

Component 11 / Unit 3 – Clinical Decision Support

Bibliography

- Adams, M., Bates, D., et al. (2008). Saving Lives, Saving Money: The Imperative for Computerized Physician Order Entry in Massachusetts Hospitals. Cambridge, MA, New England Healthcare Institute.
http://www.nehi.net/uploads/full_report/cpoe20808_final.pdf.
- Ammenwerth, E., Schnell-Inderst, P., et al. (2008). The effect of electronic prescribing on medication errors and adverse drug events: a systematic review. *Journal of the American Medical Informatics Association*, 15: 585-600.
- Ammenwerth, E., Talmon, J., et al. (2006). Impact of CPOE on mortality rates - contradictory findings, important messages. *Methods of Information in Medicine*, 45: 586-594.
- Anonymous (2008a). A Clinician's Guide to Electronic Prescribing. Washington, DC, eHealth Initiative. http://www.ehealthinitiative.org/assets/Documents/e-Prescribing_Clinicians_Guide_Final.pdf.
- Anonymous (2008b). Electronic Prescribing: Becoming Mainstream Practice. Washington, DC, eHealth Initiative.
http://www.ehealthinitiative.org/assets/Documents/eHI_CIMM_ePrescribing_Report_6-10-08_FINAL.pdf.
- Anonymous (2009). The State of Health Care Quality: 2009. Washington, DC, National Committee for Quality Assurance. <http://www.ncqa.org/tabid/836/Default.aspx>.
- Anonymous (2010). 2009 Progress Report on E-Prescribing. Alexandria, VA, Surescripts. <http://www.surescripts.com/downloads/NPR/national-progress-report.pdf>.
- Asaro, P., Sheldahl, A., et al. (2006). Embedded guideline information without patient specificity in a commercial emergency department computerized order-entry system. *Academic Emergency Medicine*, 13: 452-458.
- Ash, J., Gorman, P., et al. (2004). Computerized physician order entry in U.S. hospitals: results of a 2002 survey. *Journal of the American Medical Informatics Association*, 11: 95-99.
- Ash, J., Sittig, D., et al. (2007a). Categorizing the unintended sociotechnical consequences of computerized provider order entry. *International Journal of Medical Informatics*, 76(Suppl 1): 21-27.
- Ash, J., Sittig, D., et al. (2007b). The extent and importance of unintended consequences related to computerized provider order entry. *Journal of the American Medical Informatics Association*, 14: 415-423.
- Ash, J., Stavri, P., et al. (2003a). Implementing computerized physician order entry: the importance of special people. *International Journal of Medical Informatics*, 69: 235-250.

- Ash, J., Stavri, P., et al. (2003b). A consensus statement on considerations for a successful CPOE implementation. *Journal of the American Medical Informatics Association*, 10: 229-234.
- Barnett, G., Cimino, J., et al. (1987). DXplain: an evolving diagnostic decision-support system. *Journal of the American Medical Association*, 258: 67-74.
- Barnett, G., Winickoff, R., et al. (1978). Quality assurance through automated monitoring and concurrent feedback using a computer-based medical information system. *Medical Care*, 16: 962-970.
- Bates, D. (2005). Computerized physician order entry and medication errors: finding a balance. *Journal of Biomedical Informatics*, 38: 259-261.
- Bates, D., Evans, R., et al. (2003). Detecting adverse events using information technology. *Journal of the American Medical Informatics Association*, 10: 115-128.
- Bates, D., Kuperman, G., et al. (1999). A randomized trial of a computer-based intervention to reduce utilization of redundant laboratory tests. *American Journal of Medicine*, 106: 144-150.
- Bates, D., Kuperman, G., et al. (2003). Ten commandments for effective clinical decision support: making the practice of evidence-based medicine a reality. *Journal of the American Medical Informatics Association*, 10: 523-530.
- Bates, D., Leape, L., 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*, 280: 1311-1316.
- Bates, D., O'Neil, A., et al. (1994). Potential identifiability and preventability of adverse events using information systems. *Journal of the American Medical Informatics Association*, 1: 404-411.
- Bennett, J. and Glasziou, P. (2003). Computerised reminders and feedback in medication management: a systematic review of randomised controlled trials. *Medical Journal of Australia*, 178: 217-222.
- Berg, M. (1997). *Rationalizing Medical Work*. Cambridge, MA. MIT Press.
- Berner, E. (2009). Clinical Decision Support Systems: State of the Art. Rockville, MD, Agency for Healthcare Research and Quality.
http://healthit.ahrq.gov/portal/server.pt/gateway/PTARGS_0_1248_874024_0_0_18/09-0069-EF.pdf.
- Berwick, D. (2003). Errors today and errors tomorrow. *New England Journal of Medicine*, 348: 2570-2572.
- Bobb, A., Payne, T., et al. (2007). Viewpoint: controversies surrounding use of order sets for clinical decision support in computerized provider order entry. *Journal of the American Medical Informatics Association*, 14: 41-47.
- Campbell, E., Guappone, K., et al. (2009). Computerized provider order entry adoption: implications for clinical workflow. *Journal of General Internal Medicine*, 24: 21-26.
- Campbell, E., Sittig, D., et al. (2006). Types of unintended consequences related to computerized provider order entry. *Journal of the American Medical Informatics Association*, 13: 547-556.
- Cao, H., Stetson, P., et al. (2003). Assessing explicit error reporting in the narrative electronic medical record using keyword searching. *Journal of Biomedical Informatics*, 36: 99-105.

- Chantler, S. (1999). The role and education of doctors in the delivery of health care. *Lancet*, 353: 1178-1181.
- Chin, T. (2003). Doctors pull plug on paperless system. American Medical News. February 7, 2003. http://www.ama-assn.org/sci-pubs/amnews/pick_03/bil20217.htm.
- Connolly, C. (2005). Cedars-Sinai Doctors Cling to Pen and Paper. Washington Post. March 21, 2005. A01. <http://www.washingtonpost.com/wp-dyn/articles/A52384-2005Mar20.html>.
- deDombal, F. (1975). Computer-aided diagnosis and decision-making in the acute abdomen. *Journal of the Royal College of Physicians of London*, 3: 211-218.
- DelBeccaro, M., Jeffries, H., et al. (2006). Computerized provider order entry implementation: no association with increased mortality rates in an intensive care unit. *Pediatrics*, 118: 290-295.
- Evans, R., Pestotnik, S., et al. (1998). A computer-assisted management program for antibiotics and other antiinfective agents. *New England Journal of Medicine*, 338: 232-238.
- Fischer, M., Vogeli, C., et al. (2008). Effect of electronic prescribing with formulary decision support on medication use and cost. *Archives of Internal Medicine*, 168: 2433-2439.
- Garg, A., Adhikari, N., et al. (2005). Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: a systematic review. *Journal of the American Medical Association*, 293: 1223-1238.
- Giuse, D. (2003). Provider order entry with integrated decision support: from academia to industry. *Methods of Information in Medicine*, 42: 45-50.
- Graber, M. (2007). Diagnostic errors in medicine: what do doctors and umpires have in common? *AHRQ WebM&M*. <http://webmm.silverchair.com/perspective.aspx?perspectiveID=36>.
- Graber, M. and Mathew, A. (2008). Performance of a web-based clinical diagnosis support system for internists. *Journal of General Internal Medicine*, 23(Suppl 1): 37-40.
- Greenes, R., ed. (2007). *Clinical Decision Support - The Road Ahead*. Amsterdam, Holland. Elsevier.
- Greenwald, R. (2005). And a diagnostic test was performed. *New England Journal of Medicine*, 353: 2089-2090.
- Grizzle, A., Mahmood, M., et al. (2007). Reasons provided by prescribers when overriding drug-drug interaction alerts. *American Journal of Managed Care*, 13: 573-580.
- Han, Y., Carcillo, J., et al. (2005). Unexpected increased mortality after implementation of a commercially sold computerized physician order entry system. *Pediatrics*, 116: 1506-1512.
- Hripcsak, G., Clayton, P., et al. (1996). Design of a clinical event monitor. *Computers and Biomedical Research*, 29: 194-221.
- Hripcsak, G., Ludemann, P., et al. (1994). Rationale for the Arden Syntax. *Computers and Biomedical Research*, 27: 291-324.

- Hsieh, T., Kuperman, G., et al. (2004). Characteristics and consequences of drug allergy alert overrides in a computerized physician order entry system. *Journal of the American Medical Informatics Association*, 11: 482-491.
- Isaac, T., Weissman, J., et al. (2009). Overrides of medication alerts in ambulatory care. *Archives of Internal Medicine*, 169: 305-311.
- Jacobs, B., Brill, R., et al. (2006). Perceived increase in mortality after process and policy changes implemented with computerized physician order entry. *Pediatrics*, 117: 1451-1452.
- Kac, G., Grohs, P., et al. (2007). Impact of electronic alerts on isolation precautions for patients with multidrug-resistant bacteria. *Archives of Internal Medicine*, 167: 2086-2090.
- Karsh, B. (2009). Clinical Practice Improvement and Redesign: How Change in Workflow Can Be Supported by Clinical Decision Support. Rockville, MD, Agency for Healthcare Research & Quality.
http://healthit.ahrq.gov/portal/server.pt/gateway/PTARGS_0_1248_874022_0_0_18/09-0054-EF.pdf.
- Kim, S., Haug, P., et al. (2008). Modeling the Arden Syntax for medical decisions in XML. *Journal of Biomedical Informatics*, 77: 650-656.
- Ko, Y., Abarca, J., et al. (2007). Practitioners' views on computerized drug-drug interaction alerts in the VA system. *Journal of the American Medical Informatics Association*, 14: 56-64.
- Kohn, L., Corrigan, J., et al., eds. (2000). *To Err Is Human: Building a Safer Health System*. Washington, DC. National Academies Press.
- Koppel, R., Localio, A., et al. (2005). Neither panacea nor black box: responding to three Journal of Biomedical Informatics papers on computerized physician order entry systems. *Journal of Biomedical Informatics*, 38: 267-269.
- Koppel, R., Metlay, J., et al. (2005). Role of computerized physician order entry systems in facilitating medication errors. *Journal of the American Medical Association*, 293: 1197-1203.
- Kucher, N., Koo, S., et al. (2005). Electronic alerts to prevent venous thromboembolism among hospitalized patients. *New England Journal of Medicine*, 352: 969-977.
- Kuperman, G., Bobb, A., et al. (2007). Medication-related clinical decision support in computerized provider order entry systems: a review. *Journal of the American Medical Informatics Association*, 14: 29-40.
- Kuperman, G., Boyle, D., et al. (1998). How promptly are inpatients treated for critical laboratory results? *Journal of the American Medical Informatics Association*, 5: 112-119.
- Kuperman, G. and Gibson, R. (2003). Computer physician order entry: benefits, costs, and issues. *Annals of Internal Medicine*, 139: 31-39.
- Kuperman, G., Teich, J., et al. (1999). Improving response to critical laboratory results with automation: results of a randomized controlled trial. *Journal of the American Medical Informatics Association*, 6: 512-522.
- Ledley, R. and Lusted, L. (1959). Reasoning foundations of medical diagnosis. *Science*, 130: 9-21.
- Ledley, R. and Lusted, L. (1960). The use of electronic computers in medical data processing. *IRE Transactions in Medical Electronics*, 7: 31-47.

- Lovis, C., Chapko, M., et al. (2001). Evaluation of a command-line parser-based order entry pathway for the Department of Veterans Affairs electronic patient record. *Journal of the American Medical Informatics Association*, 8: 486-498.
- Massaro, T. (1993a). Introducing physician order entry at a major academic medical center: I. Impact on organizational culture and behavior. *Academic Medicine*, 68: 20-25.
- Massaro, T. (1993b). Introducing physician order entry at a major academic medical center: II. Impact on medical education. *Academic Medicine*, 68: 25-30.
- Mayo-Smith, M. and Agrawal, A. (2006). Factors associated with improved completion of computerized clinical reminders across a large healthcare system. *International Journal of Medical Informatics*, 76: 710-716.
- McAlearney, A., Chisolm, D., et al. (2007). The story behind the story: physician skepticism about relying on clinical information technologies to reduce medical errors. *International Journal of Medical Informatics*, 76: 836-842.
- McDonald, C. (1976). Protocol-based computer reminders, the quality of care and the non-perfectability of man. *New England Journal of Medicine*, 295(1351-1355).
- McDonald, C., Hui, S., et al. (1984). Reminders to physicians from an introspective computer medical record. *Annals of Internal Medicine*, 100: 130-138.
- McGlynn, E., Asch, S., et al. (2003). The quality of health care delivered to adults in the United States. *New England Journal of Medicine*, 348: 2635-2645.
- Melton, G. and Hripcsak, G. (2005). Automated detection of adverse events using natural language processing of discharge summaries. *Journal of the American Medical Informatics Association*, 12: 448-457.
- Miller, R. and Masarie, F. (1990). The demise of the "Greek Oracle" model for medical diagnostic systems. *Methods of Information in Medicine*, 29: 1-2.
- Miller, R., Masarie, F., et al. (1986). Quick Medical Reference (QMR) for diagnostic assistance. *M.D. Computing*, 3(5): 34-48.
- Miller, R., Pople, H., et al. (1982). INTERNIST-1: an experimental computer-based diagnostic consultant for general internal medicine. *New England Journal of Medicine*, 307: 468-476.
- Mullins, J. (2005). Whatever happened to machines that think? *New Scientist*. April 23, 2005. <http://www.newscientist.com/channel/info-tech/mg18624961.700>.
- Nebeker, J., Hoffman, J., et al. (2005). High rates of adverse drug events in a highly computerized hospital. *Archives of Internal Medicine*, 165: 1111-1116.
- Osheroff, J., ed. (2009). *Improving Medication Use and Outcomes with Clinical Decision Support*. Chicago, IL. Healthcare Information Management Systems Society.
- Osheroff, J., Pifer, E., et al. (2005). *Improving Outcomes with Clinical Decision Support: An Implementer's Guide*. Chicago, IL. Healthcare Information and Management Systems Society.
- Osheroff, J., Teich, J., et al. (2006). A Roadmap for National Action on Clinical Decision Support. Bethesda, MD, American Medical Informatics Association. <http://www.amia.org/inside/initiatives/cds/cdsroadmap.pdf>.
- Osheroff, J., Teich, J., et al. (2007). A roadmap for national action on clinical decision support. *Journal of the American Medical Informatics Association*, 14: 141-145.

- Overhage, J., Tierney, W., et al. (1997). A randomized trial of "corollary orders" to prevent errors of omission. *Journal of the American Medical Informatics Association*, 4: 364-375.
- Palen, T., Raebel, M., et al. (2006). Evaluation of laboratory monitoring alerts within a computerized physician order entry system for medication orders. *American Journal of Managed Care*, 12: 389-395.
- Paterno, M., Maviglia, S., et al. (2009). Tiering drug-drug interaction alerts by severity increases compliance rates. *Journal of the American Medical Informatics Association*, 16: 40-46.
- Payne, T., Hoey, P., et al. (2003). Preparation and use of pre-constructed orders, order sets, and order menus in a computerized provider order entry system. *Journal of the American Medical Informatics Association*, 10: 322-329.
- Phibbs, C., Milstein, A., et al. (2005). No proven link between CPOE and mortality. *Pediatrics*. <http://pediatrics.aappublications.org/cgi/eletters/116/6/1506>.
- Poon, E., Gandhi, T., et al. (2004). "I wish I had seen this test result earlier!": dissatisfaction with test result management systems in primary care. *Archives of Internal Medicine*, 164: 2223-2228.
- Potts, A., Barr, F., et al. (2004). Computerized physician order entry and medication errors in a pediatric critical care unit. *Pediatrics*, 113: 59-63.
- Ramnarayan, P., Cronje, N., et al. (2007). Validation of a diagnostic reminder system in emergency medicine: a multi-centre study. *Emergency Medicine Journal*, 24: 619-624.
- Ramnarayan, P., Roberts, G., et al. (2006). Assessment of the potential impact of a reminder system on the reduction of diagnostic errors: a quasi-experimental study. *BMC Medical Informatics & Decision Making*, 6: 22. <http://www.biomedcentral.com/1472-6947/6/22>.
- Rosenthal, A. (1984). Cutting costs in clinical chemistry. *Medical Laboratory Observer*, 16(7): 30-38. http://findarticles.com/p/articles/mi_m3230/is_v16/ai_3335988.
- Schoen, C., Osborn, R., et al. (2009). In chronic condition: experiences of patients with complex health care needs, in eight countries, 2008. *Health Affairs*, 28: w1-w16. <http://content.healthaffairs.org/cgi/content/full/28/1/w1>.
- Sequist, T., Karson, A., et al. (2005). A randomized trial of electronic clinical reminders to improve quality of care for diabetes and coronary artery disease. *Journal of the American Medical Informatics Association*, 12: 431-437.
- Shortliffe, E., Davis, R., et al. (1975). Computer-based consultations in clinical therapeutics: explanation and rule acquisition capabilities of the MYCIN system. *Computers and Biomedical Research*, 8: 303-320.
- Singh, H., Mani, S., et al. (2009). Prescription errors and outcomes related to inconsistent information transmitted through computerized order entry: a prospective study. *Archives of Internal Medicine*, 169: 982-989.
- Sittig, D., Ash, J., et al. (2006). Lessons from "unexpected increased mortality after implementation of a commercially sold computerized physician order entry system". *Pediatrics*, 118: 797-801.
- Sittig, D., Wright, A., et al. (2008). Grand challenges in clinical decision support. *Journal of Biomedical Informatics*, 41: 387-392.

- Sittig, D., Wright, A., et al. (2010). The state of the art in clinical knowledge management: an inventory of tools and techniques. *International Journal of Medical Informatics*, 79: 44-57.
- Stablein, D., Welebob, E., et al. (2003). Understanding hospital readiness for computerized physician order entry. *Joint Commission Journal on Quality and Patient Safety*, 29: 336-344.
- Tang, H. and Ng, J. (2006). Googling for a diagnosis--use of Google as a diagnostic aid: Internet based study. *British Medical Journal*, 333: 1143-1145.
- Tate, K., Gardner, R., et al. (1990). A computerized laboratory alerting system. *M.D. Computing*, 7: 296-301.
- Teich, J., Merchia, P., et al. (2000). Effects of computerized physician order entry on prescribing practices. *Archives of Internal Medicine*, 160: 2741-2747.
- Thomas, S. (2006). Jumping the CPOE generation gap: Queen's Epic Installation. *Proceedings of the AMIA 2006 Annual Symposium*, Washington, DC. American Medical Informatics Association. 1120.
- Tierney, W., McDonald, C., et al. (1987). Computerized display of past test results - effect on outpatient testing. *Annals of Internal Medicine*, 107: 569-574.
- Tierney, W., Miller, M., et al. (1990). The effect on test ordering of informing physicians of the charges for outpatient diagnostic tests. *New England Journal of Medicine*, 322: 1499-1504.
- Tierney, W., Miller, M., et al. (1993). Physician inpatient order writing on microcomputer workstations: effects on resource utilization. *Journal of the American Medical Association*, 269: 379-383.
- Wachter, B. (2008). Should Hospitals Install Bar Coding or CPOE First?, The Health Care Blog.
http://www.thehealthcareblog.com/the_health_care_blog/2008/05/should-hospital.html.
- Walsh, K., Landrigan, C., et al. (2008). Effect of computer order entry on prevention of serious medication errors in hospitalized children. *Pediatrics*, 121: e421-e427.
- Warner, H. (1989). Iliad: moving medical decision-making into new frontiers. *Methods of Information in Medicine*, 28: 370-372.
- Warner, H., Toronto, A., et al. (1961). A mathematical approach to medical diagnosis. Application to congenital heart disease. *Journal of the American Medical Association*, 177: 177-183.
- Weir, C., Staggars, N., et al. (2009). The state of the evidence for computerized provider order entry: a systematic review and analysis of the quality of the literature. *International Journal of Medical Informatics*, 78: 365-374.
- Wright, A., Goldberg, H., et al. (2007). A description and functional taxonomy of rule-based decision support content at a large integrated delivery network. *Journal of the American Medical Informatics Association*, 14: 489-496.
- Wright, A. and Sittig, D. (2008a). A four-phase model of the evolution of clinical decision support architectures. *International Journal of Medical Informatics*, 77: 641-649.
- Wright, A. and Sittig, D. (2008b). SANDS: a service-oriented architecture for clinical decision support in a National Health Information Network. *Journal of Biomedical Informatics*, 41: 962-981.

- Wright, A., Sittig, D., et al. (2009). Clinical decision support capabilities of commercially-available clinical information systems. *Journal of the American Medical Informatics Association*: Epub ahead of print.
- Wu, R. (2006). Computerized physician order entry and clinical decision support systems: Early stages in demonstrating improvements in patient outcomes. *American Journal of Managed Care*, 12: 365-366.
- Yu, V., Fagan, L., et al. (1979). Antimicrobial selection by a computer: a blinded evaluation by infectious diseases experts. *Journal of the American Medical Association*, 242: 1279-1282.