INLS 725 COURSE SYLLABUS: Electronic Health Records

WISE – Online Fall 2014

Taught by Laura Marcial

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Course Description:

The course is aimed at exposing students to Electronic Health Record (EHR) systems, with a strong emphasis on the role of EHR systems in healthcare operations. The course will concentrate on:

- Technological foundations of EHR systems
- Legal and regulatory issues that shape EHR evolution
- Role of the EHR in ensuring quality of care and evidence-based practice
- Implementation of the EHR in clinical practices: workflow analysis and change management
- Meaningful use of EHR systems and healthcare data

The course is organized into self-paced modules, details for each module are provided below.

Textbook and other readings:

Carter, J.H. (2008). *Electronic health record: A guide for clinicians and administrators.* Philadelphia: ACP Press. (ISBN 1930513976 9781930513976)

In addition, each module will have several required and optional readings selected from high quality journal articles and government reports pertinent to the module topics. The list of readings is provided in the *Resources* section of the course website.

Assignments & Assessments:

Readings. A list of readings, organized in recommended order is provided for each module. Do not be overwhelmed by the length of some lists – most readings are only a few pages long and/or only select pages from each reading are required (details will be listed in each course module). Readings should be completed prior to the beginning of each week so you are prepared to engage in class discussion. Lists of optional readings are provided for most of the modules. The optional readings provide more in-depth exploration of topics of interest and/or background to help prepare short papers/presentations.

Discussion. *We will be using the discussion forum as the main form of course interaction. You are expected to visit the course site at least 2-3 days out of each week (the instructor will be monitoring the forum daily) to post your responses to discussion prompts and to offer thoughtful replies to your classmates' posts.* We will use the forum for formal discussions of weekly readings, your individual assignments (see below) and to informally discuss any topics/issues that come up during the course. The course is short in duration, so your active engagement in forum discussions is the best way to get the most out of the course!

Virtual Presentations (5). The purpose of these assignments is to allow students to explore a topic of their choice in more detail for each module and to share the results with classmates. You are required to provide a short report in the form of a slide presentation (10 slides not including the title and references slides) on a topic relevant to each of the 5 course modules. A list of suggested topics will be provided in the Resources section of the course site but feel free to choose other topics of interest (pending instructor approval). The presentations should be based on scholarly information sources (make sure to include a proper list of references). They should be done in a somewhat pecha kucha style (brief and to the point, see also http://en.wikipedia.org/wiki/PechaKucha) and should dig a little deeper into a topic of interest for each module. Try to use non-textual materials in your presentation (online videos or examples, tables, charts, diagrams) as a way to synthesize and present the key ideas and themes. If some text is necessary, please limit it to very short paragraphs and bulleted lists. Although not a requirement, consider including voice narration with your presentation. All presentations will be posted on the course website for comments from other class participants. The author is expected to respond to any questions posted by classmates.

Final Exam. The purpose of the final exam is to assess the knowledge gained from the course. As such, it will be based on assigned readings and issues elaborated upon in class discussion. The exam which is essentially 'open book' will require your responses to a series of short essay questions. The time limit for the exam is approximately 3 hours. The questions will require that you integrate and summarize what has been covered in the course. Pre-exam review suggestions will be provided.

Grading:

- *Discussion participation - 50%*
- Presentation assignments - 30%
- Final Exam - 20%

Module 1 – Introduction to EHR concepts and context (August 19 – September 10)

Topics:

- Definition of an EHR
- Forces that shape EHR development and implementation
- EHR components and functionality
- The Legal and regulatory context for EHRs
- Implications of EHR for healthcare in the US

Required Readings:

- Carter (2008). Chapter 1, pp. 3-7
- Staggers, N., Thompson, C.B. & Snyder-Halpern, R. (2001). History and trends in clinical information systems in the United States. *Journal of Nursing Scholarship, 33* (1), 75-81
- Detmer, D.E. (2003). Building the national health information infrastructure for personal health, health care services, public health and research. *BMC Medical Informatics and Decision Making 3*(1)

- Tang P.H. (Ed). (2003). Key capabilities of an Electronic Health Record System. Washington, DC: National Academies Press
- Carter (2008). Chapter 25.
- Goldschmidt, P.G. (2005). HIT and MIS: implications of health information technology and medical information systems. Communications of the ACM, 48(10), 69-74

Optional Readings:

- Teich, J. M. (1998).*Clinical information systems for integrated healthcare networks*. In C.G. Chute (Ed.) Proceedings of the AMIA Symposium, 19–28.
- President's Council of Advisors on Science and Technology. (2010). *Realizing the full potential of health information technology to improve healthcare for Americans: The path forward*. Washington, DC: Author. [available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-health-it-report.pdf]

Assignment: By August 29, 2014, please select a topic and begin working on your module presentation. Presentations are due September 5, 2014, all comments and responses are due by September 10, 2014.

Module 2 – Supporting Technologies and Standards (September 11 – October 1)

Topics:

- Real-World EHR models
- Health Informatics Standards
- Databases in Healthcare

Required Readings:

- Carter (2008). Chapter 1, pp. 7-17
- Carter (2008). Chapter 6
- Carter (2008). Chapter 4, pp. 77-88
- Section IV - Technology for an Integrated Health IT Ecosystem (pp. 39-44) & illustrative scenarios from Section V – Privacy and Security Considerations (pp. 51-52) from President's Council of Advisors on Science and Technology. (2010). Realizing the full potential of health information technology to improve healthcare for Americans: The path forward. Washington, DC: Author. [available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-health-it-report.pdf]

Optional Readings

- Diamond, C., Mostashari, F., & Shirky, C. (2009). Collecting and sharing data for population health: A new paradigm. Health Affairs, 28(2): 454-466
- Cimino, J. (2000). From data to knowledge through concept-oriented terminologies: Experience with Medical Entities Dictionary. Journal of the American Medical Informatics Association, 7, 288-297.

- Sujansky, W.V., Overhage, J.M., Changc,S., Frohlichc, J. & Faus, S.A. (2009). The Development of a highly constrained Health Level 7 implementation guide to facilitate electronic laboratory reporting to ambulatory electronic health record systems. Journal of the American Medical Informatics Association, 16(3), 285-290.
- Weber, G.M., Murphy, S.N., McMurry, A.J., Macfadden, D., Nigrin, D.J., Churchill, S. & Kohane, I.S. (2009). The Shared Health Research Information Network (SHRINE): a prototype federated query tool for clinical data repositories. Journal of the American Medical Informatics Association, 16(5), 624-30

Assignment: By September 19, 2014, please select a topic and begin working on your module presentation. Presentations are due September 26, 2014, all comments and responses are due by October 1, 2014.

Module 3 – EHR in clinical process, workflow. (October 2 – October 22)

Topics:

- Business Processes in Clinical Practices
- Understanding Clinical Processes
- Workflow/policy challenges in EHR implementation
- Change Management

Required Readings:

- Lorenzi, N.M., and Riley, R.T (2000). Managing change: An overview. Journal of the American Medical Informatics Association, 7, 116-124.
- Caleen, J.L., Braithwaite, J. & Westbrook, J.A. (2008). Contextual implementation model: A framework for assisting clinical information system implementations. Journal of the American Medical Informatics Association, 15(2), 255-262 (mainly diagram on p. 258)
- Carter (2008). Chapter 7
- Carter (2008). Chapter 8
- Fernandopulle, R., & Patel, N. (2010). How the Electronic Health Record did not measure up to the demands of our medical home practice. Health Affairs 29 (4), 622-628
- Seo, D., Boonstra, A., & Offenbeek, M. (2011). Managing IS adoption in ambivalent groups. Communications of the ACM, 54(11), 68-73

Optional Readings:

- Ash, J.S., Sitting, D.F., Poon, E.G., Guappone, K., Campbell, E. & Dykstra, R.H. (2007). The extent and importance of unintended consequences related to computerized provider order entry. Journal of the American Medical Informatics Association, 14, 415– 423
- Payne, T.H., tenBroek, A.E., Fletcher, G.S. & Labuguen, M.C. (2010). Transition from paper to electronic inpatient physician notes. Journal of the American Medical Informatics Association, 17, 108-111.

Assignment: By October 10, 2014, please select a topic and begin working on your module presentation. Presentations are due October 15, 2014 (because of the break), all comments and responses are due by October 22, 2014.

Module 4 – EHR and Quality of Care; Clinical Decision Support (October 23 – November 12)

Topics:

- Defining QC Problems in Healthcare
- Impact of HIT on QC
- Clinical Decision Support

Required Readings:

- Chassin MR, Galvin RW. The urgent need to improve health care quality. Institute of Medicine National Roundtable on Health Care Quality. JAMA 1998; 280: 1000–5 (just pp 102-103)
- Chaudhry, B., Wang, J., Wu, S., et al. (2006). Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. Annals of Internal Medicine, 144, 742-752
- Goldzweig, C.L., Towfigh, A., Maglione, M. & Shekelle, G. (2009). Cost and benefits of health information technology: New trends from the literature. Health Affairs, 28(2), 282-293 (skim the paper, focus on discussion section on pp. 291-292)
- Buntin, M.B., Burke, M.F., Hoaglin, M.C. & Blumenthal, D. (2011). The benefits of health information technology: A review of the recent literature shows predominantly positive results. Health Affairs, 30(3), 464-471. (skim introductory sections, read the Results, pay special attention to Discussion)
- Carter (2008). Chapter 9
- Roukema, J., Styerbert, E.W., van der Lei, J. & Moll, H.A. (2008). Randomized trial of a clinical decision support system: Impact on the management of children with fever without apparent source. Journal of the American Medical Informatics Association, 15 (1), 107-114
- Osheroff, J.A., Teich, J.M., Middleton, B., Steen, E.B., Wright, A. & Detmer, D.E. (2007). A roadmap for national action on clinical decision support. Journal of the American Medical Informatics Association, 14(2), 141–145

Optional Readings:

- Balas, E.A., Weingarten, S., Garb, C.T., Blumenthal, D., Boren, S.A., & Brown, G.D. (2000). Improving preventive care by prompting physicians. Archives of Internal Medicine, 160, 301-308.
- Bates, D.W., Leape, L.L., Cullen, D.J., Laird, N., Peterson, L.A., Teich J.M., et al. (1998). Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. Journal of the American Medical Association, 80, 1311-1316
- Bates, D.W. & Gawande, A.A. (2003). Patient safety: improving safety with information technology. New England Journal of Medicine, 348, 2526-2534
- Ferranti, J.M., Langman, M.K., Tanaka, D., McCall. J., & Ahmad, A. (2010). Bridging the gap: leveraging business intelligence tools in support of patient safety and financial effectiveness. Journal of the American Medical Informatics Association, 17, 136-143
- Kuperman, G.J. 7 Gibson, R.F. (2003). Computer physician order entry: benefits, costs, and issues. Annals of Internal Medicine, 139, 31-39

- Zhou L. et al. (2009). The Relationship between Electronic Health Record use and quality of care over time. Journal of the American Medical Informatics Association, 16, 457– 464

Assignment: By October 31, 2014, please select a topic and begin working on your module presentation. Presentations are due November 7, 2014, all comments and responses are due by November 12, 2014.

Module 5 – EHR Implementation/Evaluation and Meaningful Use (November 13 – December 3)

Topics:

- Defining Meaningful Use
- Evaluation of EHR Features

Required Readings:

- Davidson, S.M. & Heineke, J. (2007). Toward an effective strategy for the diffusion and use of clinical information systems. Journal of the American Medical Informatics Association, 14(3), 361–367
- Blumenthal, D. & Tavenner, M. (2010). The "meaningful use" regulation for electronic health records. The New England Journal of Medicine, 363(6), 501–504
- Halamka, J.D. (2010). Making the most of federal health information technology regulations. Health Affairs, 29 (4), 596–600
- Section IX – Recommendations (pp. 77-79) from
- President's Council of Advisors on Science and Technology. (2010). Realizing the full potential of health information technology to improve healthcare for Americans: The path forward
- Carter (2008). Chapter 17

Optional Readings:

- Simon et al. (2009). Physicians' use of key functions in Electronic Health Records from 2005 to 2007: A statewide survey. Journal of the American Medical Informatics Association, 16, 465-470

Assignment: By November 19, 2014, please select a topic and begin working on your module presentation. Presentations are due November 25, 2014 (because of the holiday), all comments and responses are due by December 3, 2014.

Exams will take place on December 5th from noon - 3PM EST. Please contact the instructor if you need to schedule an alternate three hour window to complete your final exam.