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Kaila Quinlivan

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# The Use of Technology in the Clinical Setting and the Positive Impacts on Quality and Safety

By: Kaila Quinlivan

## INTRODUCTION

One of the most significant innovations in healthcare over the past ten years has been the implementation of technology in the clinical setting. Things like Barcode Medication Administration and Pharmacy Dispensing Systems are two examples of how technology has been used to make changes in patient safety measures, especially in decreasing adverse drug events.

Bar-code Medication Administration (BCMA) helps to ensure that patients receive the correct medication in the proper dose, route, and at the correct time. BCMA systems require the nurse to scan the patients identification bracelet as well as scanning the dose of the medication being administered to avoid any possible errors.

Pharmacy Dispensing Systems provide secure storage of medications and track which medications are being dispensed. Only the precise medication at the right dose ordered for the patient will be dispensed. This can eliminate mistakes such as mistaking one drug for another, choosing the incorrect dosage of a drug, or taking the incorrect number of pills.

## SIGNIFICANCE

“In the USA, medication errors are estimated to harm at least 1.5 million patients per year, with about 400,000 preventable adverse events.” Medication errors or adverse drug events are a serious problem in health care today. These errors can cause severe injury and possibly death to a patient so it is imperative that a solution is created to combat this, which is exactly what some of these systems do.

## POSITION STATEMENT

The use of technology in the clinical setting increases efficiency and patient safety. The use of systems such as Bar-code Medication Administration Systems and Pharmacy dispensing systems, medication errors are reduced and there are positive impacts on patient safety.

## SUPPORT FOR POSITION

- “BCMA systems reportedly produce 54–87% reductions in errors during administration of medications” (Agrawal, 2009).
- “BCMA technology appears to be cost-effective and reduces administration errors by over 50% and serious errors by up to 25%” (Truitt, 2016).
- “Automated dispensing machines reduce pharmacists’ dispensing time... hence, pharmacists have more time to dedicate to direct patient care activities and patient safety initiatives.” (Fung, 2020).
- “IT systems have also been reported to have the potential to save up to \$88 billion over 10 years in costs in the USA” (Agrawal, 2009).
- In a recent evaluation of the impact of bar-coding drugs in pharmacy and checking them before they are sent to patient care units, the dispensing error rate fell by 31% after bar-code implementation in pharmacy, and the potential rate of adverse events fell by 63% (Agrawal, 2009).

## IMPLICATIONS FOR PRACTICE

From a worker’s standpoint, implementing these systems may require some adaptations. Additional training on these electronic systems may be necessary. Some argue that while effective, these systems can be more time consuming thus taking the health care workers away from their patients. These are things that should be taken into account by workers.

In terms of safety, these systems should be used as a supplement or way to double check. Although normally very accurate, computers make mistakes too so health care workers still need to be diligent in combating the risk for adverse drug events.



Figure 1. (Omniceil, 2020).



Figure 2. (TPI,2019).

## CONCLUSION

In many facets of life, the use of technology is proving to have many benefits and its implementation is becoming more and more common. This is no different in the world of healthcare. Paper charts are becoming less and less common while most providers have switched over to electronic medical records. As time goes on these advancements will only continue. The use of various systems such as Bar-code Medication Administration and Pharmacy Dispensing systems have acted to try and eliminate the inevitable human error in medicine. These systems improve patient outcomes and prevent adverse drug events from taking place.

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