

Medication box: A classic marriage of EBP and QI

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Introduction: The Medical Center in 2014 has been experiencing a steady increase in medication error rates higher than the set threshold of 0.30 per thousand patient days. In search of an answer to manage medication errors, the nursing care group adopted a framework to integrate evidence based practice and performance improvement principles. Evidence Based Practice has its origin from Medicine. The term was first used by Gordon Gyatt in 1992. It was a new approach to providing medical care, the essence of this paradigm, using research evidence as the best evidence to guide professional decision making, has spread to other professions both within and outside the healthcare arena. So as evidence becomes crucial in practice setting and particularly in patient care, medication errors can be reduced using evidences in the literature. Medication Safety strategies and initiatives evidently can reduce errors before reaching patients (Paparella, 2008). Evidence Based Practice in Nursing was an offshoot of the medical practice EBP. The difference was mainly the shift from one on one clinical question to a question about a group. This becomes now a huge difference in approach, one that takes place in an organizational system. The desire to adopt a framework that is both evidence-laden and process driven where nurses can apply simplicity and practicality was premised in Da Vinci's "simplicity is the ultimate sophistication". The EBPI Framework gives clear direction on how to develop, implement, and evaluate innovations aimed at improving healthcare. The use of the model also helps avoid the dissemination of practice changes on a large scale before the processes needed for successful implementation have been tested and refined. Also important is the opportunity to determine who will implement these practice changes and to assess the knowledge they will need to do so.

Methodology: The EBPI being systematic avoids hospital wide implementation of practices that have little or no evidence of its usefulness. A small test of change is the hallmark of the framework. The model integrates performance improvements utilizing the Plan Do Study Act (PDSA) Model in an identified Evidence Based Nursing Practice. One disadvantage of the model noted by some who have utilized it was the length of time it may take to systematically apply such a disciplined approach to improvements. (as our experience taught us in Medication Management System, a successful project may take anywhere from 6 to 18 months to implement.) In the long run, however, taking the time to follow the EBPI model as described can save precious resources, both human and financial, because the chance of reaching desired outcomes is greater than when implementing change on a whim, opinion, or little quality evidence. The model becomes useful both in Quality Assurance and Quality Improvements. Data we gather becomes useful in developing consistent performance improvements which can eventually be translated to large scale improvements. The thought of the medication box as an individual patient supply came about when the error in 2014 have soared high. A medication error rate was recorded at 0.396 of which omission error was recorded at 0.128. The need to address this increasing error as to omission was necessary. Evidences in the literature pointed out a considerable reduction in medication error with the use of an individual patient medication supply. The Medication box is an individual patient medication supply that has grade B in EBP. A moderate support that warrants consideration of application was recommended. This suggests that this can reduce the omission error rate considerably.

Results: A Correlation Statistics between time spent, use of medication box and Medication Error was made. It revealed a no correlation between the time spent handing off, the use of the medication box and Medication error. This suggests that Med error may have been reduced as omission error have declined. Another small test of change was conducted for the second pilot test of the medication box. This time a compliance variable was measured as the work flow was enhanced based on the results of the first pilot test. Work flow process and protocol compliance were utilized as test variables. Compliance was measured using test protocol steps completion. Medication error rate, excess medicines of discharged patients and discontinued drugs that were properly turned in were measured as to rate of occurrence. Satisfaction Survey of the users was also utilized to determine: usefulness of the medication box, turning in of discontinued and batched medicines of discharged patients. There was 98.25% compliance to the work flow process of medication box usage. There was 0.425 medication error rate for the months of July to September 2014 compared to the 0.448 medication error rate of 2013. Medication error rates were noted to have been committed in the following: reconciliation, dispensing, encoding and administration. Highest error rate was noted in administration (0.42) and lowest were dispensing and encoding with similar rating of 0.14. There were no reported errors as to missed, over and under dosage. There was a negative high correlation ($r=-0.98$) between medication error rates and work flow compliance rate of nurses as to medication box utilization suggesting that the error committed is not related to the use of medication box.

Conclusion: The use of the Medication Box as an Individual Patient Medication Supply System had prevented the occurrence of the errors related to missed, over and under dosage. This had contributed significantly to the total medication error rates of the third quarter of 2014. The zero reported errors related to the missed, over and under dosage were attributable to the individual patient medication supply. The batched medicines delivered and safely kept in the patient's room may have prevented other nurses in the unit to borrow medicines from the Breur's Cart which is a unit patient medication storage resulting to missing a dose. The role of the Clinical Unit Based Educator in the validation of the medicines to be administered by the Bedside Nurse had contributed further to the zero incidence of error of missed, under and over dosage since four eyes check becomes operational. The medication error reduction of nursing care group particularly on omission errors had created an overwhelming impact in the medical center over all medication error rates. A notable decrease in the omission error was observed after a year when the medication boxes were installed in almost 50% of nursing units. (2014: 0.161 and 2015: 0.121). As of 2015, overall medication error rates across the medical center as to omission was recorded at 0.130 from the 2014 rate of 0.182.

Recommendations: The medication box as an individual medication supply system was proven to have considerably decreased medication errors. The utilization of the medication box in all nursing units is highly recommended. As to this time, the individual medication supply or the medication box was installed in all patient rooms.