**NMETH 526 Patient -Centered Interactive Health Communication Technologies**

**Spring 2009**

**Faculty: Huong Nguyen, PhD, RN**

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**Assistant Professor, Biobehavioral Nursing and Health Systems**

**COURSE DESCRIPTION**  
This course provides the student a broad overview of current and emerging consumer-centric eHealth tools and technologies. Theories, concepts, and principles of health, communication, information, cognitive processing, human-technology interaction as they relate to the development and use of these tools are emphasized. In class and web-based seminar discussions and demonstrations will be co-led by multiple disciplines including, nursing, medicine, information, biomedical informatics, bioengineering, computer science, and patient consumers on select topics.   
  
**COURSE OBJECTIVES**  
1. Be familiar with current and emerging consumer-centric eHealth tools and technologies and how they can be leveraged to optimize the healthcare partnerships of patients, families, and providers.   
2. Recognize the theoretical and practical influences of information, communication, cognitive, human-technology interaction, behavioral, and health sciences on the development, testing, implementation, adoption, and evaluation of eHealth tools and technologies.  
3. Promote inter-disciplinary discussions on personal, interpersonal, technical, organizational, economic, and policy factors that the affect the optimal and effective use of consumer-centric eHealth tools and technologies.

**PREREQUESITES**

None

**COURSE TEXTBOOKS**

None

**COURSE FORMAT**

The goal of conducting this course in a seminar format is to create a learning community. Students and the instructor bring a vast array of experiences which have bearing on the topic. Learning associated with this course will occur both during our live meetings and asynchronous discussions. My assumption is that each student is a self-directed adult learner who assumes responsibility for their learning. Students and instructor share responsibility for the success of the course. Since all communications will take place via the course web site, students are expected to log in regularly.

Live class meetings: Wednesdays, 4-5:30PM

**COURSE EVALUATION**

Class participation: 15%

Team lead web discussions for one week: 15%

Assignment #1: 15%

Assignment #2: 15%

Group Assignment: 40%

**GUIDELINES FOR ASSIGNMENTS**

Class participation (15 points). Learning in a seminar is an activity that requires all students to be full participants. Each student has a responsibility to contribute, as well as to encourage others to contribute and create an environment conducive to learning. I believe that learning is achieved through strong emotional connections to a particular topic or issue and I encourage that you share your personal and professional experiences in class discussions. However, I also have an expectation that if you share personal anecdotes, that they be directly linked to the relevant evidence-based PCT literature. In order to demonstrate your understanding and synthesis of the required readings, you are asked to make at least two sets of substantive postings to the weekly forums.

Posting #1 will be completed **before each Wednesday at 4pm**: a) Provide either a short summary (3-4 sentences) on how you might apply findings from a particular article (be sure to cite the author’s name) to your current or future work; OR b) Pose at least 2 questions or issues from the readings to stimulate discussion with your classmates.

Posting #2 will be completed **after 5:30pm each Wednesday**: a) Elaborate on barriers and drivers to implementing or evaluating a PCT (from your readings or presentation) in your current or future position (4-5 sentences); b) Provide a short critical analysis (4-5 sentences) on what could have been done differently with a particular technology (either from the readings or presentation) to make it more patient-centered; c) Provide a substantive response to at least 2 postings by your classmates; or d) Provide a critical analysis of any other learning resources (e.g. reputable news or journal article, pod cast, blogs, etc…) of relevance to the week’s topic.

Team lead and facilitate web discussions for one week (15 points). A team of 3 students will be assigned to lead and facilitate the web discussions each week (Wednesday through Tuesday). As leaders, you are expected to keep the discussions alive and moving by facilitating critical, focused, and respectful interactions by your classmates through provocative questions that either challenge conventional thinking about the week’s topic and/or introducing novel ideas or issues that have not been sufficiently covered in the readings or presentations, as well, ensuring that your peers meet the class participation requirements for the week (see above). I encourage you to be creative in your leadership style since there are multiple approaches to leading and facilitating learning in such online communities. I am available via email if you need to consult with me on any particular issue. I will monitor the discussions regularly and will only intervene as needed. Wrap up the week’s discussion Tuesday night by posting a brief summary of key issues raised over the week. Bullet points will suffice.

Assignment #1: Understanding Patient-Consumer Needs for PCT (15 points).

Students have two options for this assignment:

1) Identify and interview a patient-health consumer to develop a beginning understanding of what this individual perceives as important to staying healthy and/or managing a chronic condition and whether any particular technological innovations may be useful in his or her efforts to maintain health. The interviewee could be a patient you care for in your practice, a family member or friend. Submit a 2-page, double-spaced paper summarizing the questions you asked in your interview, the interviewee responses (provide relevant quotes or paraphrase), and your reflection on the patient-health consumer’s needs and the potential role of PCT to meet these needs. OR

2) Respond to this call for design ideas for a novel device or web application for diabetes management: <http://www.diabetesmine.com/designcontest>. The winner receives $10,000. Although the contest deadline is 5/1/09, you will need to submit your entry before 4/28/09 in order to meet the class assignment due date. Please share your submission with the class by posting a link to your 2-minute YouTube video or attach a copy of your 2-3 page “pitch” on Week 5 Forum and label the subject line of your post as “Diabetes Design Submission”. Remember that your “intellectual property” is by default protected since you would have already submitted the idea to diabetesmine.com.

Assignment #2: Evaluating PCT Research (15 points), Due 5/19/09. Findings from research studies of PCT are frequently reported and widely disseminated by the popular media. Your assignment is to identify a news story from a reputable source (published any time 1/2007-present) about a PCT and retrieve the accompanying original research article.  In your 3-5 page double spaced paper, include the following elements: what motivated the study, brief description of the PCT and what makes it patient-centric; describe the strengths and weaknesses of the study design, sample, and methods; summarize the key findings and what it means for the patient-consumer, their family, health providers, insurers and other stakeholders; what do you perceive as possible enhancements to increase the PCT’s value for broader groups of patient-consumers including those from more vulnerable populations, e.g. patients with limited English and health literacy skills or frail older adults with cognitive deficits and multiple medical illnesses; what are some barriers or drivers to adopting this PCT in your current work setting; and finally, comment on how well the news article did in accurately reporting the study findings and limitations.

Group Assignment: Envisioning the Future of PCT (40 points). This group assignment includes a written paper (up to 10 pages, double spaced, excluding appendix tables and references-use AMA or APA format) and an oral presentation with the participation of all team members during the final live class meeting (8 minutes, 2-4 minutes of questions). Teams of 3 students will select from two options:

1. You are a lead clinical informaticist/analyst for St. Chaotica Healthcare, a large integrated health care system that is also an insurer. St. Chaotica has a 250 acute-bed hospital, 12 outpatient care general and specialty practices, home care, long term care, and rehabilitation departments. Recent trends indicate that readmission rates for patients with multiple chronic conditions, e.g. congestive heart failure, chronic obstructive pulmonary disease, diabetes are high at St. Chaotica. The VP of patient services has tasked your team to do some preliminary work in order to respond to a call for proposal from the Agency for Healthcare Research and Quality (AHRQ); the call is focused on translating research evidence to improve chronic disease management. The VP has asked your team to identify and evaluate two promising PCTs with a sufficiently strong evidence base that could be adopted and implemented as part of a comprehensive disease management program across the inpatient and outpatient care settings, as well as in the patients’ homes. Write a concise systematic comparative analysis of the PCTs using these criteria: value/perceived benefits, usability, individual and systems barriers and drivers for broad use, impact of such technologies on other stakeholders such as families, health care teams, the purchaser of the PCT (St. Chaotica) etc…, necessary modifications/enhancements of the PCTs in order for it to work effectively in the St. Chaotica system, potential long term unintended consequences of these two PCTs; other relevant criteria should also be added to this evaluation. Be sure to summarize and critically evaluate the existing research evidence base that supports the effectiveness of these two PCTs. Conclude the paper with a summary of your evaluations and make a persuasive recommendation to the VP on which of the two PCTs should be included in the proposal to AHRQ.
2. You’ve just landed a joint position in Microsoft’s Health and Gaming Divisions, research and development team. Your primary assignment with two other team members is to contribute to a 5-year prospectus for how Microsoft could become a dominant player in the health care market. Microsoft is interested in developing software and hardware technologies as well as partnering with other companies for a share of the health promotion and disease management market. Your specific task is to conduct a thorough, critical review of the relevant research literature and survey the PCT landscape (including existing Microsoft tools and applications) to identify gaps and opportunities for technology development and/or integration along the themes of health promotion or disease management. Based on this knowledge, propose at least 2 innovative, out of the box, persuasive PCT that completely shifts our traditional thinking and approach to health and health care. Provide a detailed description (feel free to include paper mock ups, drawings or simulations) of the PCTs and compare their functionality and relative advantage to currently available PCT. And finally, describe creative approaches your team will take in eliciting feedback from potential target users on the value of such tools.

**Recommended news source:**  
[Daily eHealth/HIT news, iHealthBeat](http://www.ihealthbeat.org) \*Highly recommended  
[Health IT news](http://www.healthcareitnews.com)  
[Wall Street Journal](http://www.wsj.com)

**General eHealth/PCT Resources:**  
[Markle Foundation Connecting for Health](http://www.connectingforhealth.org/)  
[Pew Internet Project](http://www.pewinternet.org)  
[Robert Wood Johnson Project Health Design](http://www.projecthealthdesign.org)  
[Web design guidelines](http://usability.gov/)  
[Patient-consumer Blog](http://e-patients.net/)  
[UW-DUB (Design, Usability, and Build) Listserv](http://dub.washington.edu/mailinglist)

**Writing Style**

This is a classic reference on common writing mistakes. Your writing will be vastly improved even if you only follow a few of these guides. <http://www.bartleby.com/141/>

**Information on Disabilities**

If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating that you have a disability that requires academic accommodations, please present the letter to the instructor so we can discuss the accommodations you might need for class.

**Patient -Centered Interactive Health Communication Technologies**

**Spring 2009 Course Schedule**

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| **Week-Dates** | **Topic** | **Presenters/Students** |
| 1: 3/29-4/4 | 4/1: CPL training, Introductions & PCT Course Overview | Huong Q. Nguyen, RN, PhD  Assistant Professor, UW SON |
| 2: 4/5-4/11 | 4/8: Guiding frameworks for PCT design, implementation, and evaluation | Huong Q. Nguyen, RN, PhD  Assistant Professor, UW SON |
| 3: 4/12-4/18 | 4/15:User-Centered Design and Usability | Seth Wolpin, RN, PhD,  Assistant Professor, UW SON |
| 4: 4/19-4/25 | 4/22: *Current* PCT for collaborative health care  \*Home health care  \*Acute/chronic disease care management | Debbie Ramundo, MS,  Swedish Home Care  Ashok Patel, MD,  Mayo Clinic |
| 5: 4/26-5/2 | 4/29 *Emerging* PCT for collaborative health care  \*Gaming for diabetes control  \*Information management by patients with breast cancer | James Ralston, MD,  Group Health Cooperative  Wanda Pratt, PhD, Information School & BHI |
| 6: 5/3-5/9 | 5/6 Midpoint synthesis, conceptual blockbusting & group updates | Huong Q. Nguyen, RN, PhD |
| 7: 5/10-5/16 | 5/13 Patient-health consumer driven PCT  \*Collective intelligence: http://www.patientslikeme.com  \*Youtube: Living with COPD | Jeanna Frost, PhD, Patientslikeme Research Scientist  Mr. Michael Riser, Patient living with COPD |
| 8: 5/17-5/23 | 5/20 Mobile and Ubiquitous PCT  \*Smart homes for independent living  \*Ubifit: Promoting physical activity | George Demiris, PhD, UW SON  Sunny Consolvo, PhD, Intel |
| 9: 5/24-5/30 | 5/27 *Systems, Social & Legal Aspects* of PCT  \*Washington Health Bank Project  \*Social and legal implications | Juan Alaniz, WA Health Care Authority, Project Manager WA Health Record Bank Project  John Christiansen, JD, Christiansen Law |
| 10: 6/1-6/6 | 6/3 Group Presentations: Envisioning the Future of Patient-Centered Technologies | All Students |

**Week 1  
Introduction to Patient-Centered Interactive Health Communication Technologies (PCT)**

**Learning Objectives**

Recognize key change drivers in the shift to greater patient-health consumer involvement in health and health care

Understand what patient-centered interactive health communication technologies (PCT) is and its potential role in improving health care quality, efficiency, and cost

**Required Readings**  
Demiris G, Afrin LB, Speedie S, Courtney KL, Sondhi M, Vimarlund V, Lovis C, Goossen W, Lynch C. [Patient-centered applications: use of information technology to promote disease management and wellness. A white paper by the AMIA knowledge in motion working group.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/17947617?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Am Med Inform Assoc. 2008 Jan-Feb;15(1):8-13.

Dickerson, S. S., & Brennan, P. F. (2002). The internet as a catalyst for shifting power in provider-patient relationships. Nurs Outlook, 50(5), 195-203.

Lauver, D. R., Ward, S. E., Heidrich, S. M., Keller, M. L., Bowers, B. J., Brennan, P. F., et al. (2002). Patient-centered interventions. Res Nurs Health, 25(4), 246-255.

Mandl KD, Kohane IS. [Tectonic shifts in the health information economy.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18420506?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) N Engl J Med. 2008 Apr 17;358(16):1732-7

**Optional Readings/Resources**  
Davis K, Schoenbaum SC, Audet AM. [A 2020 vision of patient-centered primary care.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/16191145?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Gen Intern Med. 2005 Oct;20(10):953-7.

Himmelstein DU, Woolhandler S. [Hope and hype: predicting the impact of electronic medical records.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/16162553?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Health Aff (Millwood). 2005 Sep-Oct;24(5):1121-3

Hillestad R, Bigelow J, Bower A, Girosi F, Meili R, Scoville R, Taylor R. [Can electronic medical record systems transform health care? Potential health benefits, savings, and costs.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/16162551?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Health Aff (Millwood). 2005 Sep-Oct;24(5):1103-17.

**PCT in the context of HIT, WSJ Opinion/Editorial**

<http://online.wsj.com/article/SB123681586452302125.html>

Steinbrook R. [Personally controlled online health data--the next big thing in medical care?](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18420496?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) N Engl J Med. 2008 Apr 17;358(16):1653-6.

Kaelber DC, Jha AK, Johnston D, Middleton B, Bates DW. [A research agenda for personal health records (PHRs).](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18756002?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Am Med Inform Assoc. 2008 Nov-Dec;15(6):729-36.

Detmer D, Bloomrosen M, Raymond B, Tang P. [Integrated personal health records: transformative tools for consumer-centric care.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18837999?ordinalpos=4&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) BMC Med Inform Decis Mak. 2008 Oct 6;8:45.

**Week 2**

**Guiding Frameworks for PCT design, implementation, and evaluation**

**Learning Objectives**

Understand the role of frameworks/theories in the design, implementation, and evaluation of PCT

Demonstrate the ability to apply frameworks to the evaluation of PCT on proximal and distal outcomes

**Required Readings**

Eng TR, Gustafson DH, Henderson J, Jimison H, Patrick K. Introduction to evaluation of interactive health communication applications. Science Panel on Interactive Communication and Health. Am J Prev Med. 1999 Jan;16(1):10-5.

Friedman C, Wyatt J, Owens D. (2006) Technology evaluation and assessment. In Biomedical Informatics Computer Applications in Health Care and Biomedicine, 3rd Edition, Shortliffe EF & Cimino, JJ, Editors; \*Browse through for now and use as reference throughout class

Harrison MI, Koppel R, Bar-Lev S. [Unintended consequences of information technologies in health care--an interactive sociotechnical analysis.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/17600093?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Am Med Inform Assoc. 2007 Sep-Oct;14(5):542-9.

[Kukafka R, Johnson SB, Linfante A, Allegrante JP.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=14615230&query_hl=3&itool=pubmed_docsum) Grounding a new information technology implementation framework in behavioral science: a systematic analysis of the literature on IT use. J Biomed Inform. 2003 Jun;36(3):218-27.

**Optional Readings/Resources**

Jimison H, Gorman P, Woods S, Nygren P, Walker M, Norris S, Hersh W. Barriers and Drivers of Health Information Technology Use for the Elderly, Chronically Ill, and Underserved. Evidence Report/Technology Assessment No. 175 (Prepared by the Oregon Evidence-based Practice Center under Contract No. 290-02-0024). AHRQ Publication No. 09-E004. Rockville, MD: Agency for Healthcare Research and Quality. November 2008.

[Lenert L, Norman GJ, Mailhot M, Patrick K.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=16084470&query_hl=5&itool=pubmed_docsum) A framework for modeling health behavior protocols and their linkage to behavioral theory. J Biomed Inform. 2005 Aug;38(4):270-80

[Doshi A, Patrick K, Sallis JF, Calfas K.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=12704012&query_hl=2&itool=pubmed_docsum) Evaluation of physical activity web sites for use of behavior change theories. Ann Behav Med. 2003 Spring;25(2):105-11.

Nguyen HQ, Cuenco D, Wolpin S, Benditt J, Carrieri-Kohlman V. [Methodological considerations in evaluating eHealth interventions.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/17450708?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Can J Nurs Res. 2007 Mar;39(1):116-34.

**Week 3**

**User-Centered Design and Usability**

**Learning Objectives**  
Understand key principles of user-centered design and usability in the context of PCT development  
Recognize design challenges especially for vulnerable populations, e.g. low literacy, older adults and strategies to overcome these issues

**Required Readings**

Kaufman DR, Patel VL, Hilliman C, Morin PC, Pevzner J, Weinstock RS, Goland R, Shea S, Starren J. [Usability in the real world: assessing medical information technologies in patients' homes.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/14552846?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Biomed Inform. 2003 Feb-Apr;36(1-2):45-60.

Johnston SK, Nguyen HQ, Wolpin S (in press) Designing and Testing a Web-based Interface for Self-Monitoring of Exercise and Symptoms for Older Adults with COPD. Computers, Informatics, and Nursing.

Pagliari, C. Design and Evaluation in eHealth: Challenges and Implications for an Interdisciplinary Field. J Med Internet Res 2007; 9(2):e15 (<http://www.jmir.org/2007/2/e15/>)

Robert Wood Johnson Program: [Project HealthDesign](http://www.projecthealthdesign.org/home) (Browse site for writings and other resources on designing patient-centric tools)

**Optional Readings/Resources**

User Centric (2009) Usability Guidance for Improving the User Interface and Adoption of Online Personal Health Records; \*Sample comparison on usability, utility, and privacy characteristics of Google Health and Microsoft Health Vault

Pratt, W, Unruh K, Civan A, Skeels, M. Personal health information management. Communication of the ACM 2006, 49(1): 51-55; \*Qualitative work to understand how consumers manage & organize their health information & artifacts

Feldman-Stewart D, Brundage MD. [Challenges for designing and implementing decision aids.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/15324977?ordinalpos=3&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Patient Educ Couns. 2004 Sep;54(3):265-73; \*Insights into factors associated with designing decision aids for health consumers.

[Usability and User-Centered Design Guidelines](http://usability.gov/)

National Institutes of Aging and National Library of Medicine: [Designing web sites for older adults](http://www.nlm.nih.gov/pubs/staffpubs/od/ocpl/agingchecklist.html)

Art of Aging video series: <http://www.artofaging.org/>

[McCray AT.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=15561782&query_hl=1&itool=pubmed_docsum) Promoting health literacy. J Am Med Inform Assoc. 2005 Mar-Apr;12(2):152-63.

Berkman ND et al. [Literacy and Health Outcomes](http://www.ahrq.gov/clinic/epcsums/litsum.pdf). Summary, Evidence Report/Technology Assessment No. 87. AHRQ Publication No. 04-E007-1. Rockville, MD: Agency for Healthcare Research and Quality. January 2004.

Krug, S. [Don't Make Me Think](http://www.sensible.com/), Second Edition: A Common Sense Approach to Web Usability (2nd Edition)

Nielsen, J. (1994). [Usability engineering](http://www.useit.com/jakob/). San Francisco, CA: Morgan Kaufmann Publishers.

**Speaker**

[Seth Wolpin, PhD, RN](http://www.son.washington.edu/faculty/faculty_bio.asp?id=463), Research Assistant Professor, UW BNHS. Dr. Wolpin’s research is focused on promoting health communication and health literacy through the use of information technology tools. He is also the resident expert on user-centered design and usability evaluation of health related web and mobile applications.

**Week 4**

***Current* PCT for collaborative health care**

**Learning Objectives**  
Describe the potential and realized value of PCT for improving chronic illness care and self-management from the patient, family, health provider, and purchaser perspectives  
Identify current gaps in the evidence base for using PCT to support collaborative chronic illness care

**Required Readings**

Green BB, Cook AJ, Ralston JD, Fishman PA, Catz SL, Carlson J, Carrell D, Tyll L, Larson EB, Thompson RS. [Effectiveness of home blood pressure monitoring, Web communication, and pharmacist care on hypertension control: a randomized controlled trial.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18577730?ordinalpos=3&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) JAMA. 2008 25;299(24):2857-67.

Mortara A, Pinna GD, Johnson P, Maestri R, Capomolla S, La Rovere MT, Ponikowski P, Tavazzi L, Sleight P; on behalf of the HHH Investigators. [Home telemonitoring in heart failure patients: the HHH study (Home or Hospital in Heart Failure).](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19228800?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Eur J Heart Fail. 2009 Mar;11(3):312-318.

[Lorig KR, Ritter PL, Laurent DD, Plant K.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=17063127&query_hl=11&itool=pubmed_docsum) Internet-based chronic disease self-management: a randomized trial. Med Care. 2006 Nov;44(11):964-71.

[Shea S, Weinstock RS, Starren J, Teresi J, Palmas W, Field L, Morin P, Goland R, Izquierdo RE, Wolff LT, Ashraf M, Hilliman C, Silver S, Meyer S, Holmes D, Petkova E, Capps L, Lantigua RA.](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16221935&query_hl=7&itool=pubmed_docsum) A randomized trial comparing telemedicine case management with usual care in older, ethnically diverse, medically underserved patients with diabetes mellitus. J Am Med Inform Assoc. 2006 Jan-Feb;13(1):40-51.

**Optional Readings/Resources**

Glasgow, R. E., Bull, S. S., Piette, J. D., & Steiner, J. F. (2004). Interactive behavior change technology. A partial solution to the competing demands of primary care. Am J Prev Med, 27(2 Suppl), 80-87.

Medical Home: <http://healthcommentary.org/public/item/226958>

[Bodenheimer T, Wagner EH, Grumbach K.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=12365965&query_hl=8&itool=pubmed_DocSum) Improving primary care for patients with chronic illness. JAMA. 2002 Oct 9;288(14):1775-9.

[Bodenheimer T, Wagner EH, Grumbach K.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=12377092&query_hl=8&itool=pubmed_DocSum) Improving primary care for patients with chronic illness: the chronic care model, Part 2. JAMA. 2002 Oct 16;288(15):1909-14.

Anderson G, Knickman JR. [Changing the chronic care system to meet people's needs.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/11816653?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Health Aff (Millwood). 2001 Nov-Dec;20(6):146-60.

Chen C, Garrido T, Chock D, Okawa G, Liang L. [The Kaiser Permanente Electronic Health Record: transforming and streamlining modalities of care.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19275987?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Health Aff (Millwood). 2009 Mar-Apr;28(2):323-33.

Clark RA, Inglis SC, McAlister FA, Cleland JG, Stewart S. [Telemonitoring or structured telephone support programmes for patients with chronic heart failure: systematic review and meta-analysis.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/17426062?ordinalpos=3&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) BMJ. 2007 May 5;334(7600):942.

Peikes D, Chen A, Schore J, Brown R. [Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries: 15 randomized trials.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19211468?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) JAMA. 2009 11;301(6):603-18.

Dorr D, Bonner LM, Cohen AN, Shoai RS, Perrin R, Chaney E, Young AS. [Informatics systems to promote improved care for chronic illness: a literature review.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/17213491?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Am Med Inform Assoc. 2007 Mar-Apr;14(2):156-63

Pare G, Jaana M, Sicotte C. Systematic Review of Home Telemonitoring for Chronic Diseases: The Evidence Base. J Am Med Inform Assoc. 2007 May-June;14(3):269-277

Warmerdam L, van Straten A, Twisk J, Riper H, Cuijpers P. Internet-Based Treatment for Adults with Depressive Symptoms: Randomized Controlled Trial . J Med Internet Res 2008; 10(4):e44 (<http://www.jmir.org/2008/4/e44/>)

Zickmund SL, Hess R, Bryce CL, McTigue K, Olshansky E, Fitzgerald K, Fischer GS. [Interest in the use of computerized patient portals: role of the provider-patient relationship.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18095039?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Gen Intern Med. 2008 Jan;23 Suppl 1:20-6.

**Guest Speakers**

**Debby Ramundo, BSN, MSIT, Healthcare Informatics Specialist**. Ms. Ramundo was formerly a Senior Project Manager in the Home Care division of [Swedish Medical Center](http://www.swedish.org/body.cfm?id=143) in Seattle, Washington. She was responsible for the identification of key existing and emerging technologies and their integration with health care operations. She will discuss current challenges in the home health care sector and how patient-centric technologies could be leveraged to partially address these issues. She will provide insight on how patients and front line health providers interact with these technologies, as well, the sociopolitical and economic constraints to testing and adoption of such technologies.

Ashok Patel, MD. Dr. Patel is a pulmonologist at the Mayo Clinic, Rochester, Minnesota. As an early adopter of technology, he published a review article on the use of the Internet for asthma management in 2001. He has great understanding of the sociotechnical issues with technology implementation within large health care organizations and will speak from his perspective as a provider on use of patient-centric technologies for collaborative health care.

**Week 5**

***Emerging* PCT for collaborative health care**

**Learning Objectives**

Understand the relative advantage of second generation PCT, e.g. gaming, virtual reality to engage patients and health consumers in health promotion and disease prevention

Glean insights from the professional educational literature on potential benefits and risks of using gaming and virtual learning environments to engage patient-consumers

**Required Readings:**

Browse the following web sites about games for health and the emerging research in this field: [Games for Health Initiative](http://www.gamesforhealth.org/about2.html) and [Health Games Research](http://www.healthgamesresearch.org/)

Lanningham-Foster L, Foster RC, McCrady SK, Jensen TB, Mitre N, Levine JA. [Activity-Promoting Video Games and Increased Energy Expenditure.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19324368?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Pediatr. 2009 Mar 24

Hansen MM. [Versatile, immersive, creative and dynamic virtual 3-D healthcare learning environments: a review of the literature.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18762473?ordinalpos=12&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Med Internet Res. 2008 Sep 1;10(3):e26. Review. <http://www.jmir.org.offcampus.lib.washington.edu/2008/3/e26/#ref9>

Alessandra G, et al. [A Second Life for eHealth: Prospects for the Use of 3-D Virtual Worlds in Clinical Psychology](http://www.jmir.org/2008/3/e21/HTML) J Med Internet Res 2008; 10(3):e21

**Optional Readings/Resources**

[Gunther Eysenbach’s blog on Web/Medicine 2.0](http://gunther-eysenbach.blogspot.com.offcampus.lib.washington.edu/2008/03/medicine-20-congress-website-launched.html)

**Speakers**

[James Ralston, MD, MPH.](http://www.centerforhealthstudies.org/ctrstaff/ralston.html) Assistant Investigator (Center for Health Studies). Dr. Ralston is an internist and health services investigator. His research interests include health informatics and the care of patients with chronic medical conditions, in particular, patients with diabetes. He is working with collaborators on designing the next generation patient-centric diabetes management tools.

[Wanda Pratt, PhD.](http://projects.ischool.washington.edu/wpratt/)  Associate Professor, Information School and Biomedical and Health Informatics. Dr. Pratt’s background is in medical informatics, computer science, electrical and computer engineering. Her work has mostly focused on personal health information management. She will present findings from a project titled, “Managing Health in Your Life” a consumer health informatics project focused on patients with breast cancer. One component of this project is a Facebook application for the breast cancer patient and her social network.

## Week 6

## Mid-Point Synthesis, Conceptual Blockbusting, Group Updates

**Objectives**

Review relevant issues related to student learning and synthesis of course materials and assignments as needed

Provide resources to assist student teams in developing group assignment

**Resources**

Burken, S. The Myths of Innovation, <http://www.scottberkun.com/services/speakingsamples/>

(View the Carnegie Mellon YouTube video clip-50 minutes; his essays on creative thinking are also very useful if your team is looking for exercises to get your creative “juice” flowing)

# Adams, J (2001) Conceptual Blockbusting: A Guide To Better Ideas

Magee M (2009) Leveraging technology to transform care. Health Commentary

Health Care Reform. <http://www.healthreform.gov/>

National health care community discussion forum on health care reform

Commonwealth Fund. <http://www.commonwealthfund.org/>

Resources and essays on relevant heal policy issues in relation to chronic disease management and medical homes

McDaniel AM, Schutte DL, Keller LO. [Consumer health informatics: from genomics to population health.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18922271?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Nurs Outlook. 2008 Sep-Oct;56(5):216-223

<http://www.hello.nhs.uk/training_critapp-toolkits.asp#handout>

Excellent tool kits for critically appraising research evidence for PCT studies

Titler MG, Kleiber C, Steelman VJ, Rakel BA, Budreau G, Everett LQ, Buckwalter KC, Tripp-Reimer T, Goode CJ. [The Iowa Model of Evidence-Based Practice to Promote Quality Care.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/11778337?ordinalpos=43&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Crit Care Nurs Clin North Am. 2001 Dec;13(4):497-509.

**Week 7**

**Patient-Health Consumer Driven PCT**

**Learning Objectives**

Evaluate the unique contributions of patient-health consumer driven PCT and qualities that make these tools “disruptive innovations”

Understand patient-consumers’ perceived value of “going public” with their personal health information and implications for future PCT development

**Required Readings**

Frost JH & Massagli MP (2008) [Social Uses of Personal Health Information Within PatientsLikeMe, an Online Patient Community: What Can Happen When Patients Have Access to One Another’s Data](http://www.jmir.org/2008/3/e15/). J Med Internet Res 2008 (May 27); 10(3):e15

Lee-Raine Support Group Narrative Excerpts

Keselman A, Browne AC, and Kaufman DR. [Consumer Health Information Seeking as Hypothesis Testing](http://www.jamia.org.offcampus.lib.washington.edu/cgi/content/full/15/4/484)**.** J Am Med Inform Assoc 2008; 15: 484-495

Lau A and Coiera EW [Impact of Web Searching and Social Feedback on Consumer Decision Making: A Prospective Online Experiment](http://www.jmir.org/2008/1/e2/HTML). J Med Internet Res 2008 (Jan 22); 10(1):e2

<http://www.jmir.org/2008/1/e2/HTML>

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**Optional Readings/Resources**

van Uden-Kraan CF, Drossaert CH, Taal E, Seydel ER, van de Laar MA. [Self-reported differences in empowerment between lurkers and posters in online patient support groups.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18653442?ordinalpos=10&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Med Internet Res. 2008 Jun 30;10(2):e18. http://www.jmir.org/2008/2/e18/

Eysenbach, G., Powell, J., Englesakis, M., Rizo, C., & Stern, A. (2004). [Health related virtual communities and electronic support groups: systematic review of the effects of online peer to peer interactions](http://www.bmj.com.offcampus.lib.washington.edu/cgi/content/full/328/7449/1166?view=long&pmid=15142921). Bmj, 328(7449), 1166.

Shaw BR, Han JY, Hawkins RP, Stewart J, McTavish F, Gustafson DH. [Doctor-patient relationship as motivation and outcome: examining uses of an Interactive Cancer Communication System.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/16460995?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Int J Med Inform. 2007 Apr;76(4):274-82.

Hesse BW, Nelson DE, Kreps GL, Croyle RT, Arora NK, Rimer BK, Viswanath K. [Trust and sources of health information: the impact of the Internet and its implications for health care providers: findings from the first Health Information National Trends Survey.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/16344419?ordinalpos=2&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Arch Intern Med. 2005 Dec 12-26;165(22):2618-24.

**Guest Speakers**

[Jeanna Frost, PhD](http://www.patientslikeme.com/members/view/1781), Research Scientist, Patientslikeme.com. Dr. Frost’s background is in media, psychology, and behavioral sciences. She was one of the co-founders of Patientslikeme.com, an online patient community that enables users to share personal health information in an effort to improve the collective health of the community. She will provide an insider’s view of this online community and the powers of aggregated data.

[Mr. Michael Riser](http://www.youtube.com/watch?v=z5EfAmGeEqg). Michael is a patient living with COPD. He has produced a series of outstanding YouTube videos for other patients and their caregivers. He will share his motivation for creating these videos, responses he’s received from viewers, and what he sees as gaps within our health care system and how patients like himself can help to empower others to effectively cope with their chronic conditions.

**Week 8**

**Mobile and Ubiquitous PCT**

**Learning Objectives**

Recognize current and emerging use of mobile and ubiquitous computing technologies for health promotion and disease management

Understand the ethical, legal, and socio-technical implications associated with use of ubiquitous sensor based technologies

**Required Readings**

Consolvo, S et al (2008) Flowers or a Robot Army? Encouraging Awareness & Activity with Personal, Mobile Displays. Paper presented at Ubicomp 2008, Seoul, Korea

Demiris G, Hensel BK. [Technologies for an aging society: a systematic review of "smart home" applications.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18660873?ordinalpos=14&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Yearb Med Inform. 2008:33-40.

Demiris G, Oliver DP, Dickey G, Skubic M, Rantz M. [Findings from a participatory evaluation of a smart home application for older adults.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18487857?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Technol Health Care. 2008;16(2):111-8.

Patrick K, Raab F, Adams MA, Dillon L, Zabinski M, Rock CL, Griswold WG, Norman GJ. [A text message-based intervention for weight loss: randomized controlled trial.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19141433?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) J Med Internet Res. 2009 Jan 13;11(1):e1.

**Optional Readings/Resources**

Patrick K, Griswold WG, Raab F, Intille SS. [Health and the mobile phone.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/18550322?ordinalpos=2&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Am J Prev Med. 2008; 35(2):177-81.

Connected Health Symposium Podcasts. There are a number of excellent talks from this meeting. One in particular is focused on mobile technologies. You should be able to download the podcast via iTunes from this web site: <http://www.connected-health.org/events/symposium-2008.aspx>

## [Brendryen H](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/sites/entrez?Db=pubmed&Cmd=Search&Term=%22Brendryen%20H%22%5BAuthor%5D&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_RVAbstractPlus), [Drozd F](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/sites/entrez?Db=pubmed&Cmd=Search&Term=%22Drozd%20F%22%5BAuthor%5D&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_RVAbstractPlus), [Kraft P](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/sites/entrez?Db=pubmed&Cmd=Search&Term=%22Kraft%20P%22%5BAuthor%5D&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_RVAbstractPlus).A digital smoking cessation program delivered through internet and cell phone without nicotine replacement (happy ending): randomized controlled trial. [J Med Internet Res.](javascript:AL_get(this,%20'jour',%20'J%20Med%20Internet%20Res.');) 2008 Nov 28;10(5):e51.

[Hensel BK, Demiris G, Courtney KL.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=16622166&query_hl=26&itool=pubmed_docsum) Defining obtrusiveness in home telehealth technologies: a conceptual framework. J Am Med Inform Assoc. 2006 Jul-Aug;13(4):428-31.

**Guest Speakers**

[George Demiris, PhD.](http://www.son.washington.edu/faculty/faculty_bio.asp?id=494)Associate Professor (UW). Dr. Demiris’ research focuses on the use of information technology to improve quality of life for older adults. He is exploring the design and evaluation of “smart home” applications that support older adults to remain independent and the use of telehealth technologies for home care and hospice patients and caregivers.

[Sunny Consolvo, PhD](http://www.seattle.intel-research.net/people.php). Research Scientist (Intel). Dr. Consolvo’s research interests are in applying user-centered design to ubiquitous computing systems. She will be speaking about her Ubifit project which was focused on promoting physical activity using sensor based technologies and graphical feedback on mobile phones.

**Week 9**

**Systems, Social and Legal Aspects of PCT**

**Learning Objectives**  
Recognize that development and use of PCT are embedded within systems and communities of care   
Identify organizational, social, legal, technical, and economic factors associated with adoption of PCT

**Required Readings**

Primer on Health Record Banks (HRB): <http://www.healthbanking.org> (click on “CLICK HERE” link to view 18 min narrated slides)

WA Health Record Bank Project

WA Health Record Bank Grant Solicitation (Read pages 4-9)

<http://www.accessmyhealth.org/>

Read 2 out of these 3 articles

Kendall DB. [Protecting patient privacy through health record trusts.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19276001?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Health Aff (Millwood). 2009 Mar-Apr;28(2):444-6.

Neupert P, Mundie C.[Personal health management systems: applying the full power of software to improve the quality and efficiency of care.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19275994?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) Health Aff (Millwood). 2009 Mar-Apr;28(2):390-2.

Hall MA, Schulman KA. [Ownership of medical information.](http://www.ncbi.nlm.nih.gov.offcampus.lib.washington.edu/pubmed/19318657?ordinalpos=3&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) JAMA. 2009 Mar 25;301(12):1282-4

**Optional Readings/Resources**

Health Record Banks:

<http://www.allhealth.org/briefingmaterials/HealthRecordBankingsummary-1101.pdf>

<http://www.louhie.org/>

<http://healthrecordbank.oregon.gov/DHS/hrb-oregon/about_us.shtml>

National HIT privacy framework: <http://www.hhs.gov/healthit/privacy/framework.html>.

Kleinke JD. (2000). [Vaporware.com: the failed promise of the health care Internet](http://content.healthaffairs.org.offcampus.lib.washington.edu/cgi/reprint/19/6/57). Health Aff;19(6):57-71.

Kleinke JD (2005) [Dot-gov: Market failure and the creation of a national information technology system](http://content.healthaffairs.org.offcampus.lib.washington.edu/cgi/content/full/24/5/1246). Health Aff; 24(5): 1246-1262

McDonald CJ, Overhage JM, Mamlin BW, Dexter PD, Tierney WM. [Physicians, information technology, and health care systems: a journey, not a destination](http://www.jamia.org.offcampus.lib.washington.edu/cgi/content/full/11/2/121). J Am Med Inform Assoc. 2004 Mar-Apr;11(2):121-4.

Rogers EM (2005) Diffusion of Innovations, 5th Edition. New York: Free Press.

**Guest Speakers**  
Juan Alaniz, Project Manager, WA Health Record Bank Project