The Characteristics of Personal Order Sets in a Computerized Physician Order Entry System at a Community Hospital

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Abstract
Personal order sets (POS) have been touted as important for the success of a computerized physician order entry (CPOE) system[1]. However, POS may systematize practice variability and are difficult to centrally administer. Few studies have looked at the characteristics and use of POS in a community hospital. We examined how POS are used at the Queen's Medical Center (QMC). POS are an important part of the success of the QMC CPOE, but have definite disadvantages.

Background
The use of the computer-based patient record (CPR) and computerized physician order entry (CPOE) continues to grow and expand and is driven by a variety of factors. These factors include decreased medical errors, decreased costs and improved patient care. Although a number of studies have shown such results[2-4], there are few studies that describe the variety of systems used across the myriad of health care institutions that use them[5]. A majority of the studies on computerized physician order entry systems have been performed at academic institutions, where the main users of the system are physicians-in-training. The community hospital setting has a much different user base, presenting different challenges and barriers to CPOE implementation. We can gain valuable information by examining the characteristics of a community hospital that has undergone successful CPOE implementation.

Methodology
The Queen's Medical Center (QMC) is a community hospital located in Honolulu, Hawai'i with extensive use of CPOE since 1995. We used the QMC CPOE system to generate a list of all POS sorted by physician. We calculated the total number of POS, average number of POS per physician, and average number of orders per POS. We also searched for orders that currently do not represent accepted practice. Since orders generated from POS are not flagged, we correlated the POS with actual orders to evaluate the actual use of POS.

Results
Out of a medical staff of nearly 1100, there were 560 physicians that had POS, with a total of 2,247 POS of which 833 were uniquely named. The combined POS contained 10,123 unique orders from a total of 30,421 individual orders. Each physician had an average of 4 POS, with each containing an average of 13.5 orders.

A number of medications that are no longer considered best practice were still in POS. These include sublingual nifedipine (should never be administered) and droperidol (requires a 12-lead EKG and documentation of QTc). POS also contained non-standard insulin sliding scales, which have been standardized across the institution. A number of POS labeled "pneumonia" contained a variety of antibiotic orders, even though gatifloxacin is the antibiotic of choice for community-acquired pneumonia at QMC. Correlation with actual orders suggests that many of these POS continue to be used.

Conclusion
POS have been cited as an important feature for the success of CPOE. We believe that POS played a significant role in achieving a high rate of CPOE at the QMC. However, there are drawbacks to POS. At QMC, there are more than 10,000 unique orders in POS. This is an unwieldy number to administer centrally. Additionally, these POS contain orders that are no longer considered best medical practice and in some cases may be dangerous. Such disadvantages need to be considered when implementing POS.

References
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