CCAOM Research Literacy Course

The purpose of this resource is to encourage research literacy at the basic level for students of CCAOM member schools.

Course Objectives:

At the end of this course, the student will be able to:

1. Understand research terminology
2. Demonstrate fluency in information literacy
3. Use a collection of research databases to locate medical information
4. Recognize the scope and history of NCCAM
5. Read and critically review a research paper
6. Understand the significance of evidence-informed practices in acupuncture practice & research
7. Compare well designed studies with poorly designed studies by evaluating study design, appropriateness of participants, clinical significance of outcomes measures
8. Recognize general & specific outcome measures used in research
9. Understand research ethics and informed consent
10. Compare different types of research
11. List methodological challenges to acupuncture research
12. Understand the basic approach to integrating western in vivo and in vitro biomedical studies with TCM practice.

**REQUIRED TEXTS:**

Menard, Martha Brown. *(2009) Making Sense of Research*.

User's Guide to the Medical Literature, JAMA Series

**RECOMMENDED TEXTS/RESOURCES**

- Abramson, John. *Overdosed America*
- Birch, S., Felt, B. (1999). *Understanding Acupuncture*
- Deng, G. (2009) *Integrative Medicine Research: Context and Priorities*, Institute of Medicine
- Greenhalgh, Trisha. (2001) *How to Read a Paper: The Basics of Evidence-based Medicine*. BMJ Publishing Group. Wiley-Blackwell (2006). ISBN = 0727915789 or 1405139765.
- Hulley, Cummings, Browner, Grady, Hearst (2006) Newman *Designing Clinical Research*
- MacPherson, Hugh (2007). *Acupuncture Research: Strategies for Establishing an Evidence Base*. Churchill Livingstone. ISBN = 0443100292.
- Petrie. A. & Sabin, C. *(*2005). *Medical Statistics at a Glance*.
- Spencer & Jacobs. (1999) *Complementary & Alternative Medicine. An Evidence-based Approach.*
- Vogt, P. (2012). When to Use What Research Design
- World Health Organization. *Guidelines for Clinical Research on Acupuncture*. ISBN = 9290611146

Suggested Topics:

| | |
|---|---|
| Week 1: | Intro to Evidence-Informed Practices; Types of Journals; Overview Types of Studies |
| Week 2: | Specific types of research – survey, case report, chart review |
| Week 3: | Types of research – pilot study, longitudinal study, meta-analysis; The Hierarchy of Evidence |

| | |
|---|---|
| Week 4: | Placebo – effects, uses, how to enhance or reduce the placebo effect |
| | Placebo controlled clinical trials – benefits and limitations |
| Week 5: | Evidence Based Medicine: Asking the right questions; Critical Evaluation of the Literature |
| Week 7: | **Quiz, Project, Presentation** |
| Week 8: | Using PubMed, PubMed Central, and other databases; |
| | "searchable" questions; using MESH terms," and "identifying a PICO" |
| Week 9: | "Placebos" and "Blinding" for acupuncture |
| Week 10: | Whole Systems Research |
| Week 11: | Influencing the results – embedded design flaws |
| Week 12: | **Quiz, Project, Presentation** |
| Week 13: | Evaluation of current literature for case study reviews |
| Week 14: | Western biomedical research – why should a TCM practitioner care? |
| Week 15: | In vivo vs in vitro studies; ethical considerations of human research |
| Week 16: | Relevance of research for 6000-year old medicine; designing |
| | acupuncture-based research studies |

Other possible topics: Privacy / HIPAA and RCR training; Introduction to the IRB; Basic statistics and numbers (Mean, SD, p-value, t-tests); Understanding sensitivity, specificity, predictive value and likelihood ratios; the declaration of Helsinki (human research protocols); Communication with patients/health care providers about research

# Evidence-Informed Practice (EIP) and Research Related Competencies

Prepared for NARCCIM Research Literacy Competencies Workshop 2009

## [ ] 1. Define EIP and describe its role

Discusses the role, relevance and implications of different types of "evidence" in healthcare delivery, including clinical and historical experience, patient presentation and preferences, and research.

## [ ] 2. Describe fundamental principles of research

Describes research approaches, types of research design, and measurement methods

## [ ] 3. Generate searchable questions

Formulates questions that can be explored using available sources of evidence; propose testable hypotheses relevant to clinical practice.

## [ ] 4. Access relevant information to find evidence-informed (EI) answers to questions that arise in clinical practice.

Identifies and implements appropriate strategies for finding the best-available evidence from multiple sources, including databases, journals, texts, patients, other practitioners and clinical observation;

## [ ] 5. Critically appraise different forms of evidence

Uses critical thinking and evaluative criteria to systematically assess the relevance and validity of different forms of evidence; synthesize the evidence to enhance knowledge base

## [ ] 6. Integrate multiple forms of evidence into clinical practice

Effectively incorporates/applies best evidence from a variety of sources, including relevant research evidence, patient preferences and clinical expertise to inform clinical decisions, patient care and patient education.

## [ ] 7. Effectively integrates evidence into professional communications

Incorporates research findings and other forms of evidence into professional communications with colleagues, patients, third-party payers and community groups

## [ ] 8. Maintain ethical standards of practice

Practices responsible and ethical patient care, ethical thinking, ethical scholarship, including standards of copyright and citation; and ethical research including protection of human subjects

## [ ] 9. Engage in reflective practice

Establishes a habit of mindfulness, self-awareness, and contemplation of ideas, issues, or problems from different perspectives and in a variety of ways with an intention toward clarity and resolution.

## [ ] 10. Participate in the culture of research

Maintains awareness of research issues in their own discipline and establishes strategies to support lifelong learning including journal clubs and conference participation; discusses the importance of research in one's own discipline and its current status; discusses ways to effectively participate in research in one's field including practice-based research, informing study design, providing care in studies, etc.

## Evidence-Informed Practice and Research Related Competencies Rubric

| Competency | Exceeds | Adequate | Minimal | Inadequate |
|---|---|---|---|---|
| 1) Define EIP and describe its role | | | | |
| 2) Describe | | | | |

| | | | | |
|---|---|---|---|---|
| fundamental principles of research | | | | |
| 3. Generate searchable questions | | | | |
| 4. Access relevant information to find evidence-informed (EI) answers to questions that arise in clinical practice. | | | | |
| 5. Critically appraise different forms of evidence | | | | |
| 6. Integrate multiple forms of evidence into clinical practice | | | | |
| 7. Effectively integrates evidence into professional communications | | | | |
| 8. Maintain ethical standards of practice | | | | |
| 9. Engage in reflective practice | | | | |
| 10. Participate in the culture of research | | | | |

# National College of Natural Medicine

## COURSE INFORMATION FOR STUDENTS

| | |
|---|---|
| **Course Number/Quarter/Year** | Research Bas 434 Winter |
| **Course Title** | Research |
| **Credits** | 2 |
| **Class Time and Location** | Wednesdays 2-4 |
| **Instructor (s)** | Zwickey and Iacullo |
| **Faculty Office Hours** | Wednesdays 4-5 Admin Building, Suite 250 |
| **Phone and E-mail** | |

- Students are responsible for knowing and adhering to academic policies and procedures as outlined in the Student Handbook.
- Students are responsible for completing electronic assessments, which will be posted near the end of the quarter.

This syllabus contains information all students must read to understand the requirements of the course. Answers to most questions about the class can be found in this document.

### 1. Course Overview

Course Description: This course is designed to introduce students to a research study. Students will learn how to do a literature search for a study and critically review current literature, including some of the landmark papers in natural research. The focus of the literature will include the top public health topics: cancer, diabetes, cardiovascular disease, depression, and pain. Mainstream and alternative journals as well as studies will be compared. How to formulate a research question and how to subsequently address it will also be addressed.

Prerequisites: None

### 2. Student Competencies from this Course

Communication Skills:
Students will learn the language of scientific research and scientific method. This will promote their ability to discuss research and medicine with other researchers and physicians. Students will also work in a group setting each day. This will help them to learn group dynamics and how to make a group work as a team.

Critical Thinking:
Critical thinking skills are the primary goal of the Research and Biostatistics course. Students will learn how to formulate a question, and how to search for information relevant to that question. They will also learn how to use this information to inform their decision-making process. They will learn to evaluate the quality of research literature, and determine the strength of their clinical confidence based on research literature.

Naturopathic Philosophy:
"Treating the cause" of an illness requires knowing its cause. As new information is constantly being discovered and reported, a physician must know how to stay abreast of scientific literature, and know how to search literature for answers that may not be self-evident.

**3. Assessments**
Assessments will be based on the following:
Students will be assessed on whether they've kept up with their reading with weekly quizzes, weeks 3-10; (70 points);
Students will be assessed on their ability to interpret the literature by presenting a Journal club to their small group; (50 points)
Students will be assessed on their ability to find and evaluate research papers to answer a clinical question in their "Final project"; (50 points)
Other skills such as "using MESH terms," "developing clinical questions," and "identifying a PICO" will be evaluated through Homework assignments (30 points)

**4. Course Outcomes**

At the end of this course, the student will be able to:

- Use a collection of research databases to locate medical information
- Read and critically review a research paper
- List methodological challenges to research and to CAM research
- Find relevant high quality literature for a clinical case
- Compare well designed studies with poorly designed studies by evaluating study design, appropriateness of participants, clinical significance of outcomes measures
- Calculate relative risk, absolute risk ratio, and number needed to treat

**5. Organization and Requirements**
Each class session is 2 hours long. The first 45 minutes-1 hour is a lecture on a subject area relevant to research. The second half of the class session is a team-based learning format discussion of a scientific paper and how to critically evaluate each paper. Students are expected to be present for both parts of the course and to actively participate in class. Each student must present a journal article to their group during one of the weeks of class.

**6. Instructional Philosophy**
The course will be taught in a Team-Based Learning format. This format involves more discussion and allows students who know more about research to assist students who know less about research. The more active a student is in discussion, the more likely they are to remember their education.

**7. Instructional Materials and Resources (texts or study aids)**

Required Texts:
Overdosed America, John Abramson

Recommended Texts:
Making Sense of Research. Martha Brown Menard, 2003.
User's Guide to the Medical Literature, JAMA Series

**8. Grading (Evaluation with Criteria for Passing and Honors)**

Passing: 90% attendance, 80% on the project, 80% on the journal club, 80% on the quizzes, all homework complete, and participation in group activities.
Honors: All of the above and a written synopsis of a research article (PICO) (must have article approved by professor). Honors projects are due on Tuesday of week 11.

**9. Study Strategies and Participation Expectations**
As stated above, this course is designed to teach critical thinking. Thus, in order to best learn this skill, homework should be done independently when assigned independently, or paired when assigned as a pair. **It is expected that all students will read all of the assigned publications and be prepared to discuss the publication before class.**

The more research literature you read, the more skilled you will become in interpreting literature, making you more able to use research literature for clinical decision making. Thus, if you have extra time, spend some time on PubMed Central reading papers about medical conditions that interest you.

**10. Schedule**

| Week | Date | Topic | People | Paper Discussion/ Journal Club | Homework (to be discussed following week) |
|---|---|---|---|---|---|
| 1 | 1/6 | Intro to Evidence Based Medicine<br>Types of Journals; Types of Papers; Overview Types of Studies | Heather Zwickey | Zwickey presentation of a paper<br>Vioxx and Celebrex | Read Chapters 1-3 of Overdosed America; |
| 2 | 1/13 | EBM-<br>Types of Studies and Hierarchy of Evidence | Heather Zwickey | Quiz<br>Zwickey JC demo | Read OD 4-8 America papers; |
| 3 | 1/20 | Evidence Based Medicine<br>Asking the right questions | Heather Zwickey | Quiz<br>Premarin Paper Presentation #1<br>HRT | Read Acupuncture papers (SPINE study) |
| 4 | 1/27 | Evidence Based Medicine<br>Critical Evaluation of the Literature<br>PICO | Heather Zwickey | Quiz<br>Acupuncture Paper Presentation #2 | Read Meditation papers (Meditation and HIV) |
| 5 | 2/3 | Evidence Based Medicine<br>Calculating NNT, AR, ARR | Rich Barrett | Quiz<br>Meditation Paper Presentation #3 | Read St. John's Wort (Hypericum) papers |
| 6 | 2/10 | CAM Research: Methodological challenges (Botanical) | Heather Zwickey | Quiz<br>Botanical Paper Presentation #4 | Read St. John's Wort (Hypericum) papers |
| 7 | 2/17 | Using PubMed, PubMed Central, and other databases | Noelle Harling | Using PubMed, PubMed Central, and other databases | Read Weber,<br>St. John's Wort |
| 8 | 2/24 | Careers in Research: PTSD in vets | Helane Wahbeh | P values and stats review<br>Interpreting data<br>Citing research | Read Whole Systems Papers |
| 9 | 3/3 | Whole Systems Research | Carlo Calabrese | Quiz<br>Whole systems Presentation #5 | |
| 10 | 3/10 | Research Ethics Discussion<br>Plagiarism | Nancy Scarlett | Careers in Research | Lynne Shinto<br>Wendy Hodsdon |
| 11 | | Honor projects due | | | |
| 12 | | FINAL projects due | | | |

**Bibliography for Research and Biostatistics Course (BAS 434)**

We will not be discussing homeopathy. If you want to read about homeopathy, references are [22-24].

**References**


1. Bombardier, C., *An evidence-based evaluation of the gastrointestinal safety of coxibs*. Am J Cardiol, 2002. **89**(6A): p. 3D-9D.
2. Bombardier, C., et al., *Response to expression of concern regarding VIGOR study*. N Engl J Med, 2006. **354**(11): p. 1196-9.
3. Bombardier, C., et al., *Comparison of upper gastrointestinal toxicity of rofecoxib and naproxen in patients with rheumatoid arthritis. VIGOR Study Group*. N Engl J Med, 2000. **343**(21): p. 1520-8, 2 p following 1528.
4. White, H.D., et al., *Pravastatin therapy and the risk of stroke*. N Engl J Med, 2000. **343**(5): p. 317-26.
5. Cherkin, D.C., et al., *A randomized trial comparing acupuncture, simulated acupuncture, and usual care for chronic low back pain*. Arch Intern Med, 2009. **169**(9): p. 858-66.
6. Cherkin, D.C., et al., *Efficacy of acupuncture for chronic low back pain: protocol for a randomized controlled trial*. Trials, 2008. **9**: p. 10.
7. Moffet, H.H., *How might acupuncture work? A systematic review of physiologic rationales from clinical trials*. BMC Complement Altern Med, 2006. **6**: p. 25.
8. Myers, S.S., et al., *Patient expectations as predictors of outcome in patients with acute low back pain*. J Gen Intern Med, 2008. **23**(2): p. 148-53.
9. Caspi, O. and K.O. Burleson, *Methodological challenges in meditation research*. Adv Mind Body Med, 2005. **21**(1): p. 4-11.
10. Creswell, J.D., et al., *Mindfulness meditation training effects on CD4+ T lymphocytes in HIV-1 infected adults: a small randomized controlled trial*. Brain Behav Immun, 2009. **23**(2): p. 184-8.
11. Sarris, J. and D.J. Kavanagh, *Kava and St. John's Wort: current evidence for use in mood and anxiety disorders*. J Altern Complement Med, 2009. **15**(8): p. 827-36.
12. Weber, W., et al., *Hypericum perforatum (St John's wort) for attention-deficit/hyperactivity disorder in children and adolescents: a randomized controlled trial*. Jama, 2008. **299**(22): p. 2633-41.
13. Boon, H., et al., *Evaluating Complex Healthcare Systems: A Critique of Four Approaches*. Evid Based Complement Alternat Med, 2007. **4**(3): p. 279-285.
14. Ritenbaugh, C., et al., *Whole systems research: a discipline for studying complementary and alternative medicine*. Altern Ther Health Med, 2003. **9**(4): p. 32-6.
15. Szczurko, O., et al., *Naturopathic care for chronic low back pain: a randomized trial*. PLoS One, 2007. **2**(9): p. e919.
16. Verhoef, M.J., et al., *Complementary and alternative medicine whole systems research: beyond identification of inadequacies of the RCT*. Complement Ther Med, 2005. **13**(3): p. 206-12.
17. Walach, H., et al., *Circular instead of hierarchical: methodological principles for the evaluation of complex interventions*. BMC Med Res Methodol, 2006. **6**: p. 29.
18. Artaza, J.N., R. Mehrotra, and K.C. Norris, *Vitamin D and the cardiovascular system*. Clin J Am Soc Nephrol, 2009. **4**(9): p. 1515-22.
19. Jimenez-Corona, A., et al., *Applicability of Framingham risk equations for studying a low-income Mexican population*. Salud Publica Mex, 2009. **51**(4): p. 298-305.
20. Nucifora, G., et al., *Relation Between Framingham Risk Categories and the Presence of Functionally Relevant Coronary Lesions as Determined on Multislice Computed Tomography and Stress Testing*. Am J Cardiol, 2009. **104**(6): p. 758-763.
21. Oppenheimer, G.M., *Becoming the Framingham Study 1947-1950*. Am J Public Health, 2005. **95**(4): p. 602-10.
22. Jonas, W.B., et al., *Ethical issues in research in complementary and alternative medicine*. Jama, 2004. **291**(18): p. 2192; author reply 2193-4.

23. Walach, H., W. Jonas, and G. Lewith, *Are the clinical effects of homoeopathy placebo effects?* Lancet, 2005. **366**(9503): p. 2081; author reply 2083-6.
24. Walach, H., et al., *Research on homeopathy: state of the art*. J Altern Complement Med, 2005. **11**(5): p. 813-29.

UB Acupuncture Institute
Research Methodology
Course Outline
Spring 2008

Instructor:
Jennifer Brett, ND
Phone:
Email:

Course Description:
***The basic principles of clinical and laboratory research are examined with a special emphasis on the applications of acupuncture and oriental techniques in the research setting.***

Course Number: AWB 522

Prerequisites: None

Term: Spring 2007

Class Time & Days: ONLINE January 9 – May 20

Number of Credits: 1 Lecture Hours: 1 Lab Hours: 0 Total Hours: 18

Format: Lecture

Course Objectives:

1. The student will be able to identify the 10 most common types of research design
2. The student will learn how to utilize the UB library online and at UB to find research abstracts and full articles
3. The student will learn how to review research abstracts and articles and identify strengths and weaknesses based on research design and embedded flaws
4. The student review 9 acupuncture/TCM research abstracts and be able to discuss the findings relevant to clinical practice
5. The student will understand the basic approach to integrating western in vivo and in vitro biomedical studies with TCM practice.
6. The student will learn to design a blinded study that does not violate TCM practice guidelines and ethics and could elicit helpful information for AOM practitioners

Required Text: NONE

| | |
|---|---|
| Week 1: | Introductions, using online learning modalities |
| Week 2: | Types of research – survey, case report, chart review |
| Week 3: | Types of research – pilot study, longitudinal study, meta-analysis |
| Week 4: | Placebo – effects, uses, how to enhance or reduce the placebo effect |
| Week 5: | Placebo controlled clinical trials – benefits and limitations |
| Week 6: | Placebo controlled trials – theory behind double blinded cross over trials |
| Week 7: | **Quiz 1 (online)** |
| Week 8: | Non placebo controlled clinical trials |
| Week 9: | “Placebos” for acupuncture |
| Week 10: | “Blinding” in acupuncture |
| Week 11: | Influencing the results – embedded design flaws |
| Week 12: | **Quiz 2 (online)** |
| Week 13: | Using online resources – UBCAT & Pub Med |
| Week 14: | Western biomedical research – why should a TCM practitioner care? |
| Week 15: | In vivo vs in vitro studies; ethical considerations of human research |

Week 16: Relevance of research for 6000-year old medicine; designing research studies

Week 17: Free week to work on your final project

Week 18: **Final Project due – submit to the digital drop box**

**Final Project: (Due May 12): Design a blinded, cross-over placebo controlled trial that meets the requirements of either modern TCM or the Nei Jing in terms of acupuncture practice for both the placebo and active arm of the study. Identify where you have made modifications to modern biomedical research trial designs in order to be true to the profession.**

Evaluation:

Weekly discussion participation - worth 30% of grade
Quizzes & Assignments: 30% of grade
Final Project: 40% of grade.

Make Up Examination Procedure:

1. A student who is late for an examination will be allowed to take that exam only if no other student has finished the class and left the room
2. The student must notify the faculty member by the time of the test AT THE LATEST (call my cell 203-767-1939 or the college office 203-576-4109 and leave a message on the voice mail if no one answers) if he or she will not be taking the test. A makeup test will be given only upon submission of a documented reason which is considered valid by the instructor. The student and the instructor will fill out a Request for Makeup Test form and a makeup date will be scheduled within 7 calendar days of the original request.
3. A student will receive a grade of zero for any scheduled test if they fail to do the following:
    A. Present valid documentation
    B. Fill out a Request for Makeup Exam with the instructor
    C. Take the makeup exam within seven days from the original test
    D. Keep the appointed makeup test date
4. Final Exams:
    A. An unexcused absence will result in a failing (“F”) grade for the entire course
    B. If the student misses the final exam, a grade of “I” will appear on the transcript. It is the student’s responsibility to follow the steps above and schedule to makeup exam within seven calendar days of the end of the semester. Failure to follow these procedures will result in a grade of “F” at the conclusion of the semester following the one in which the “I” was issued.

Requirements for Passing Course: **70% or better** on overall discussion participation, quiz and assignment/project score

# National College of Natural Medicine

## COURSE INFORMATION FOR STUDENTS

| | |
|---|---|
| **Course Number/Quarter/Year** | RES420 Winter 2011 |
| **Course Title** | Research Practicum |
| **Credits** | 2 |
| **Class Time and Location** | Saturdays 9 am to 5 pm<br>Sundays 9 am to 12 noon<br>Dates January 29, 30 and February 19, 20, 2011<br>Room 302 |
| **Instructor (s)** | Wendy Hodsdon, ND |
| **Faculty Office Hours** | By Appointment Admin Building, Suite 250 |
| **Phone and E-mail** | |

- Students are responsible for knowing and adhering to academic policies and procedures as outlined in the Student Handbook.
- Students are responsible for completing electronic assessments, which will be posted near the end of the quarter.

This syllabus contains information all students must read to understand the requirements of the course. Answers to most questions about the class can be found in this document.

### 1. Course Overview

Course Description: This course provides and overview of the steps required in the research process. Students will complete training in responsible conduct of research and HIPAA, as well as complete conflict of interest disclosures. Institutional Review Board (IRB) training will cover the required components of IRB applications, including the protocol, consent forms, HIPAA forms, lay summary, telephone script, and advertising. Research ethics will be covered. Students will have the opportunity to participant in a research study. Introduction to statistics will be provided.

Prerequisites:

Completion or current enrollment in BAS434 Research and Statistics

### 2. Student Competencies from this Course

Communication Skills:

Students will learn the language of scientific research and scientific method. This will promote their ability to discuss research and medicine with other researchers and physicians. Students will also work in a group setting each day. This will help them to learn group dynamics and how to make a group work as a team.

Critical Thinking:

Critical thinking skills and development of those skills are the primary goals of the Research Practicum course. Students will learn research ethics and understand the importance and role of the Institutional Review Board and issues working with human research participants. Students will have the opportunity to learn about research by participating in a voluntary research project while in class.

**3. Assessments**

Assessments will be based on the following:

- Attendance (40 %) Participation in class and group discussions and projects is required.
- Homework (20 %) Students will be expected to complete responsible conduct in research training, conflict of interest disclosure. Students will be assessed on their evaluation of ethical questions related to published research papers.
- Final Project (40 %) Students will be assessed on their ability to complete an IRQ and consent form when provided with a protocol.

**4. Course Outcomes**

At the end of this course, the student will be able to:

- Understand the basics about the components of an IRB application
- Describe issues in ethics for research
- Understand basic statistical concepts and how to interact with a statistician
- Complete RCR training and Conflict of Interest declaration page
- Understand more directly the experience of research participants

**5. Organization and Requirements**

The class will be taught over 2 weekends. The class schedule is below.

In this term, we will complete a pilot study with the class as the study participants. Beginning Sunday of the first weekend, you will collect samples, enter data on a data collection sheet, and review the protocol and paperwork necessary to get this study approved by the NCNM IRB. Inclusion and exclusion criteria for the study will be discussed the first day of class. Participation in class during the study is part of the attendance grade. If you are ineligible for the study, or choose not to participant directly in the study for any reason, then you will observe the process and assist in the study where you are able.

**6. Instructional Philosophy**

The course will be taught in a lecture format and a Team-Based Learning format. A team- based learning format involves discussion in pairs and small groups and is designed to allow the students who know more about research to assist students who know less about research. The more active a student is in discussion, the more likely they are to remember their education.

**7. Instructional Materials and Resources (texts or study aids)**

Required Texts:
none

Recommended Texts:
Making Sense of Research. Martha Brown Menard, 2003.
In class articles and handouts

**8. Grading (Evaluation with Criteria for Passing and Honors)**

40% Attendance (40 points). Attendance is required due to the group learning format of the class. For each hour of class missed that is missed, the student will lose 4 points.

Passing: 80% attendance (2 points deducted for each hour of class missed), 80% on individual homework assignments (2 points deducted for each week an assignment is late), 80% on Final project – 2 IRB forms made from a provided protocol. All homework must be completed and weekly participation in group activities is required to pass. If students receive a near pass, they will be required to complete a remediation assignment involving the completion of IRQ and consent form for a new study protocol. A new study protocol will be provided by the instructor. For students who fail, the course must be re-taken.

**Attendance** **40 pts**

**Homework** **20 pts total**

RCR training completion (5 pts)

COI form completion (5 pts)

Prepare questions for discussion 2nd weekend (10 pts)

**Final Project** **40 pts total**

Complete IRQ from protocol (20 pts)

Complete consent form from protocol (20 pts)

**Total** **100 pts**

| | |
|---|---|
| Honors=90% | 90 pts |
| Passing= 80% and above | 80 pts |
| Near Pass= 70-79% | 70 – 79 pts |
| Fail= Below 69% | 69 and below |

Homework is due during the 2nd weekend.

Final project is due at the end of week 11.

**9. Study Strategies and Participation Expectations**

As stated above, this course is designed to teach critical thinking. Thus, in order to best learn this skill, homework should be done independently when assigned independently, or in groups when assigned to a group.

**10. Schedule**

**January 29th, Saturday**

| Time | Lecture topic or activity | Instructor |
|---|---|---|
| 9 - 10 | Introductions.<br>What is your interest in research?<br>Bring a research question to class. | Hodsdon |
| 10 - 11 | Ethics Lecture | Hodsdon |
| 11 - 12 | Privacy / HIPAA and RCR training | Hodsdon |
| 12 - 1pm | Lunch | |
| 1 – 2 pm | Conflict of Interest (COI) discussion and investigator bias | Hodsdon |

| | | |
|---|---|---|
| 2 – 2:30 | COI form | Hodsdon |
| 2:30 – 3 | COI in scientific literature | Hodsdon |
| 3 – 4 pm | Introduction to the IRB | Hodsdon |
| 4 – 5 pm | Introduce sugar study (consent forms go home with students) | Nygaard |

**January 30th, Sunday**

| | | |
|---|---|---|
| 9 – 9:30 | Consent form components and questions | Hodsdon |
| 9:30 – 10:30 | Ethical issues with studies – case studies in discussion groups | Hodsdon |
| 10:30 – 11 | Demonstrate procedure for study and how to use glucometer | Nygaard / Hodsdon |
| 11 – 12 | Perform study with students.<br>Lecture: Study design introduction | Nygaard/ Zwickey |

**February 19th, Saturday**

| **Time** | **Lecture topic or activity** | **Instructor** |
|---|---|---|
| 9 - 10 | IRB Documents: Protocol | Hodsdon |
| 10 - 11 | IRB Documents: IRQ, Telephone Screening script | Hodsdon |
| 11 - 12 | Perform sugar study<br>IRB Documents: Sugar Study | Nygaard/ Hodsdon |
| 12 - 1pm | Lunch | |
| 1 – 3 pm | Ethic Discussions – case studies in discussion groups. Read at least 2 of the articles provided before coming to class. Answer questions concerning ethic issues as homework. Discuss in groups. | Hodsdon |
| 3 – 5 pm | Introduction to statistics<br>Perform sugar study | Wilde/ Nygaard |

**February 20th, Sunday**

| | | |
|---|---|---|
| 9 – 11 am | Ethical and design issues with student studies. Questions and activities individually, in pairs and small groups. | Hodsdon |
| 11 – 12 | Final sugar study measurement and<br>Wrap up | Nygaard/ Hodsdon |

# DRE 803-806 Research Methodology I, II, III and IV

## Module 1 (2 days) Basics of Scientific Research – by Nadine Gassner, PhD

- Introduction to Research Methodology
  - Research tools (library and online – what is available at Five Branches)
  - Literature Review
- Research Topic
  - Why research topics arise? (Hypothesis and research question you wish to answer through your research)
  - Choosing a Topic
- Research Design
  - Key points to consider in designing a research
  - Survey method, case-study method, pilot study, QA study
  - IRB requirement
  - Clinical trials and parameters of measurement (lab and symptomatology)
  - Quasi vs Experimental Methodology
  - RCTs
  - Inclusion and exclusion criteria
- Introduction to Pre-proposal and Proposal
- Practice on Pre-proposal and Proposal

## Module 2 (2 days) Introduction to Scientific Literature and Capstone Paper– by Heather N. Thomsen, PhD

- Explore the different sections of peer-reviewed journal articles including the Abstract, Introduction, Literature Review, Methods, Results and Discussion sections and how these pertain to the Capstone paper.
- Obtain TCM peer-reviewed journal articles: Access PubMed online and gather full text articles.
- Introduce the 4 major quantitative statistics: t-tests, chi-square, linear correlation, and ANOVA statistics (including under what circumstances each method is used).
- Determine useful TCM literature (based on knowledge from DRE 803 Research Methodology I and statistics)
- Work on Research Design for Capstone project.
- Practice Pre-proposal and Proposal using in-class time.

## Module 3 (2 days) – by Nadine Gassner, PhD & Heather Thomsen, PhD

Day 1: Nadine Gassner, PhD

1. Critical evaluation of current literature

- case study
- pilot study
- literature review with meta-analysis
- qualitative study

2. Discussion of best practices in design and writing of Capstone learned from analysis of literature

Day 2: Heather Thomsen, PhD

- Writing of professional paper
  - Format for clinical study
  - Format for review
- Literature Review
- Discuss the difference between the hypothesis and research question.
- Cover topic sentences, transitions, and the composition of the overall Capstone project.
- Review what should be included in the Introduction, Methods, Results and Discussion sections.
- Provide examples of Reference sections- use class time to compose them correctly.

- Provide examples of in-text citations.

## Module 4 (1 day) – SAR Researcher

- Popular ongoing researches/types of ongoing research – discuss in detail (design, resources, difficulties encountered, etc.)
- Institutions for AOM research (like SAR, UCSF, University of Maryland, OCOM, NESA-OSHA, etc.)
- SAR Conferences
- AOM research controversies (e.g. sham acupuncture, etc.)
- Available research funding for young investigators
- Etc.

# COURSE OUTLINE

| | | |
|---|---|---|
| WK 1 | Introduction | What is research? How is it done today? |
| WK 2 | Pubmed search | Online research tools, journals |
| WK 3 | | Scientific papers Structure and types of articles |
| WK 4 | Study types | From case studies to RCT's- "gold standard" |
| WK 5 | Literature research | Where do we stand today? |
| WK 6 | Basic statistics and numbers | Mean, SD, p-value, t-tests |
| WK 7 | Review, questions, more examples | |
| WK 8 | **MIDTERM:** Journal Club | In-class presentation on your topic of interest |
| WK 9 | **MIDTERM:** Journal Club | In-class presentation on your topic of interest |
| WK 10 | **SPRING BREAK** | |
| WK 11 | Guidelines for authors | CONSORT & STRICTA |
| WK 12 | Research Desing | How to create your own research question |
| WK 13 | Research Desing | Different tools and methods |
| WK 14 | Research Design | Surveys, questionnaires |
| WK 15 | Acupuncture research today | Congresses, conferences…worldwide |
| WK 16 | **FINAL:** Research project | In-class presentations |
| WK 17 | **FINAL:** Research project | In-class presentations |

# PHOENIX INSTITUTE OF HERBAL MEDICINE & ACUPUNCTURE

301 East Bethany Home Road, Suite A-100, Phoenix, Arizona 85012 (602) 274-1885

| | | | |
|---|---|---|---|
| **COURSE CODE:** | RES 600 | **COURSE TITLE:** | Research Methods |

| | | | |
|---|---|---|---|
| **Session:** | Spring 2011 | **Instructor:** | Dr. Howard Major |
| **Days/Times:** | Sundays 8:00 AM-12:00 Noon<br>First 15 weeks | **Phone #:** | |
| **Locations:** | A-107 | **Email:** | |
| **Hours/Credit** | 45 hours / 3 credits | **Availability:** | By email, phone, or appointment |

**Instructor Bio:** *Howard Major has undergraduate majors in Sociology and Secondary Education, a Masters degree in Library and Information Science and a Doctorate in Educational Leadership with an emphasis in Educational Technology from Western Michigan University. He has taught at various schools, colleges and universities including Grand Valley State University, Valencia College, Eastern Michigan University and Nazareth College of Kalamazoo. He has been a college and university administrator in several universities and colleges in Michigan, Colorado and Wyoming. He has taught online distance learning courses and courses related to improving the teaching and learning process.*

**Course Description:** This course focuses on the use of quantitative and qualitative research designs in field and clinical settings within Oriental medicine. The use of primary and secondary data, research design and research methodology are included. Also emphasized is the interpretation and utilization of research findings in practice. This course prepares students to begin work on their Master's degree thesis/Applied Research Proposal..

**Curricular Relationships:** This course is appropriate for students who matriculated under the 2006-2008 catalogs, and prepares the student for RES 610.

**Prerequisites:** None

**Required Text(s):** *Acupuncture Research: Strategies for Establishing an Evidence Base*, by Hugh MacPherson et al. Churchill Livingstone (2007). ISBN = 0443100292.

*How to Read a Paper: The Basics of Evidence-based Medicine, 2nd Edition* or newer, by Trisha Greenhalgh. BMJ Publishing Group (2001); Wiley-Blackwell (2006). ISBN = 0727915789 or 1405139765.

*Publication Manual of the American Psychological Association, Sixth Edition*. American Psychological Association (2009). ISBN = 1433805618.

Phoenix Institute of Herbal Medicine & Acupuncture Research Guide 2011. Microsoft Word document to be distributed in class.

**Recommended Text(s):** *Guidelines for Clinical Research on Acupuncture*. World Health Organization. ISBN = 9290611146.

*The Elements of Style, Fourth Edition*, by William Strunk Jr. & E. B. White. Longman (1999). ISBN= 020530902X.

**Course**

**Competencies:** This course will enable the student to:

- Describe the role of Scientific Review Boards, Institutional Review Boards, and the academic peer review process.
- Evaluate approaches to evidence based medicine and rating the safety and effectiveness of treatments.
- Assess the validity and applicability of published reports.
- Describe common experimental methods and designs and apply them to the design of experiments.
- Describe common statistical tests and how they contribute to the evaluation of experimental results.
- Design a reasonable and valid Thesis/Applied Research Proposal.
- Identify ethical considerations applicable to research involving human subjects and apply these considerations to research design.
- Use the style manual of the American Psychological Association to guide the presentation of a Thesis or Applied Research Proposal.
- Demonstrate knowledge of the basic processes that researchers must follow to design a useful thesis or research study. These would include stating a research problem or thesis statement, reviewing related literature, explaining the methodology that will test a hypothesis (if an applied research proposal is chosen) or the methodology that will support a thesis statement (if a thesis project is chosen).
- Draw appropriate conclusions from the thesis project or the applied research proposal project.
- Define and describe suggestions for further investigation or study related to the chosen topic.

| **Class topics and Assignments** | **DUE DATE** | **% of Grade** |
|---|---|---|
| Review Syllabus and course design. Review PIHMA Research Guide and share timeline goals. Discuss purposes of research. Discuss application of APA protocol. | Week 1 (January 9, 2011) | 10% |
| Discuss ethical considerations in research: Prior to class, please complete NIH Training on "Protecting Human Research Participants" (submit certificate in class). Begin discussion of Basic research processes. Begin vocabulary building. | Week 3 (January 23) | 10% |
| Basic research processes: Writing a thesis statement or problem statement. Continue vocabulary building. Applying APA. | Week 5 (February 6) | 10% |
| Basic research processes: Reviewing related literature. Boolean Searching, Database searching. Continue Vocabulary building. | Week 7 (February 20) | 10% |
| Basic research processes: Measurement. Mid-term feedback instrument. Continue vocabulary building. | Week 9 (March 6) | 10% |
| Quality Analysis of Research Designs. Please review Campbell and Stanley prior to class. Continue vocabulary building. | Week 11 (March 20) | 10% |
| Hypothesis Testing. Continue vocabulary building. | Week 13 (April 3) | 10% |
| Putting it all together on a small scale: Developing a scaled-down academic paper (thesis or applied research proposal). Group development of Grading Rubric. | Week 15 April 17) | 10% |
| Collaborative sharing and critique of your draft of a thesis/applied research proposal focusing on applying the "best practices" discussed in this class.<br><br>Week 18 is final exam week. Time and location will be communicated to students in a timely manner. A revised draft of a thesis/applied research project will also be due. This "compressed" Thesis/Applied Research Proposal can form the first draft of your Thesis/Applied Research Proposal | Week 17 (May 8th) | 20% |

| | | |
|---|---|---|
| for RES610. However if you wish to use this as a practice and switch to a different topic for RES 610, that is also permissible.<br><br>Submit electronic copy of your draft in Microsoft Word "doc" or "rtf" format for review by Dr. Major.<br><br>You will be graded both on content and writing style. | | |

**Competency Assessment**: A final research proposal will give the student the opportunity to propose scientific study of an aspect of TCM of particular interest to him or her.

**Attendance Requirements**: 80% attendance is required. Unavoidable absences will require make-up work to be arranged with the instructor. Also please read the section on attendance in the academic policies section of the PIHMA catalog.

**Grading Scale:**

| | | | | | |
|---|---|---|---|---|---|
| **A** | **95+** | **B-** | **80-83** | **D+** | **67-69** |
| **A-** | **90-94** | **C+** | **77-79** | **D** | **64-66** |
| **B+** | **87-89** | **C** | **74-76** | **D-** | **60-63** |
| **B** | **84-86** | **C-** | **70-73** | **F** | **59 or less** |

**Incompletes:** Please refer to the **catalog or** student handbook regarding incompletes.

**Course Schedule & Assignments (Subject to Change)**:

| WEEK | DATE | READING ASSIGNMENTS TO BE COMPLETED BY |
|---|---|---|
| 3 | 1/23/11 | http://en.wikipedia.org/wiki/Scientific_method<br>http://phrp.nihtraining.com/users/login.php<br>Proposal and Grant Writing<br>MacPherson: Chapter 1 (Acupuncture and the Emerging Evidence Mosaic). |
| 5 | 2/6/11 | APA: Chapter 1 *(Writing for the … Sciences)*<br>APA: Chapter 2 *(Manuscript Structure and Content)*<br>APA: Chapter 3 *(Writing Clearly and Concisely)*<br>APA: Chapter 4 *(Mechanics of Style)*<br>Strunk & White: *Elements of Style (Recommended)*<br>http://scholar.google.com/<br>APA: Chapter 6 (Crediting Sources)<br>APA: Chapter 7 (Reference Examples)<br>PIHMA Research Handbook. |
| 7 | 2/20/11 | MacPherson: Chapter 5 *(Measuring Outcomes)*<br>MacPherson: Chapter 6 *(Studies Without Control)*<br>MacPherson: Chapter 7 *(Comparing Treatments)*<br>MacPherson: Chapter 10 (Mechanisms)<br>MacPherson: Chapter 12 *(Practical Guidelines)* |
| 9 | 3/6/11 | MacPherson and class handouts<br>Greenhalgh: Drug Trials<br>Greenhalgh: Diagnostic and Screening Tests<br>Greenhalgh: Meta-Analyses<br>Greenhalgh: Guidelines<br>Greenhalgh: Economic Analysis<br>Greenhalgh: Qualitative Research |
| 11 | 3/20/11 | MacPherson and class handouts<br>http://en.wikipedia.org/wiki/Placebo<br>http://en.wikipedia.org/wiki/Nocebo<br>http://en.wikipedia.org/wiki/Hawthorn_effect |
| 13 | 4/3/11 | Greenhalgh: *Why Read Papers at All?*<br>Greenhalgh: *Getting Your Bearings* |
| 15 | 4/17/11 | Greenhalgh: *Assessing Methodological Quality* |

| | | |
|---|---|---|
| 17 | 5/8/11 | http://en.wikipedia.org/wiki/Evidence-based_medicine<br>MacPherson: Chapter 2 (Acupuncture Research – the Story So Far)<br>Schmuller: *Statistical tests*.<br>Greenhalgh: Implementing Evidence Based Findings<br>Greenhalgh: Appendix 1: Checklist |

*American College of Traditional Chinese Medicine*

*DAOM 09 Syllabus – Fall 2009*

*Clinical Research Design I with Dr. Lixing Lao*

| | |
|---|---|
| **Instructor**: Lixing Lao, PhD, L.Ac.<br><br>**E-mail:**<br><br>**Phone:** | **Course Name:** Clinical Research Design<br><br>DA715<br><br>**Class Schedule:** Dec 11 – Dec 13, 2009<br><br>Friday to Sunday from 8:30 – 5:30pm<br><br>**Class Hours:** 24 Didactic |

**Course I Description**

This course will assume that students have already had a basic research methodology course. This course provides a further foundation in research methodology to enable students to read and critique the medical literature. Students will learn how to interpret research questions, understand the basic concept of study design, interpret statistical results, and evaluate potential bias and confounding and address ethical issues of research.

**Learning Objectives**:

- To be able to critically evaluate clinical studies of acupuncture and Oriental medicine
- To learn how to interpret the research question and learn how to formulate a research question.
- To understand the basic concept of study design and select a study design.
- To understand sample size calculation and interpret statistical results.
- To evaluate potential bias and confounding.
- To address ethical issues of research.
- After completing the course, students will be able to critique the main sections of a clinical trial on a complementary medicine therapy, such as research questions, design, study sample/diagnosis, intervention, treatment allocation concealment/blinding, and conclusions.
- After completing the course, students will be able to identify the major challenges in designing clinical trials that evaluate the effectiveness of acupuncture and Chinese medicine.

**Methods of Instruction**

Lecture and class projects.

**Methods of Evaluation**

Term project and project presentation.

**Schedule of Topics:**

| Lecture # | Description<br>**Class is scheduled from Friday to Sunday (December 11-13)** |
|---|---|
| 1st Class | General Overview<br>Assessing the research question and Study Plan<br>Internal and External Validity. |
| 2nd Class | Specification of study subjects and sampling – biomedicine versus Chinese medicine classifications.<br>Experimental Designs/Clinical Trials<br>Choice of Comparative groups, assuring adherence, appropriate random allocation, and blinding.<br>Spurious Associations – Confounding, bias and random error. |
| 3rd Class | Outcome assessments – Understanding sensitivity, specificity, predictive value and likelihood ratios.<br>Statistical Principles I:<br>Type I and II errors. Effect Size, power calculations, and p-values. |
| 4th Class | Critique Journal Article. |
| 5th Class | Workshop on clinical trail design |
| 6th Class | Ethical Issues in conducting clinical research -- IRBs, Federal Guidelines on Human Subjects, Informed Consent, Blinded trials, Deception. Final Exam. |

**Required* Reading/Texts**

1. **Clinical Trials Using "wait-list" Control**
   *Chronic Low back pain[1]
   PTSD [2]
2. **Clinical Trials Using "Non-insertion Sham acupuncture" Control**
   Infertility[3]
   Toothache[4]
   IBS[5]
   *Knee OA[6]
   *Chronic Low back pain[24]
3. **Clinical Trials Using "Needling insertion Sham acupuncture" Control – for pain conditions**
   *Knee OA[7]
   Migraine[8]
   *Low back pain[9]
4. **Clinical Trials Using "Needling insertion Sham acupuncture" Control – for non-pain conditions**
   *Low blood pressure[10]

*Hypertension[11]
Hot flash[12]

5. **Systematic Review**
*Knee OA: [13]
*Infertility: [14]
Low back pain[15]
Obesity[25]
Infertility[26]
Postoperative nausea and vomiting[27]
Allergic rhinitis[28]
Migraine[29]
Tension Type Headache[30]
Pain[31]
Chronic headache[32]
Depressive disorders[33]

6. **Research Methodology** [*18, *19, *20]

Reference


1. Brinkhaus, B., et al., *Acupuncture in patients with chronic low back pain: a randomized controlled trial*. Arch Intern Med, 2006. 166(4): p. 450-7.
2. Hollifield, M., et al., *Acupuncture for posttraumatic stress disorder: a randomized controlled pilot trial*. J Nerv Ment Dis, 2007. **195**(6): p. 504-13.
3. Smith, C., M. Coyle, and R.J. Norman, *Influence of acupuncture stimulation on pregnancy rates for women undergoing embryo transfer*. Fertil Steril, 2006. **85**(5): p. 1352-8.
4. Michalek-Sauberer, A., et al., *Perioperative auricular electroacupuncture has no effect on pain and analgesic consumption after third molar tooth extraction*. Anesth Analg, 2007. **104**(3): p. 542-7.
5. Schneider, A., et al., *Acupuncture treatment in irritable bowel syndrome*. Gut, 2006. **55**(5): p. 649-54.
6. Berman, B.M., et al., *Effectiveness of acupuncture as adjunctive therapy in osteoarthritis of the knee: a randomized, controlled trial*. Ann Intern Med, 2004. **141**(12): p. 901-10.
7. Scharf, H.P., et al., *Acupuncture and knee osteoarthritis: a three-armed randomized trial*. Ann Intern Med, 2006. **145**(1): p. 12-20.
8. Diener, H.C., et al., *Efficacy of acupuncture for the prophylaxis of migraine: a multicentre randomised controlled clinical trial*. Lancet Neurol, 2006. **5**(4): p. 310-6.
9. Haake, M., et al., *German Acupuncture Trials (GERAC) for chronic low back pain: randomized, multicenter, blinded, parallel-group trial with 3 groups*. Arch Intern Med, 2007. **167**(17): p. 1892-8.
10. Flachskampf, F.A., et al., *Randomized trial of acupuncture to lower blood pressure*. Circulation, 2007. **115**(24): p. 3121-9.
11. Macklin, E.A., et al., *Stop Hypertension with the Acupuncture Research Program (SHARP): results of a randomized, controlled clinical trial*. Hypertension, 2006. **48**(5): p. 838-45.
12. Vincent, A., et al., *Acupuncture for hot flashes: a randomized, sham-controlled clinical study*. Menopause, 2007. **14**(1): p. 45-52.
13. Manheimer, E., et al., *Meta-analysis: acupuncture for osteoarthritis of the knee*. Ann Intern Med, 2007. **146**(12): p. 868-77.
14. Manheimer, E., et al., *Effects of acupuncture on rates of pregnancy and live birth among women undergoing in vitro fertilisation: systematic review and meta-analysis*. Bmj, 2008.
15. Manheimer, E., et al., *Meta-analysis: acupuncture for low back pain*. Ann Intern Med, 2005. **142**(8): p. 651-63.
16. Sherman, K., Lao, L., MacPerson, H., Lewith, G., Hopwood, V., Kawakita K. Matching acupuncture clinical study designs to research questions. *Clinical Acupuncture and Oriental Medicine* 2002: 3:12-15
17. MacPerson, H., Sherman, K., Hammerschlag, R., Birch S., Lao, L., Zaslawski C. The clinical evaluation of traditional East Asian systems of medicine. *Clinical Acupuncture and Oriental Medicine*. 2002: 3:16-19
18. Lao, L., Ezzo, J. Designing acupuncture trials: one size does not fit all, *Clinical Acupuncture & Oriental Medicine*. 2003: 3(4): 218 – 221

19. Lao, L., Brian Berman. Evaluating the Effects of Acupuncture on Knee Osteoarthritis- A Stepwise Approach to Research, University of Maryland Experience. *The American Acupuncturist - AAAOM's Official Publication for Practitioners of Oriental Medicine*. 2007;40:8-11
20. Lao, L., Berman, B., Ezzo, J., Hammerschlag, R. Considerations for the Future Design of Clinical Trials in Acupuncture. IN Stüx, G., and Hammerschlag, R. (eds.) *Clinical Acupuncture--Scientific Basis*. Berlin: Springer-Verlag, 2001
21. Hully, S.B. et al,. *Designing Clinical Research: An Epidemiologic Approach, 2001. 2nd Edition* Lippincott Williams & Wilkins Publishers, Baltimore, MD.
22. Lewith, G Jonas W.B. Walach H. *Clinical Research in Complementary Therapies: Principles, Problems, and Solutions*. 2002. Churchill Livingston, New York.
23. *Guidelines for Clinical Research on Acupuncture*, WHO Regional Publications, Western Pacific Series No. 15, 1997.
24. Cherkin, D. C., K. J. Sherman, et al. (2009). "A randomized trial comparing acupuncture, simulated acupuncture, and usual care for chronic low back pain." Arch Intern Med **169**(9): 858-66.
25. Cho, S. H., J. S. Lee, et al. (2009). "Acupuncture for obesity: a systematic review and meta-analysis." Int J Obes (Lond) **33**(2): 183-96.
26. El-Toukhy, T. and Y. Khalaf (2009). "The impact of acupuncture on assisted reproductive technology outcome." Curr Opin Obstet Gynecol **21**(3): 240-6.
27 Lee, A. and L. T. Fan (2009). "Stimulation of the wrist acupuncture point P6 for preventing postoperative nausea and vomiting." Cochrane Database Syst Rev(2): CD003281.
28. Lee, M. S., M. H. Pittler, et al. (2009). "Acupuncture for allergic rhinitis: a systematic review." Ann Allergy Asthma Immunol **102**(4): 269-79; quiz 279-81, 307.
29. Linde, K., G. Allais, et al. (2009). "Acupuncture for migraine prophylaxis." Cochrane Database Syst Rev(1): CD001218.
30. Linde, K., G. Allais, et al. (2009). "Acupuncture for tension-type headache." Cochrane Database Syst Rev(1): CD007587.
31. Madsen, M. V., P. C. Gotzsche, et al. (2009). "Acupuncture treatment for pain: systematic review of randomised clinical trials with acupuncture, placebo acupuncture, and no acupuncture groups." Bmj **338**: a3115.
32. Sun, Y. and T. J. Gan (2008). "Acupuncture for the management of chronic headache: a systematic review." Anesth Analg **107**(6): 2038-47.
33. Zhang, Z. J., H. Y. Chen, et al. (2009). "The effectiveness and safety of acupuncture therapy in depressive disorders: Systematic review and meta-analysis." J Affect Disord.

# Institute of Clinical Acupuncture and Oriental Medicine
# Course Syllabus

# Research Methodology
# 3 Credit Hours
# Tuesdays 5-7:30pm

**Instructors**: Ed Bernauer, Ph.D.

**Course Description**:

This course surveys the essential aspects of research methodology and covers the basic processes of building research studies. This course will cover the fundamentals of study conception (hypothesis), design (approach), and conduct (implementation) of clinical research and analyses. Students will acquire the skills to construct their own TCM research proposal and interpret and critically analyze published acupuncture and/or TCM research.

**Pre-requisites**: None

**Student Learning Outcomes**:
Upon successful completion of Acupuncture Research Methodology, a student should be able to:

- Use the scientific method to analyze a research question, formulate a hypothesis, and outline an appropriate research design.
- Comb the scientific literature to develop an understanding of the knowledge and issues associated with current research questions.
- Identify experimental variables
- Outline how to select a sample of sufficient size for an ideal experiment
- Discuss and analyze the differing methods of data collection, and select an appropriate method based on research question and design
- Overview of quantitative and qualitative statistics.
- Choose appropriate analyses of quantitative data and formulate conclusions based on how data is displayed.
- Conduct a TCM pilot project or write a TCM research proposal
- Critically evaluate scientific information in scientific journals and other media.
- Communicate in ways appropriate to the biological sciences (both on paper and orally).
- Learn to use the APA manual for correct scientific writing conventions

**Textbook:**

MacPherson, Hugh. *Acupuncture Research: Strategies for Establishing an Evidence Base*. Churchill Livingstone. 2008.

Kumar, Ranjit. *Research Methodology: A Step-by-Step Guide for Beginners*. Sage Publications Ltd; Second Edition. 2005.

**Recommended:** Publication Manual of the American Psychological Association, Fifth Edition (APA Manual). This Manual is updated electronically on-line and can be ordered at: http://www.apastyle.org/pubmanual.html

Supplemental readings will be assigned weekly and will be handed out or emailed one week prior to class.

PowerPoint Presentations will be available either for download, printing as handout layouts, or printed and distributed one week prior to the class in which the PowerPoint presentations will be given in class.

Several supplemental journal articles, journals, textbooks and other readings will be available on reserve in the Institute's library. Please do not take these extra source materials from the library unless for copying at the Institute with permission.

**Requirements:**

Students are expected to come to class on time prepared to discuss readings and participate in activities that highlight concepts from readings. In addition to the weekly participation requirement and eight assignments, all students will be expected to complete a proposal for a research study where they correctly apply experimental design principles. Students should select a clinical problem of personal interest in acupuncture or oriental medicine. Students will communicate their research proposal via an oral presentation at the end of the semester.

**Course mechanics**:

| | |
|---|---|
| **Attendance** | 15 pts |
| **Assignments/Participation** | 30 pts |
| **Acupuncture Research Project (written)** | 20 pts |
| **Acupuncture Research Project (presentation)** | 35 pts |

**Total: 100 points**

**Attendance**
Although completing all assignments and the research proposal (written and presentation) are essential to overall class performance and efficacy of student learning objectives, attendance at class meetings is equally as important for assimilation of information. Five points will be awarded to each student for attendance on 15 of the class meeting dates. If you know ahead of time you cannot make class, notify the instructor BEFORE class to make other arrangements. You can arrange to get the attendance points by other methods if you let the instructor know ahead of time.

**Assignments/Participation**
Assignments will be used as the basis for each week's lecture and discussion and thus it is imperative that you complete and bring them to class. Assignments are utilized to assist students in gradually constructing their research proposal over the course of the semester. While it is important to do your best in completing each assignment, grading will be skewed towards effort and completeness rather than accuracy. During class, students will work cooperatively to improve their assignments by sharing them with the class. See grading rubric for assignments.

**Research Project**
The research project should be no more than 5 pages typed, not including references. The research proposal presentation should be a 15 minute PowerPoint presentation, followed by a maximum of 5 minutes of questions from the audience. Details and grading rubrics on the written and oral components of the research proposal will be handed out and discussed later. Remember following scientific writing formats are spelled out with examples in the APA manual.

**Final Grades**
Final grades will be determined by the percentage of total available points that you accumulate, according to the standard grading format.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Grading** | **A** | **95-100** | **4.0** | **B-** | **80-82** | **2.7** |
| | **A-** | **90-94** | **3.7** | **C+** | **77-79** | **2.3** |
| | **B+** | **87-89** | **3.3** | **C** | **75-76** | **2.0** |
| | **B** | **83-86** | **3.0** | **F** | **0-74** | **0.0** |

Grades may be curved at the instructor's discretion; however, students should use the above grading scale to evaluate their performance throughout the class. No extra credit assignments will be offered. Extra credit will not be given for any unassigned work.

**Absence/Late Assignments**

If you cannot attend class or complete an assignment, please let instructor know as early as possible, by email if necessary. Assignments can be emailed *before* class for full credit. If you are ill or have a legitimate emergency you must contact the instructor within 48 hours to make arrangements for missed assignments. The instructor may request that the student present evidence of the illness or emergency. Unexcused late assignments will be deducted by **20% each day**.

**Academic Dishonesty**

**Students involved in academic dishonesty will receive an "F" grade for the course.**

Academic dishonesty includes cheating, copying, and plagiarism.

**Grading Rubric for Assignments:**

| **Expectations:** | **Exceeds or Meets** | **Approaching** | **Does not meet** |
|---|---|---|---|
| **Completion**<br>2pts | Assignment fully completed (2pts) | Assignment mostly completed<br>(1pt) | *If assignment not completed = zero* |
| **Effort**<br>5 pts<br><br>**(If you do not understand an aspect of an assignment, please email me prior to class for assistance) | Student fully answers questions – this may include detailed explanations, justifications, thought processes, or other information relative to each assignment.<br>Student shows evidence of reading assigned material.<br>Student shows evidence of thoroughly reading question and answering thoughtfully.<br>(5pts) | Student fully answers some questions but marginally answers others. Some questions may be answered incorrectly due to misunderstanding of question.<br>(3-4pts depending on prevalence) | Student marginally answers questions, answers very short with no explanations. Little or no evidence of completion of assigned reading(s).<br>(0-2pts depending on prevalence) |
| **Terminology / Concepts Evidence of Preparedness**<br>3pts | Uses scientific terminology and concepts that correlate with material covered in class and utilized in that week's assigned reading<br>(3pts) | Uses some scientific terminology and concepts but slips into using laymen words or phrases; uses few if any "new" words or concepts covered in that week's assigned reading<br>(2pts) | Uses few if any scientific terminology or concepts, no evidence student has read week's assigned reading<br>(0-1pt depending on prevalence) |

**Total Number of Points: 10**

**Course Content and Schedule:**

| Date | Lecture Topic | Readings | Assignments |
|---|---|---|---|
| 5/11 | Introduction to Class | Research Terminology | Read : Glossary of research terminology in the beginning text of Acupuncture Research |
| 5/18 | Acupuncture and the emerging evidence mosaic | Why do research<br>Why Acupuncture is a challenge to research<br>Western Clinical Trials of Acupuncture | Acupuncture Research Textbook pages 1-30 |
| 5/25 | Guest Speaker:<br>Joanna P | Chapter 1: Research: A way of Thinking<br>Chapter 2: The Research Process: A Quick Glance<br>Chapter 4: Formulating a Research Problem<br><br>*Science for All Americans: The nature of Science*:<br>http://www.project2061.org/publications/sfaa/online/chap1.htm | Assignment #1 Due Jan 26th 2009: Formulate a Research Problem |
| 6/1 | Scientific Literature<br>Language of Science<br>Evaluating Scientific Claims<br>Hypothesis Formation<br>Formulating a Research Problem | Chapter 3: Reviewing the Literature<br>Chapter 6: Constructing Hypotheses<br>Nature of Science<br>APA Manual PPT (download)<br>History of Western Medical Knowledge PPT (download) | Assignment #2 Due Feb 2nd 2009: Hypothesis/ Literature Review |
| 6/8 | Subjects and Variables | Chapter 5: Identifying Variables<br>2009 Subject and Variables PPT (download) | Assignment #3 Due Feb 9th 2009<br>Subjects and Variables |
| 6/15 | Structuring a Study<br>Design Problems and Solutions | Chapter 7: The Research Design<br>Chapter 8: Selecting a Study Design | Assignment #4 Due Feb 23rd 2009<br>Outline of Research Design |
| 6/22 | Factors unique to OM research | TBA | TBA |
| 6/29 | Data Collection | Chapter 9: Selecting a method of data collection<br>Chapter 10: Collecting data using attitudinal Scales<br>Chapter 11: Establishing the validity and reliability of a research instrument | Assignment #5 Due March 9th 2009<br>Data Collection |
| 7/6 | Overall Statistics<br>Sampling and Sample Size | Chapter 12: Sampling<br>Intro to Statistics PPT (download)<br>TBA statistics overview readings TBA | Assignment #6 Due March 16th 2009<br>Sampling and Sample Size |
| 7/13 | Research Proposal | Chapter 13: Writing a Research Proposal<br>TBA Additional Reading on Research Proposal<br>TBA | Assignment #7 Due March 23rd 2009<br>Proposal Outline |
| 7/20 | Ethics and Error | Chapter 14: Considering ethical issues in data collection | Assignment #8 Due<br>Ethics |
| 7/27 | Collection and Processing of Data<br>Displaying Data3 | Chapter 15: Processing Data<br>Chapter 16: Displaying Data | Assignment #9 Due<br>Data Display |
| 8/3 | Holiday – Spring Break | | |
| 8/10 | Communicating Research I | Chapter 18: Research Methodology and Practice Evaluation | |
| 8/17 | Communicating Research II | | Assignment #10 Due |

| | | | |
|---|---|---|---|
| | | | Presentation Outline |

**This syllabus is tentative and subject to change. Any changes in the course schedule, such as in course readings or assignment due dates, will be announced ahead of time in class and/or via email. It is the student's responsibility to be informed of these changes.

SOUTHERN CALIFORNIA UNIVERSITY OF HEALTH SCIENCES

***LOS ANGELES COLLEGE OF CHIROPRACTIC***

**COLLEGE OF ACUPUNCTURE AND ORIENTAL MEDICINE**

***DEPARTMENT OF PRINCIPLES AND PRACTICE***

**DEPARTMENT OF FUNDAMENTAL PRINCIPLES**

**COURSE INFORMATION**

**Course Title: Research Methods**

**Course Number(s):** CRE0201

**Term:** 2

**Time Requirement: (**hours/week)

Lecture Hours: 30 Laboratory Hours: 0 Total Units: 2

**Prerequisites:** Admission to college, or equivalent*

* as determined by instructor(s), Department Chair(s), and/or Dean(s)

**Co-requisites:** None

**Faculty:**

Lead Faculty: S. Prasad Vinjamury
Email:
*Phone:*
Office Hours: Monday 10 A.M. -12 P.M.
Office Location: Bldg F- Room # 80
Faculty Assisting in the Course: Anupama Kizhakkeveettil

## COURSE PURPOSE

**Course Description:**

This course is designed to develop students' practical skills in clinical problem solving by reading and appraising published health sciences literature for its validity (closeness to truth) and usefulness (clinical applicability). At the same time, the course will introduce the student to the application of key basic concepts in clinical epidemiology, clinical study design, and biostatistics. The goal of this course is to develop part of the essential knowledge, skills, and attitudes necessary to *practice evidence-based acupuncture/ chiropractic care*.

**Student Learning Outcomes:**

Evidence-Based/Outcomes Focused Practice

- Graduates demonstrate an ability to integrate patient needs, their experiences as practitioners, and the best available research-based evidence into clinical practice

Communication and Interpersonal Skills

- Graduates exhibit effective verbal, non-verbal, written, and electronic communications in clinical practice.

**Competencies:**

1. Research and Medical Informatics
2. Communication

***Objectives:***

***At the conclusion of this course, the successful student will be able to:***

1. Describe the importance of research and evidence based health care to clinical practice.
2. Demonstrate the use of various health sciences databases.
3. Outline taxonomy of research study designs including observational and experimental approaches.
4. Define the important elements of literature reviews, systematic reviews and meta-analyses and describe their importance in clinical practice.
5. Summarize and critically appraise a journal article about clinical measurement.
6. Interpret the use of biostatistics in research literature.

## COURSE SCHEDULE

| Week | Date | Lecture | Readings from recommended textbook 1 | Assessment |
|---|---|---|---|---|
| 1 | 01-05-11 | • Introduction to course | PowerPoint | |

| | | | | |
|---|---|---|---|---|
| | | • Importance of Research Methods in Acupuncture & Chiropractic. Current status of research in Acupuncture & Chiropractic<br>• Evidence Based Medicine (EBM) and EB Practice<br>• How to read a research paper | presentation | |
| 2 | 01-12-11 | • Medical literature search - Use of Databases: PubMed, Ovid, MEDLINE, CINAHL, Chiropractic and Acupuncture web sites | Chapter 3 Pages 65 to 88 | Lit Search Assignment |
| 3 | 01-19-11 | • Steps in Research Process<br>• Terms (Research Vocabulary) in Research Articles – I | Chapter 1 Pages 18 to 31 | |
| 4 | 01-26-11 | • Terms (Research Vocabulary) in Research Articles – II | | |
| 5 | 02-02-11 | | | **Midterm I** |
| 6 | 02-09-11 | • Research Designs: Overview, Classification and Hierarchy<br>• Experimental and Observational studies – Definitions, Types, Examples<br>• Case Studies and Cross Sectional surveys | Research Articles posted on the intranet | |
| 7 | 02-16-11 | • Critical appraisal of a Case Study article and a Survey article – Interactive session | | **Critical appraisal Class Assignment. Use forms posted on the intranet** |
| 8 | 02-23-11 | • Types of Experimental Studies – Concepts and important components of experimental studies<br>• Randomized Controlled trials<br>• Systematic Reviews and Meta-analysis | | |
| 9 | 03-02-11 | • Critical appraisal of two Randomized controlled trials – Interactive session. | | **Critical appraisal Class Assignment. Use forms posted on the intranet** |
| 10 | 03-09-11 | | | **Midterm II** |
| 11 | 03-16-11 | • Introduction to Biostatistics – Definitions and application of Mean, Median, Mode, Standard Deviation, Normal curve, Types of Variables, t-test, odds ratio, risk ratio<br>Interpretation of Statistical tests and results in Research Papers | | |

| | | | | |
|---|---|---|---|---|
| 12 | 03-23-11 | • Research Debates - I | | |
| 13 | 03-30-11 | • Research Debates – II | | |
| 14 | 04-06-11 | • Research Debates - III | | |
| 15 | 04-13-11 | | | **Final Exam** |

**These dates are tentative and may vary depending on class progress through course material. It is the responsibility of the students to keep up with the changes.**

## INSTRUCTIONAL MATERIALS

**Recommended Text(s):**

1. Evidence Based Chiropractic Practice by Michael T. Haneline. Paperback. Jones & Barlett -2006 ISBN13: 9780763735715
2. Introduction to Research: Understanding and Applying Multiple Strategies by Elizabeth Depoy and Laura N. Gitlin. Paperback. Elsevier Mosby – 2005. ISBN 0-323-02853-5
3. ***The pocket guide to Critical Appraisal. By Iain K Crombie. Paperback – 66 pages – British Medical Journal Publishing Group – 1996. ISBN 0-7279-1099-X***

**Required Materials**: **Lap tops with wireless internet capability. (Those who don't have can team up with others for class activity)**

**Provided Materials:** *Not Applicable*

**Required Attire:** *Not applicable*

## TEACHING METHODS AND ACTIVITIES

Interactive lectures and Guest Lectures
Small group critical appraisal activities
Independent learning

## EVALUATION OF STUDENTS LEARNING

**Grading procedures:**

Student assessments may include self-assessments, peer assessments, and instructor assessments. The format of these assessments may include multiple choice, essay, short answer, or fill-in examinations; special individual or group projects; or practical examinations, etc. Embedded assessments such as ICE or ACE examinations, critical thinking examinations, etc. may also be considered in the determination of the student's final grade and/or passing of the course.

| Assessment | Points |
|---|---|
| Midterm exams (100X2) | 200 |
| Final exam | 100 |
| **Pop Quizzes (25x2)** | 50 |
| Debate Project (see below) | 100 |
| Class participation | 50 |

| | |
|---|---|
| **Total** | **500** |

**Grading scale:**

Letter grades will be assigned only at the end of the trimester.
A = 90% to 100%
B = 80% - less than 90%
C = 70% - less than 80%
D = 60% - less than 70%
F = less than 60%
I = Incomplete
W = Withdrawal
**Failure to participate in the Debate Project will be an automatic "F" in the class**.

**University Policies**

All university policies apply to this course and all others. For full policy information please consult the university "Blue Book". For a quick reference guide to the following policies: make-up examination, grade posting, results of failing grades, student support information, syllabus amendments, special needs, student conduct, and attendance, please consult the academic policies document housed on the Online Student Services [the preceding is a hyperlink].

Syllabus prepared by: S. Prasad Vinjamury
Prepared: December 2010

# COURSE SYLLABUS

**COURSE #: WMR 501 COURSE TITLE: Introduction to Western Medical Research**

**TERM: Fall 2010 CLASS HOURS: 30 CLASS CREDITS: 2**

**INSTRUCTOR: Dr. Mary Jo Hayes**
**OFFICE HOURS:** Call for an appointment.

**Student Requirements:** **Regular and prompt attendance to all classes, completion of a literature review project, participation in group/individual research analysis**

**Method of Instruction:** **Lecture, statistical labs and guided practical application of literature search skills and research analysis**

**Required Reading:** **Clinical Epidemiology: The Essentials 4th Ed. 2005. by Robert Fletcher and Suzanne Fletcher, Pub. Lippincott, Williams and Wilkins**

**Recommended Reading:** **The Oxford Guide to Library Research 2005. by Thomas Mann; Pub. Oxford University Press**

**Course Description:** Students learn the basic concepts of statistics required to interpret scientific research, specifically medical research. Different types of medical research will be discussed. The components of different types of a research publication will be covered. Students will develop the skills necessary to be able to evaluate the merits of published scientific articles based on their conceptual, logical and technical attributes.

The class participants will perform a substantial scientific literature review. This will require that the student become skilled at utilizing diverse resources, including traditional reference works, published studies, the inner library loan process, personal communication, and internet resources. This skill set will be invaluable to you in your clinic experience and in your practice.

These combined skill/knowledge sets will provide those who wish to pursue research in oriental medicine a basis for gaining access to collaborative projects with western practitioners and grant development process.

Your literature review project will be **due on the Sunday prior to the final exam** and should be e-mailed to me directly at the above e-mail address.

To optimize your learning experience, **please print out and complete the following consent form**. Please bring it to class next week. In this way, I will be able to forward everyone in class a copy of your work.

**Goals & Objectives:** Students will be able to:

A. Demonstrate a working knowledge of the concepts of statistical analysis

1. Describe a normal distribution, how to identify it, it's basic parameters
2. Explain the difference between a population and a sample
3. Explain what bias is and its sources
4. Explain what is central tendency and variability and what is their relevance to statistical analysis
5. Describe the different types of analysis available and list their strengths/weaknesses
6. Determine the validity of conclusions based on statistical principles
7. Demonstrate the ability to analyze published research
6. Do a literature search of western publications on a specific topic.
7. Use the inner library loan process to collect a set of quality publications relevant to the literature search
8. Generate a publication-styled literature citation list of literature collected
9. Provide an executive summary of the conclusions given in the searched literature

**Method of Grading: Total of 100%**
**Literature Review Project 50%**
**Mid Term: 25%**
**Final Examination: 25%**

**Class Outline in Tentative Schedule:**

Aug. 31 Ch. 1: Introduction & Stat Lab on Bias and Chance
Sep. 7 Ch. 2: Abnormality & Stat Lab on Central tendency and Variation
Sep. 14 Ch. 3: Diagnosis & Guided critique of article
Sep. 21 Ch. 4: Frequency & Guided critique of article
Sep. 28 Ch. 5 & 6: Risk: Forward and Backward & Guided critique of article
Oct. 5 Ch. 7 & 8: Prognosis and Treatment & Guided critique of article
Oct. 12 Ch. 12 Systemic Reviews & Guided critique of article
Oct. 19 Guided critique of articles
Oct. 26 Mid term exam
Nov. 2 Medical Research Databases with Daniel Horak, DRCOM librarian
Nov. 9 Practice of Database skills and retrieval of article from internet.
Selection of topic for literature review
Nov. 16 Critique of student-provided articles
Nov. 23 Thanksgiving Break
Nov. 30 Critique of student-provided articles
Dec. 7 Critique of student-provided articles. Literature review due via e-mail on Sun. Dec. 12.
Dec. 14 Final Exam

# Experience-Based & Integrative Evidence-Based Medicine (EBM)

Evidence-Based Medicine (EBM) is both a “content area” and a “process” for teaching and practicing medicine. As a content area, residents must learn to become proficient in the basic skills of framing testable questions, searching for best evidence, and critically appraising that evidence. To fully utilize EBM as a method for teaching and practicing medicine, residency faculty must model EBM when treating patients and when discussing patient care with residents during clinical experiences. There have been criticisms of the EBM movement for ignoring both the wisdom of experience and the wishes of the patient. In their second edition, Sackett et al. defined EBM as an “integration of best research evidence with clinical expertise and patient values.” This definition promotes the use of evidence and “informed opinion” in the unique context of the needs of the individual patient. The following key characteristics of Integrative, Evidence-Based Medicine are consistent with the characteristics of “Teaching from a Competency Perspective.”

- On-line modules and journal club activities can be effective, efficient techniques for teaching the basics of EBM. For EBM to become a part of residents’ approach to practicing medicine, however, it must be integrated into the daily routine of examining and evaluating patients. (Explicit and Real-Life)
- Modeling an evidence-based approach to practicing medicine fosters the critical appraisal of personal assumptions as well as the framing and testing of good clinical questions that ultimately guide practice. (Self Assessment)
- Learning to practice medicine using an EBM approach includes learning how to weigh the value of clinical experience, patient values, and best evidence. It also includes learning what to do when “best evidence” is not very enlightening. (Real-life)
- As defined above, EBM fosters accountability, as the integration of “documented best practice” and expert clinical opinion become the criterion set for patient care. (Accountability)

## Example 1

**Scenario: Focusing a clinical question to teach Practice-based Learning and Improvement on the in-patient service.**

You are an associate residency director in a busy Psychiatry residency program and are in charge of teaching residents on the inpatient service. A lecture was given on the topic of "formulating testable questions." As a follow-up, you want to reinforce this skill in a patient care setting through discussions of newly-admitted patients.

The illustration below describes how you can address this and other *Practice-Based Learning and Improvement* learning objectives on the inpatient service. The ***objectives*** are that residents will be able to: (a) focus a clinical question, and (b) search the literature and locate evidence that addresses the question. **Illustration:**

Identifying a focused clinical question is the first step in evidence-based medicine. Using the systematic approach developed by Sackett, et al., you provide the admitting resident with a worksheet outlining the "Patient, Intervention, Comparison, and Outcome" model for building an answerable question. You guide the resident through the list by asking:

"P" How would you describe a group of patients similar to this patient?
"I" Which main intervention, prognostic factor, or exposure are you considering?
"C" What is the main alternative to compare with the intervention? (if appropriate)
"O" What can you hope to accomplish, measure, improve, effect?

After a few attempts, the resident team arrives at the following question. "In a 15 year-old girl with depression and one episode of suicidal ideation, does admission to an adolescent inpatient unit decrease the incidence of another suicide attempt?" Then using a database such as **(InfoRetriever®)** on one of the resident's pocket PC, you search for new clinical information that may apply to this patient. You find that there are no definitive studies addressing this question. The team discusses the question and decides to expand the search to address all adolescents and all types of treatments. By broadening the search, the team found 21 controlled studies examining issues pertaining to "adolescent," "suicidal ideation," and "treatment," five of which were pertinent to their patient.

## Example 2

**Scenario: Using a "real-time" EBM approach to teach Practice-Based Learning and Improvement and to increase Medical Knowledge on the in-patient service.**

You are a faculty member in a large pediatric residency program, and have been asked by the director to coordinate the "evidence-based medicine" curriculum. You would like to demonstrate that while actively seeing patients, residents may practice evidence-based medicine. The residents are skeptical that this can be accomplished in the time allotted.

The illustration below describes how you may address *Practice-Based Learning and Improvement* and *Medical Knowledge* learning objectives on the in-patient wards. The ***objectives*** are that residents (1) will obtain current, evidence-based information about the treatment of common medical conditions (*Medical Knowledge);* and (2) will be able to: (a) formulate a good clinical question; (b) efficiently search for appropriate evidence and guidelines of care; (c) critically appraise the evidence; and (d) decide whether evidence and guidelines apply to the care of a specific patient (*Practice Based Learning and Improvement* ). **Illustration:**

During a patient care session in the clinic, you are supervising a resident. His patient is a six-year-old child with recurrent otitis media. Using an EBM approach to teaching, you want to demonstrate that new information on common problems is published every day. You ask the resident the following questions: "What is the most sensitive clinical examination finding for otitis media?" and "When should a child be referred for PE tubes?"

The resident is unsure, and together you focus a new question: "What are the indications for PE tubes therapy for recurrent otitis media in a six year-old child?" A computer with Worldwide Web access in the supervision room allows you to search for recent guidelines published on the subject using the **National Guideline Clearinghouse** (NGC) ( www.guideline.gov/ ) and **Cochrane Database (**www.cochrane.org/index0.htm ). The answer was available after a four-minute search of the NGC. You then review the guidelines and the associated grading system, and consider whether the guidelines are relevant for this patient and clinical setting. In another residency setting that does not have ready access to the Worldwide Web, you could use CD ROM materials, which are updated quarterly and may be used to answer common medical questions. By gathering and using these resources, residents learn new knowledge and sharpen their critical appraisal skills while improving the outcomes for patients.

## Example 3

**Scenario: Using an experience-based integrative EBM approach to teach Practice-based Learning and Improvement during administrative conferences.**
You are the chief resident in a busy general surgery residency program. You and your residency faculty advisor have been asked to suggest ways to improve teamwork and reduce the number of medical errors attributed to failure of teamwork in the residency program. You remember hearing a presentation at the Surgical Education conference about how improving team communication reduced errors and improved patient satisfaction. You wonder whether communication skill training would help solve these problems in your residency.

The illustration below describes how you may address *Practice-Based Learning and Improvement* learning objectives during administrative conference time. The ***learning objectives*** are that residents will be able to: (a) search for evidence to answer a focused question; (b) critically appraise the evidence; and (c) incorporate scientific evidence into decisions and plans for improving patient care. **Illustration:**
Although EBM is typically used to help make informed decisions about patient care practices, systematic reviews related to a wide range of topics are also appearing in EBM databases. In this example, you and your faculty advisor decide to use an administrative resident meeting to approach a group practice and communication problem from an EBM perspective. You and your advisor determine that including all residents in this process will increase participation should they find confirming evidence. At the resident administrative meeting, you lead a short discussion on the problem, state the question, and divide the residents into two teams. Using the computers provided, both teams of residents find systematic reviews **(Cochrane Database of Systematic Reviews**) and primary research addressing this subject in less than five minutes. The first of six systematic reviews includes behavior change as well as attitude change as outcomes, and presented 12 studies that met criteria as controlled studies. From this evidence, the residents agreed that communication training across the health care team was worth pursuing. You and your faculty advisor take the recommendation to the Residency Director.

## Tips for Using Experience-Based, Integrative Evidence-Based Medicine (EBM)

Teaching with an EBM approach fosters development of the skills needed to bring the most current information to the real-time practice of medicine. With the advent of reliable, evidence databases that provide screened meta-analyses and systematic reviews, a residency director might wonder which skills are most needed and most practical. Do residents need to be able to perform a systematic review of the primary research, or should they instead focus attention on learning to access already-

prepared systematic reviews and integrate “best evidence” into the care of their patients? Unfortunately, there is little evidence in the literature to help us answer this question. Residency Directors do not need to make this choice, however, because both methods may be learned during a three-year residency program. The educational research examining the implementation of EBM curricula suggests the following:

1. There is little evidence to support that the conclusion that learning EBM as a “content area” through didactics alone (or even through journal clubs) encourages residents to use EBM in their practices. EBM must be integrated into clinical practice on the wards and in the clinics.
2. Faculty members need both to embrace the EBM approach to teaching medicine and to model its use in their own practice. Some ways to do this might be to:
   - cite systematic reviews when lecturing and expect residents to do the same when presenting;
   - keep an updated file of systematic reviews in your area of practice, update it quarterly, and use it while precepting; (Residents may also be responsible for updating a “practice database.”)
   - use computer resources (both online and CD-ROM) on site;
   - expect “evidence” to be part of morning report, ambulatory rounds, work rounds, etc.;
   - model integrating “best evidence” with expert opinion and the specific needs of patients; and
   - model “communicating best evidence” with patients.

**Reference:** **http://www.acgme.org/outcome/instrmod/ebm.pdf**