Effect of a Computerized Provider Order Entry (CPOE) System on Provider and Nurse Satisfaction at a Community Hospital and University Hospital

Mark L. Wess, MD, SM1,2,3, Catherine Hegner, RN, MSN, Paul F. Anderson, MBA3, Geriann Thelen, RN3, Peter J. Embi, MD, MS1,2, James L. Besier, PhD3, James C. Besier3

1 Division of General Internal Medicine University of Cincinnati, Cincinnati, OH, 2Center for Health Informatics, University of Cincinnati, Cincinnati, OH, 3Health Alliance of Greater Cincinnati, Cincinnati, OH

Abstract

Computerized Provider Order Entry (CPOE) has few community hospital implementations with even less known about the effects on providers and nurses. With a pre-post study design, we surveyed providers and nurses at a community and a university hospital about their satisfaction with the ordering process. Overall, the trend for all users was less satisfaction with CPOE. Community providers were very satisfied with the paper ordering process and less satisfied with CPOE (p<0.0001).

Background

Few hospitals have implemented Computerized Provider Order Entry (CPOE). Most published CPOE studies relate to academic medical centers, with few addressing the effect on community hospitals. Moreover, community hospitals account for about 89 percent of U.S. hospitals and most of the physicians are not employed by the hospital. Even fewer studies have looked at provider or nurse satisfaction with CPOE use.

Methods

In 2005, The Health Alliance of Greater Cincinnati implemented GE, formerly IDX, LastWord® CPOE at two of its hospitals as part of the ongoing quality improvement efforts. To evaluate the paper process, we surveyed providers and nurses prior to their CPOE training. Three months after the start of CPOE, we resurveyed the providers and nurses with access to CPOE. We grouped the responses by community or university hospital and whether they were providers or nurses. Comparisons were made within each group for each item’s average responses for paper and CPOE. In addition, we compared all providers to all nurses, and providers to nurses within a facility. The Student’s T-test was used to compare means.

Results

We received 77 of 337 surveys for the paper ordering process and 88 of 362 for users with CPOE access. We had a wide range of responses, both favorable and unfavorable to CPOE. Community providers were highly satisfied with the handwritten order process, and nurses to a lesser extent. For both groups, overall satisfaction with CPOE decreased significantly. In contrast, the university providers and nurses had minimal change in satisfaction with CPOE. Providers tended toward lower satisfaction with CPOE compared with nurses. Prior to CPOE, all groups valued the potential efficiencies and quality improvements with CPOE. After actual CPOE use, respondents did not realize the benefits to the degree they were expecting. For write-in responses, more than one third of respondents indicated: a pro for legibility, and cons for more ordering time, lack of clarity of order (character limitations for order name), and poor software functionality.

Discussion

A hybrid process of CPOE and paper orders occurred at the community hospital, contributing to quality concerns inappropriately attributed to CPOE. Before the CPOE survey, only some of the requested revisions and enhancements to the system had been completed, resulting in less favorable attitudes. All providers expressed significant concern over the additional time for CPOE compared to the paper order process. Community providers were especially affected given the heavy use of pre-printed order forms. The response rate was low, especially for university providers with CPOE access. Consequently, we could not demonstrate a significant difference for a majority of items.

Conclusion

Overall, after three months, our community hospital providers and nurses are less satisfied with CPOE than university hospital providers and nurses. All value the potential benefits of CPOE. Increased time with CPOE use may affect adoption.

Acknowledgement

The authors appreciate the financial support from the Elizabeth Gamble Deaconess Home Association for the CPOE implementation and data collection.