Title:
Nurses Perspectives on Implementing Cerner EHR System

Said Abusalem, PhD[1]
Sheila Rickert, MSN[2]
Megan Burke, MHA[2]
David J. Morrison, BSN[2]
Timothy N. Crawford, PhD[3]
M. Cynthia Logsdon, PhD[2]
Brittney Brown, BSN[4]
(1)School of Nursing, University of Louisville, Louisville, KY, USA
(2)Nursing, University of Louisville Hospital, Louisville, KY, USA
(3)Nursing, University of Louisville, Louisville, KY, USA
(4)Nursing, University of Louisville, LOuisville, KY, USA

Session Title:
Integration of Electronic Health Record Systems
Slot:
D 02: Sunday, 29 October 2017: 2:45 PM-4:00 PM
Scheduled Time:
3:25 PM

Keywords:
Cerner EHR use, Implementing new Cerner technolgy and Nurses Satisfaction Cerner

References:
Addington, D., Kyle, T., Desai, S., & Wang, J. (2010). Facilitators and barriers to implementing quality measurement in primary mental health care Systematic review. *Canadian Family Physician, 56*(12), 1322-1331.

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., & Silber, J. H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA: The Journal of the American Medical Association, 288*(16), 1987-1993.

Amarasingham, R., Plantinga, L., Diener-West, M., Gaskin, D. J., & Powe, N. R. (2009). Clinical information technologies and inpatient outcomes: a multiple hospital study. *Archives of Internal Medicine, 169*(2), 108-114.

Bates, D. W., Goldman, L., Lee, T. H. (1991). Contaminant blood cultures and resource utilization: The true consequences of false-positive results. *Journal of American Medical Association, 265*(3), 365–369.

Bates, D. W., Teich, J. M., Lee, J., Seger, D., Kuperman, G. J., Ma'Luf, N., ... & Leape, L. (1999). The impact of computerized physician order entry on medication error prevention. *Journal of the American Medical Informatics Association, 6*(4), 313-321.

Chen, P., Tanasijevic, M. J., Schoenenberger, R. A., Fiskio, J., Kuperman, G. J., & Bates, D. W. (2003). A computer-based intervention for improving the appropriateness of antiepileptic drug level monitoring. *American Journal of Clinical Pathology, 119*(3), 432-438.

Colón-Emeric, C. S., Ammarell, N., Bailey, D., Corazzini, K., Lekan-Rutledge, D., Piven, M. L., Anderson, R. A., et al. (2006). Patterns of medical and nursing staff communication in nursing homes: implications and insights from complexity science. *Qualitative Health Research, 16*(2), 173-188.

Demakis, J. G., Beauchamp, C., Cull, W. L., Denwood, R., Eisen, S. A., Lofgren, R., ... & Henderson, W. G. (2000). Improving residents' compliance with standards of ambulatory care: results from the VA Cooperative Study on Computerized Reminders. *JAMA: The Journal of the American Medical Association*, *284*(11), 1411-1416.

Devine, E. B., Hansen, R. N., Wilson-Norton, J. L., Lawless, N. M., Fisk, A. W., Blough, D. K., ... & Sullivan, S. D. (2010). The impact of computerized provider order entry on medication errors in a multispecialty group practice. *Journal of the American Medical Informatics Association, 17*(1), 78-84.

Garrard, L., Boyle, D. K., Simon, M., Dunton, N., & Gajewski, B. (2014). Reliability and validity of the NDNQI® Injury Falls Measure. *Western Journal of Nursing Research*, 0193945914542851.

Griffin, M. (2004). Teaching cognitive rehearsal as a shield for lateral violence: An intervention for newly licensed nurses. *Journal of Continuing Education in Nursing, 35*(6), 257-263.

James, J. T. (2013). A new, evidence-based estimate of patient harms associated with hospital care. *Journal of Patient Safety, 9*(3), 122-128. doi: 10.1097/PTS.0b013e3182948a69

Kapp, M. B. (2003). Patient safety and medical errors in nursing homes: Reporting and disclosure in a culture of mutual distrust. *The Journal of Legal Medicine, 24*(1), 51-76.

Kohn, L. T., Corrigan, J., & Donaldson, M. S. (2000). *To err is human: Building a safer health system*. Washington, D.C: National Academy Press.

Kucher, N., Koo, S., Quiroz, R., et al. (2005). Electronic alerts to prevent venous thromboembolism among hospitalized patients. *New England Journal of Medicine, 352*(10), 969–977.

Longo, J. (2007). Bullying in the workplace: Reversing a culture. *Journal of Nursing Ethics, 17*(5), 614-627.

Manley, K. (2008). 'The way things are done around here'-Developing a culture of effectiveness: A pre-requisite to individual and team effectiveness in critical care. *Australian Critical Care: Official Journal of the Confederation of Australian Critical Care Nurses, 21*(2), 83-85.

Manley, K., Sanders, K., Cardiff, S., & Webster, J. (2011). Effective workplace culture: The attributes, enabling factors and consequences of a new concept. *International Practice Development Journal, 1*(2), 1-29. Retrieved Sept. 20th, 2013 from www.fons.org/library/journal.aspx

McDonald, C. J., Hui, S. L., Smith, D. M., Tierney, W. M., Cohen, S. J., Weinberger, M., & McCabe, G. P. (1984). Reminders to physicians from an introspective computer medical record: a two-year randomized trial. *Annals of Internal medicine, 100*(1), 130-138.

Menachemi, N., Chukmaitov, A., Saunders, C., & Brooks, R. (2008). Hospital quality of care: Does information technology matter? The relationship between information technology adoption and quality of care. *Health Care Management Review, 33*(1):51–59.

Montalvo, I. (2007). The National Database of Nursing Quality Indicators™ (NDNQI®). OJIN: *The Online Journal of Issues in Nursing, 12*(3).

Mullett, C. J., Evans, R. S., Christenson, J. C., & Dean, J. M. (2001). Development and impact of a computerized pediatric anti-infective decision support program. *Pediatrics, 108*(4), E75.

National Quality Forum. (2011a). *Serious Reportable Events in Healthcare-2011*

Update: A Consensus Report, Washington, DC: NQF.

Niès, J., Colombet, I., Zapletal, E., Gillaizeau, F., Chevalier, P., & Durieux, P. (2010). Effects of automated alerts on unnecessarily repeated serology tests in a cardiovascular surgery department: a time series analysis. *BMC health services research, 10*(1), 70.

Rogers, A. E., Hwang, W. T., Scott, L. D., Aiken, L. H., & Dinges, D. F. (2006). The working hours of hospital staff nurses and patient safety. *Health Affairs (Project Hope), 23*(4), 202-212.

Rossi, R. A., & Every, N. R. (1997). A computerized intervention to decrease the use of calcium channel blockers in hypertension. *Journal of General Internal Medicine, 12*(11), 672-678.

Sorra, J. S. & Nieva, V. F. (2004). *Hospital Survey on Patient Safety Culture*. (Prepared by Westat, under Contract No. 290-96-0004). AHRQ Publication No. 04-0041. Rockville, MD: Agency for Healthcare Research and Quality.

Tierney, W. M., Miller, M. E., McDonald, C. J. (1990). The effect on test ordering of informing physicians of the charges for outpatient diagnostic tests. *New England Journal Medicine, 322*(21), 1499–1504.

Tierney, W. M., Miller, M. E., Overhage, J. M., & McDonald, C. J. (1993). Physician inpatient order writing on microcomputer workstations: Effects on resource utilization. *Journal of American Medical Association, 269*(3), 379–383.

Tillott, S., Walsh, K., & Moxham, L. (2013). Encouraging engagement at work to improve retention. *Nursing Management, 19*(10), 27-31.

Wachter, R. M. (2012). *Understanding patient safety.* McGraw Hill Medical.

Willson, D., Ashton, C., Wingate, N., Goff, C., Horn, S., Davies, M., & Buxton, R. (1995). Computerized support of pressure ulcer prevention and treatment protocols. In *Proceedings of the Annual Symposium on Computer Application in Medical Care*(p. 646). American Medical Informatics Association.

Wilson, G. A., McDonald, C. J., & McCabe, G. P. (1982). The effect of immediate access to a computerized medical record on physician test ordering: A controlled clinical trial in the emergency room. *American Journal of Public Health, 72*(7), 698–702.

Abstract Summary:
A University Hospital implemented Cerner EHR technology across the hospital to improve communication and patient outcomes. A new system is a challenge to hospital staff. This study reports on nurses perceptions and issues with the use of cerner EHR.

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
Will learn about Cerner EHR technology and its impact on patient outcomes and staff satisfaction.	Review of the Cerner EHR technology. Literature available about the Cerner

	technology and its impact on patient outcomes and nurses satisfaction.
Discuss findings of nurses perspectives and perception with using Cerner EHR technology.	research study findings and discussion of the clinical significance.

Abstract Text:

The purpose of this study is to evaluate nurse's perspectives on the use of a newly implemented Cerner system across a University hospital. With nationwide continuing reports of a high prevalence of care errors and healthcare associated infections, there is a critical need to identify outcomes associated with implementing Cerner Electronic Health Record (EHR) system including nurse's perspectives on Cerner technology implementation. These findings are urgent priorities for hospital policy makers, clinical managers, and the University hospital organization. If healthcare services are to meet the patient needs, provide cost-effective patient-centered care, yield high quality outcomes, and retain expert nursing staff, effective communication and shared clinical patient information is paramount.

Cross sectional prospective design was used for this study. Data were collected after 6 to 8 months of the initial implementation of the Cerner system. Nurses on every unit in the hospital were recruited to complete the two pages survey on all shifts. Candy and pens were provided to nurses to help increase participation. The survey has 44 items and uses Likert scale questions. 358 nurse completed the survey, with a response rate of around 79%.

Of 358 respondents, the average worked hours per week was 36.8 (SD 8.7) hours. Most of the participating nurses worked full time (83.7%). Fifty five percent of the nurses worked day shift. In regard to computer use experience, the average score was 5.67 (SD .88) on a scale from 1 for "never used it" to 7 for "expert user". Most of the answers were in the middle point on the Likert scales at score of 5. Nurses reported an average score of 3.75 (SD 1.64) for "Cerner improves my productivity" on a scale from 1 for "never" to 7 for "always". And an average score of 4.56 (SD 1.36) for "Cerner reduces patient care errors". The average score for "overall, I am satisfied with Cerner system" was 4.01 (SD 1.63).

Most nurses at the University hospital are not satisfied with the Cerner HER system in many aspects, this might be a result of the difficulty to operate the new Cerner system. Further research and surveys will be implemented after 1 year to assess multiple staff perspectives about the Cerner system.