparation for 10/27 small group

## **Lecture Wednesday October 22: “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. Role of medical librarians
    - ii. Role of patients seeking information on the Internet
    - iii. Information resources and their advantages/limitations:
      1. Healthlinks
      2. PubMed database including Medline Plus
      3. Google/Google Scholar
      4. Up To Date clinical information resource
      5. MD Consult information resource
      6. Cochrane Library
      7. British Medical Journal (BMJ) Clinical Evidence
      8. Translating Research Into Practice (TRIP) database
      9. DELETED InfoPOEMS
      10. Agency for Healthcare Research and Quality National Guideline Clearinghouse
    - iv. 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 Monday October 27**
  - a. In preparation students, small group leads and librarians will have searched for answers to PICOSS topics identified in 10/22 small group

- b. 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
- c. Students to report on what they have found in resources and any questions they have on what they found.
- 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 questions

### **Lecture Monday October 27: “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. Different studies (Case Series, Cohort Trial, Case Control, Randomized Controlled Trial, Systematic Review, Meta-analysis)
      2. Levels of evidence
    - ii. More key statistical/quantitative measures
      1. Confidence intervals
    - iii. Treatment Statistics
      1. RRR: Relative Risk Reduction
      2. ARR: Absolute Risk Reduction
      3. NNT: Number Needed to Treat
      4. Odds Ratio

### **2. Small Group Wednesday October 29**

- 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 assignment related to treatments which will focus on:
  - i. Confidence intervals
  - ii. RRR
  - iii. ARR
  - iv. NNT
  - v. Odds Ratio

### **Lecture Wednesday October 29: “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 Monday November 3**

- 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 assignment 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-

**Lecture Monday November 3: “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 Wednesday November 5**

- 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 assignment 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

**Lecture Wednesday November 5: “Applying MIDM Concepts in the Real World”**

- 1. Learning Objective 3: Translate a clinical situation/scenario into a searchable question
- 2. Learning Objective 5: Find candidate documents from one or more medical information resource(s) that may address the clinical situation
- 3. Learning Objective 6: Assess systematically the relevance and validity of a given document with respect to the clinical situation
- 4. Learning Objective 7: Compare relevance and validity across two documents