
CLRES 2900**Transforming Practice for
Improved Health Care**

Dates: Fall term

Location: 305A Parkvale

Phone contact: 412-586-9788

Course Director:
Mary Ann Sevick, ScD, RNEmail addresses:
(sevick@pitt.edu)

Course objectives:

Transforming Practice for Improved Health Care course will provide an overview of theories, methods, structures, and processes useful for translating evidence-based research findings into practice, and for transforming the practice setting to improve quality and outcomes. The course will provide didactic underpinnings of translation of research findings into practice and transforming practice. Students will be required to develop a research proposal or business plan related to translating evidence-based research findings into practice, or for transforming the clinical practice setting. Students will have the opportunity to subsequently implement their proposal or business plan in the optional CLRES 2910 Translational Research Practicum.

Course Requirements:

Class participation	10%
Midterm preliminary proposal/business plan	30%
Final Exam	30%
Final proposal	30%

Proposal/business plan.

Students will be required to develop a 10 to 15 page business plan or proposal related to translating evidence-based research findings into practice, or for transforming the practice setting to improve quality and outcomes of care.

Research proposals will be evaluated on the clarity of research objectives, scientific significance, methodologic rigor, feasibility, and likelihood that the results of the proposed work will result in improvements to health service delivery.

Business plans will be evaluated in terms of the technical description of the type of product or service to be developed, the evaluation of the potential market, the analysis of competitors, feasibility, and likelihood that the product will result in improvements to health service delivery.

Students will confer with the course director in development of proposal/business plan ideas. Identification of a faculty mentor with expertise in research/product area to be addressed in the proposal/business plan is strongly advised. An outline of the research proposal/business plan is due at midterm and the fully developed proposal/business plan is due at term's end.

Course Mechanics:

2 credits, 2 hours/session, 1 sessions/week, for 16 weeks
Wednesdays 10-12 noon

Required text: None

Readings are placed on CourseWeb.

Session 1	9/1	Introduction: Transforming the Health Care for the 21 st Century	Kapoor
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At the conclusion of this lecture the student will be able to:

1. Describe epidemiologic evidence pertaining to quality shortfalls in the US health care system
2. Discuss the proximate causes of health care crises including: increasing patient complexity, advances in medical science, the structure of health care system, an acute care orientation in the face of an aging and chronically ill population, economic incentives, and underdeveloped information technology.
3. Discuss the Institute of Medicine agenda for transforming the health care system as described in the report: Crossing the Quality Chasm – Six aims for improvement

Required Reading (prior to session):

A New Partnership Between Systems Engineering and Health Care. Chapter 1 in Reid PP, Compton WD, Grossman JH, Fanjiang G (Eds.) Building a Better Delivery System: A New Engineering/Health Care Partnership. Washington DC: The National Academies Press, 2005.

Improving the 21st-Century Health Care System. Chapter 2 in Committee on Quality Health Care in America, Institute of Medicine. Crossing the Quality Chasm. Washington DC: The National Academies Press, 2001.

Session 2	9/8	Models and frameworks for transforming the health care system	Sevick
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At the conclusion of this lecture the student will be able to:

1. Describe the health care environment and methods for identifying common performance “break points.”
2. Discuss the VA QUERI approaches for integrating evidence-based medicine into practice.
3. Compare and contrast the evidence-based practice paradigm with the industrial engineering paradigm, for transforming the service delivery system.
4. Discuss potential pitfalls for implementation of guidelines into clinical practice settings.

Required Reading (prior to session):

VA-QUERI Implementation Guide. Guide for Implementing Evidence-Based Practice and Conducting Implementation Research. <http://www.hsr.d.research.va.gov/queri/implementation/>

Ferlie EB, Shortell SM. Improving the quality of health care in the United Kingdom and the United States: a framework for change. *Milbank Quarterly* 2001; 79(2): 281-315.

Coffey RJ. Engineering and the Health Care System in Reid PP, Compton WD, Grossman JH, Fanjiang G (Eds.) Building a Better Delivery System: A New Engineering/Health Care Partnership. Washington DC: The National Academies Press, 2005, p107-111.

Carayon P. Human Factors and Ergonomics in Health Care and Patient Safety. Chapter 1 in Carayon P. (Ed.) Handbook of Human Factors and Ergonomics in Health Care and Patient Safety. Mahwah, New Jersey: Lawrence Erlbaum Associates, 2007.

Session 3	9/15	<u>Using decision sciences to improve practice</u>	Mark Roberts
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At the conclusion of this lecture the student will be able to:

- 1) Describe the characteristics of health care problems that are amenable to evaluation by decision sciences and modeling
- 2) Describe the concepts of calibration and validation of a decision model
- 3) Evaluate the ability of two specific models to answer clinical questions regarding clinical practice in gall bladder disease and HIV disease

Required readings (prior to session):

Friedman LS, **Roberts MS**, Brett AS, Marton KI. Management of asymptomatic gallstones in the diabetic patient: a decision analysis. *Annals of Internal Medicine*. 1988;109:913-9.

Braithwaite RS, **Roberts MS**, Chang CCH, Goetz MB, Gibert CL, Rodriguez-Barradas MC, Shechter S, Schaefer AJ, Nucifora K, Koppenhaver R, Justice AC. The influence of alternative thresholds for initiating HIV treatment on life expectancy and quality-adjusted life expectancy: A decision model. *Annals of Internal Medicine*. Feb 5;148(3):178-85, 2008

Optional Reading:

Session 4	9/22	<u>An introduction to process improvement methods for enhancing quality of care</u>	Simak
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At the conclusion of this lecture the student will be able to:

1. Describe process improvement tools/approaches common to health care quality improvement (QI) methods.
2. Discuss the common features of health system databases that may be used to identify quality problems, target QI interventions, and assess the effectiveness of QI interventions.
3. Discuss the factors to be considered in designing QI interventions that are feasible/acceptable, and methods to reduce implementation barriers (e.g. stakeholders).
4. Analyze findings, identify key opportunities for improvement, and recommend solutions (for class demonstration projects).
5. Critically evaluate the tools, data, flow chart, intervention and feasibility/acceptability of a QI project that has been implemented within the UPMC.

Demonstration/in class exercise: Improving Processes of Primary Care: Prevention, Phone Care, Diabetes Management, or Hypertension Management

Required readings (prior to session): none

Optional Reading:

Deming, W. Edwards. *Out of Crisis*. MIT Press edition, 2000.

Wheeler, Donald J. *Understanding Variation: The Key to Managing Chaos*. 2nd ed. SPC Press. 2000

Session 5	9/29	Changing financial incentives to improve practice	Mehrotra
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At the conclusion of this lecture the student will be able to:

1. Describe the extent to which the conditions of idealized competition are possible in the health care system.
2. Describe current economic incentives that support an inefficient system of care (e.g. asymmetric information and agency, moral hazard of insurance and current reimbursement, imperfect agency and supplier induced demand).
3. Discuss the evidence regarding alternative approaches for reversing inefficient economic incentives (e.g. pay-for performance, co-payments and deductibles, prospective payment, competitive bidding, and consumer-directed health care).
4. Critically evaluate an empirical evaluation of a pay-for-performance study from UK.

Required readings (prior to session):

Doran T, Fullwood C, Gravelle H, Reeves D, Kontopantelis E, Hiroeh U, Roland M. Pay-for-performance programs in family practices in the United Kingdom. *N Engl J Med*. 2006; 355(4): 375-84.

Campbell S, Reeves D, Kontopantelis E, Middleton E, Sibbald B, Roland M. Quality of Primary Care in England with the Introduction of Pay for Performance. *N Engl J Med* 2007; 357: 181.

Robinson JC. Theory and practice in the design of physician payment incentives. *Milbank Q*. 2001; 79(2): 149-77.

Session 6	10/6	Implementation of Guidelines: Strategies that Work	Fine
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At the conclusion of this lecture the student will be able to:

1. Discuss the developmental context and uses of clinical practice guidelines
2. Discuss the methods used to develop clinical practice guidelines

3. Describe guideline appraisal instruments, and critically evaluate the quality of a clinical practice guideline
4. Discuss effective methods of guideline dissemination and implementation
5. Critically appraise a study of guideline development and implementation.

Required Reading (prior to session):

Davis DA, Taylor-Vaisey A. Translating guidelines into practice: A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *Can Med Assoc J* 1997; 157(4): 408-416.

Mugford M, Banfield P, O'Hanlon M. Effects of feedback of information on clinical practice: A review. *BMJ* 1991; 303: 398-402.

Graham ID, Calder LA, Hebert PC, Carter AO, Tetroe JM. A comparison of clinical practice guideline appraisal instruments. *International Journal of Technology Assessment in Health Care* 2000; 16(4): 1024-38.

Shaneyfelt TM, Mayo-Smith MF, Rothwangl J. Are guidelines following guidelines? The methodologic quality of clinical practice guidelines in the peer-reviewed medical literature. *JAMA* 1999; 281: 1900-5.

Optional:

Gross PA, Greenfield S, Cretin S, Ferguson J, Grimshaw J, Grol R, Klazinga N, Lorenz W, Meyers GS, Riccobono C, Shoenbaum SC, Schyve P, Shaw C. Optimal methods for guidelines implementation: Conclusions from the Leeds Castle meeting. *Medical Care* 2001; 39(8 suppl 2): II85-92.

Solberg LI. Guideline Implementation: What the literature doesn't tell us. *Jt Comm J Qual Improv* 2002; 26: 525-537.

Weingarten SR. Translating Practice guidelines into patient care: Guidelines at the bedside. *CHEST* 2000; 118: 4S-7S.

Session 7	10/13	<u>Clinical Practice Strategies and Research pertaining to Multimorbidity and Complex Chronic Disease</u>	Sevick
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At the conclusion of this lecture the student will be able to:

1. Discuss the epidemiologic data regarding the shifting needs of the U.S. population in terms of chronic disease and multi-morbidity.
2. Highlight the differences between disease management, case management, and collaborative care.
3. Discuss the literature regarding effectiveness of disease/case/collaborative management programs.
4. Discuss the barriers/facilitators to implementing disease/case/collaborative management programs for a variety of common conditions including CHF, depression, and diabetes.

Required readings (prior to session):

Von Korff M, Gruman J, Schaefer J, Curry SJ, Wagner EH. Collaborative management of chronic illness: Essential elements. *Ann Intern Med* 1997; 127: 1097-1102.

Wagner EH. Deconstructing heart failure disease management. *Ann Intern Med* 2004; 141(8): 644-646.

Casalino LP. Disease management and the organization of physician practice. *JAMA* 2005; 293(4): 485-488.

Leeman J, Mark B. The chronic care model versus disease management programs: a transaction cost analysis approach. *Health Care Manage Rev* 2006; 31(1): 18-25.

Piatt GA, Orchard TJ, Emerson S, Simmons D, Songer TJ, Brooks MM, Korytkowski M, Siminerio LM, Ahmad U, Zgibor JC. Translating the chronic care model into the community: results from a randomized controlled trial of a multifaceted diabetes care intervention. *Diabetes Care* 2006; 29(4): 811-817.

Rollman BL, Weinreb L, Korsen N, Schulberg HC. Implementation of guideline-based care for depression in primary care. *Adm Policy Ment Health* 2006; 33(1): 47-57.

Optional Reading:

Robert Wood Johnson Foundation. Improving Chronic Illness Care.
<http://improvingchroniccare.org/change/model/components.html>

Rollman BL, Herbeck Belnap B, Reynolds C, Schulberg H, Shear M. A contemporary protocol for the treatment of panic and generalized anxiety in primary care. *Gen Hosp Psychiatry* 2003; 25: 74-82.

Rothman AA, Wagner EH. Chronic illness management: what is the role of primary care? *Ann Intern Med* 2003; 138(3): 256-261.

DeBusk RF, Miller NH, Parker KM, Bandura A, Kraemer HC, Cher DJ, West JA, Fowler MB, Greenwald G. Care management for low-risk patients with heart failure: a randomized, controlled trial. *Ann Intern Med* 2004; 141: 606-613.

Bodenheimer T, Fernandez A. High and rising health care costs. Part 4: Can costs be controlled while preserving quality? *Ann Intern Med* 2005; 143(1): 26-31

Bower P, Gilbody S, Richards D, Fletcher J, Sutton A. Collaborative care for depression in primary care. Making sense of a complex intervention: systematic review and meta-regression. *British Journal of Psychiatry* 2006; 189: 484-93.

Session 8 10/20 Human Computer Interaction concepts and methods: designing Hochheiser
and evaluating technology for the health care sector.

At the conclusion of this lecture the student will be able to: Discuss the importance of designing technology to solve the right problem, and methods for measuring whether this has been achieved.

Identify good and bad technology in use by providers and patients and discuss the implications of problematic technology for successful care.

1. Discuss current research initiatives at Pitt and CMU regarding human computer interaction and related technologies related to health care.
2. Discuss gaps in the literature related to human computer interaction and transformative care and directions for future research..

Required readings (prior to session):

Bickmore T, Gruber A, Picard RW. Establishing the Computer-Patient Working Alliance in Automated Health Behavior Change Interventions. *Patient Educational Counseling* 2005; 59(1): 21-30.

Ren, Y., Kiesler, S., Fussell, S., & Scupelli, P. Trajectories in multiple group coordination: A field study of hospital operating suites. *Proceedings of the 40th Hawaii International Conference on System Sciences*, IEEE Computer Society Press, Big Island, Hawaii, January 2007

Chapter 3 in Hugh Beyer , Karen Holtzblatt, *Contextual design: defining customer-centered systems*, Morgan Kaufmann Publishers Inc., San Francisco, CA, 1998

Selected readings from Norman DA. *Design of Everyday Things*. New York: Doubleday, 1990.

Optional Reading:

Session 9	10/27	Using an EMR to Improve the Quality of Patient Care	Ambrosino Clark
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At the conclusion of this lecture the student will be able to:

1. Describe the features common to many EMRs (CPOE, documentation, care management, decision support, messaging, analysis and reporting, patient-directed functions [less common], billing)
2. Discuss barriers to uptake of EMR by individual practices (cost time, usability, support, inadequate exchange of information between paper and electronic record barriers to cross-institutional care).
3. Discuss the evidence on the effectiveness of EMR.
4. Discuss the organizational ergonomic considerations in designing and implementing an EMR (e.g. how do we optimize the interface between the EMR and features of the health care service delivery system?)
5. Describe the use of the EMR and barriers encountered in a current project regarding inpatient medical emergencies.

Demonstration: EMR from VA and UPMC (Mars, PowerChart, Epicare)

Required Reading (prior to session):

Leape LL, Berwick DM. Five Years After To Err Is Human: What Have We Learned? *JAMA* 2005; 293: 2384-2390

Chapman WW, Christensen LM, Wagner MM, Haug PJ, Ivanov O, Dowling JN, Olszewski RT. Classifying free-text chief complaints into syndromic categories with natural language processing. *AI in Medicine* 2005; 33(1): 31-40.

Optional Reading:

Han YY, Carcillo JA, Venkataraman ST, Clark RSB, Watson RS, Nguyen TC, Bayir H, Orr RA. Unexpected Increased Mortality After Implementation of a Commercially Sold Computerized Physician Order Entry System. *Pediatrics* 2005; 116: 1506-1512

Del Beccaro MA, Jeffries HE, Eisenberg MA, Harry ED. Computerized Provider Order Entry Implementation: No Association With Increased Mortality Rates in an Intensive Care Unit. *Pediatrics* 2006;118;290-295

Session 10	11/3	Using telehealth technologies	Courtney
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At the conclusion of this lecture the student will be able to:

1. Discuss the development of and potential applications for a variety of patient-provider telehealth technologies including environmental sensors, telemonitoring, and "virtual visits."
2. Discuss the state-of-the-science with regard to each of these technological innovations (e.g., feasibility/acceptability; sensitivity/specificity for identifying risks/events; integration of multiple data sources; efficacy)
3. Discuss the ethical issues to be addressed in patient-provider telehealth technologies (e.g., privacy, safety, consent).
4. Discuss areas for further development/expansion of telehealth (e.g., linking telehealth technologies to the medical record; preparing users for self-management; use of trend data to improve patient management)

Demonstrations: Telehealth and telepathology applications,

Required readings (prior to session):

Hebert, M. A., Korabek, B., & Scott, R. E. Moving research into practice: A decision framework for integrating home telehealth into chronic illness care. *International Journal of Medical Informatics* 2006; 75(12), 786-794.

Ni Scanail, C., Carew, S., Barralon, P., Noury, N., Lyons, D., & Lyons, G. M. A review of approaches to mobility telemonitoring of the elderly in their living environment. *Ann Biomed Eng* 2006; 34(4), 547-563.

Optional Reading:

Gilbertson, J. R., J. Ho, et al. Primary histologic diagnosis using automated whole slide imaging: a validation study. *BMC Clin Pathol* 2006; 6: 4.

Massone, C., H. Peter Soyer, et al. Feasibility and diagnostic agreement in teledermatopathology using a virtual slide system. *Hum Pathol* 2007; 38(4): 546-54.

Steinbrook, R. The age of teleradiology. *N Engl J Med* 2007; 357(1): 5-7

Session 11	11/10	Using the Internet to Deliver Care	Rotondi
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At the conclusion of this lecture the student will be able to:

1. Discuss considerations for the development of internet-based health intervention including the mental models of the user, the system, the designer, and the health care professional.
2. Describe methods and processes of conducting a needs assessment for developing internet-based health interventions
3. Discuss perspectives and methods for conducting user-centered design and evaluation of internet-based health intervention.
4. Describe web-based support/management programs to assist families/patients.
5. Discuss the importance of personalizing and tailoring health messages with internet-based care.
6. Critically evaluate the cognitive ergonomic characteristics of an internet-based self-management support program.
7. Describe threats to safety of participants, and the potential for therapeutic effects of the interventions.
8. Discuss why it is not the case that "if you build it they will come and they will benefit."

Demonstration: HealtheVet, TBI Caregiver Support

Required Reading (prior to session):

Rotondi AJ, Haas GL, Anderson CM, Newhill CE, Spring MB, Ganguli R, Gardner WB, Rosenstock JB, A Clinical Trail to Tests the Feasibility of a Telehealth Psychoeducational Intervention for Persons with Schizophrenia and their Families: Intervention and Three-month Findings. *Rehabilitation Psychology* 2005; 50(4): 325-336.

Rotondi AJ, Sinkule J, Haas GL, Spring MB, Litschge CM, Newhill CE, Ganguli R, and Anderson CM, Designing Websites for Persons with Cognitive Deficits: Design and Usability of a Psychoeducational Intervention for Persons with Severe Mental Illness. In Press, 2007, *Journal of Psychological Services*.

Eysenback G, Powell J, Englesakis M, Rizo C, Stern A. Health related virtual communities and electronic support groups: systematic review of the effects of online peer to peer interactions. *BMJ* 2004; 328: bmj.com

Stretcher VJ, Shiffman S, West R. Randomized controlled trial of a web-based computer-tailored smoking cessation program as a supplement to nicotine patch therapy. *Addiction* 2005; 100(5): 682-688.

Session	11/17	Genetics and personalized medicine	Kammerer
12			

At the conclusion of this lecture the student will be able to:

Required Reading (prior to session):

Moore JH, Williams SM. (2009). Epistasis and Its Implications for Personal Genetics. *The American Journal of Human Genetics*; 85: 309-320.

Bussey HI, Wittkowsky AK, Hylek EM, Walker MB. Genetic Testing for Warfarin (Coumadin) Dosing? – Not Yet Ready for Prime Time. <http://www.clotcare.com/clotcare/warfaringeneticstesting.aspx>.

Your DNA's in the post. BBC News. http://news.bbc.co.uk/2/hi/uk_news/magazine/7518061.stm.

Pharoah PDP, Antoniou AC, Easton DF, Ponder BAJ. Polygenes, Risk Prediction, and Targeted Prevention of Breast Cancer. *N Engl J Med* 2008; 358: 2796-803.

Jakobsdottir J, Gorin MB, Conley YP, Ferrell RE, Weeks DE. Interpretation of Genetic Association Studies: Markers with Replicated Highly Significant Odds Ratios May Be Poor Classifiers. *PLoS Genet* 5(2): e1000337. doi:10.1371/journal.pgen.1000337.

Kraft P, Hunter DJ. (2009). Genetic Prediction – Are We There Yet? *N Engl J Med* 360;17.

Harmon A. (2007). My Genome, Myself: Seeking Clues in DNA. <http://www.nytimes.com/2007/11/17/us/17dna.html>.

Harmon A. (2008). Gene Map Becomes a Luxury Item. <http://www.nytimes.com/2008/03/04/health/research/04geno.html>

Optional Reading:

No Class	11/24	Thanksgiving break	
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Session	12/1	Comparative effectiveness	Roberts
13			

At the conclusion of this lecture the student will be able to:

Required Reading (prior to session):

Optional Reading:

Session 14	12/8	Ecological Momentary Assessment	Kamarck
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At the conclusion of this lecture the student will be able to:

1. Describe advantages associated with use of ecological momentary assessment (EMA) methods
2. Describe methods of real-time capture of self-report and biological data
3. Describe how EMA methods might be applied for understanding the role of stress in the development of cardiovascular disease and relapse processes in smoking
4. Describe how EMA methods might be applied to other diverse research questions and settings

Required Reading (prior to session):

Kamarck, TW, Shiffman, S & Wethington, E (in press). Measuring psychosocial stress using ecological momentary assessment methods. In R Contrada & A Baum (Eds.), *The Handbook of Stress Science: Biology, Psychology and Health*. New York: Springer.

Stone AA, Shiffman S, Schwartz JE, Borderick JE, Hufford MR. Patient compliance with paper and electronic diaries. *Controlled Clinical Trials* 2003; 24: 182-199.

Optional Reading: None

Session 15	12/16	Final Exam	
		Final proposal due	
