

Barcode KBMA

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Introduction

Electronic Medication Administration Record (eMAR) alongside Barcode Medication Administration (BCMA) technologies are the dual ways used in the improvement of safety for inpatient medication. They do this through automation of the procedure of inspecting drug and creating the electronic medication administration record. Nevertheless, error in medicine is avertable through putting preventive measures. To prevent such failure instigated by human dynamics and improving the safety of the patient medication, numerous hospitals tried to host information technology (Borycki, & Keay, 2010).

Leaders in the nursing field are in charge of medication safety and management in any setting of health care. Errors in medication can happen at any phase in the therapeutic usage of treatment starting with a prescription to administration. The technology would contribute to the first line workforce carrying out identification of the patient in collaboration with the process of medication administration, barcode wristband for patients, unit-dose packing and a system for barcode scanning came top of the list for the most prevalent types of information technology solution (James, 2013). The change agent promotes the execution of an electronic system for medication management to minimize errors of medication alongside improving the safety of patients. Therefore, the paper will stipulate the planning, implementation and evaluation of the change agent which is a barcode electronic medication system to decrease errors in medication while improving the quality of care and safety of patients in the medical sector.

Literature review

Medication administration error (MAE)

Errors in medication remains a concern for patient safety. Limited studies have examined the influence of bar-coded technology on the reduction of medication error through the administration practice in situations of acute care. The focus and purpose of the systematic evaluation involved determining whether the Bar Code Medication Administration System implementation is related with regressions in the rate of Medication Administration Error. Results of the systematic assessment disclose different findings between research alongside the five rights of administration of medicine such as a timely manner, right drug, right patient, right route and right dose in overall (Leung et al., 2015). Even though the BCMA did not steadily decline the widespread occurrence of Medication Administration Error, the technology did detect medication errors categories previously left unnoticed with the outdated approach of the five rights. The chance to examine the additional classifications of Medical Administration Error recognized by Bar Code Medication Administration contains inferences for the safety of the patient.

Medication errors denote to any inaccuracy in either prescription, dispensation or supervision of drugs whether adverse penalties exists or not, entail the most avertible root of injury on the patient. The mistakes can happen at any phase in the process of drug usage between administration and prescription of the patient. The IOM, Institute of Medicine, made public a report concentrating on the safety of patient approximating that between 44,000 to 98,000 persons in American health facilities die yearly due to medical mistakes (James, 2013). Indisposition emerging from errors in medication lead to high costs of financing for medical care organizations and unfavorably impacts the quality of life of a patient. However, a successive

report of the Institute of Medicine acknowledged information technology (IT) among the vital factors that can considerably advance safety and quality of health care.

Knowledge-Based Medication Administration (KBMA)

It is an authoritative bedside administration of medication solution which aids hospitals to accomplish better levels of well-being for improved care outcomes for patients. Merging of cutting-edge clinical decision support, automated workflow, safety technology, and bar-code verification by KBMA empowers nurses to confidently and quickly authenticate the five rights of Medication Administration and decreases the quantity of stages for significant enhancements in precision (Carayon et al. 2014).

Knowledge-Based Medication Administration functions as an essential portion of a closed-loop medication administration unit. Employing a patient electronic health record that gets shared and integrated clinical data views and rules through the structure to encourage continuous handoffs while preventing poor communication during the health information system of the enterprise.

Since the solution gets incorporated with other entire constituents of treatment management, health care nurses work with the recent statistics alongside contribution from other nurses and organize care through the organization (Borycki, & Keay, 2010). KBMA aids to decrease the extensive amount of stages in the administration process of medication and provides hospitals the true interoperability and connectivity that drives them in the direction of significant usage of their information technology in healthcare.

A Technical Review of Bar Codes

The degree of rational comprehension of bar coding that a pharmacist must have continues to become a topic of discussion. A number of individuals feel that a chemist

employing a bar coded medication system ought to have a thorough information on bar code symbols and standards (James, 2013). Others think that taking into consideration of the mass and complexity of the facts; such aspect is not essential to construct an operational safety for medication process using bar codes.

Barcodes form part of the most extensively documented machine-readable symbols. The several accessible formats of barcodes could get puzzling. In fact, each kind of bar code performs a similar function such as representing a sequence of characters. Subject to the kind of bar code, the characters can consist of letters, numbers, or unusual characters. These characters denote data to become transmitted to an electronic structure, and there is when the bar code gets delivered. An illustration, the data kept in a medication bar code would hold an exclusive digit like the National Drug Code number which recognizes a factory-made prescription, or a clinical-specific code to signify a particular patient-specific dosage arranged by a chemist (Radley et al., 2013). Therefore, barcode scanning is a highly accurate and fast technique of recording or collecting data.

Planning Phase

It is performed to establish the particular details of the alteration alongside the creation of a comprehensive sustenance for the prearranged change. It concentrates on constructing energy, commitment and ability to adjust. The change agent struggled to exhibit more perceptible act through accumulative engagement and participation in the procedure for change. The change agent wanted to convey the idea for change with interested party commence to allocate functions to people and recognize outstanding quality and performance measures (James, 2013).

Planning comprises of three phases.

a. Constructing commitment:

This stage of the planning phase is a vital step that entails opposition to adjustment and converts the confrontation into an obligation. Opportunities were provided to give opinions, thoughts, and answers to complications developing from the entire system method (Borycki, & Keay, 2010). Examination of the change project got performed to review the key interior strengths of the organization, flaws, alongside a valuation of the threats and opportunities in the outside environment that might create an effect on the outline of the software structure. Within the institution, there were several strengths, but mostly the high points emerged from an incredibly inspired workforce.

b. Establishing the aspect of the change:

The modification agent conversed the vision of the business with the group and entire staff personnel engaged with the amendment. Emails were successfully utilized by the team to notify workforce of scheduled gatherings alongside other facts.

The change agent evaluated the gap amid the present condition and the idea through interviews and observations. In the findings, it was clear that the team had to discover out additional statistics about appropriate tools such as electronic tablet devices, script printers and proof of approval of signatures that are electronic (James, 2013). A group was assigned to visit an institute where the electronic system was already in the actual functioning state. The change agent paid a visit and made an observation of the management and the system in another nurturing home. They deliberated on the electronic system outlining the opinions with the Department of Nursing and involvements of the staff personnel utilizing the system.

c. Implementation Plan development:

During this phase, the details of implementation are stated, such as the series of the activities necessary for the subsequent step, the persons liable for the period and every deed to achieve accomplishment. A comprehensive plan for implementation gets drawn with particulars for sequenced schedules as well as the duration for completion. Preliminary goals got reconsidered to guarantee soundness to carry on the implementation. The strategy of implementation effect got evaluated by finalizing the Health and Safety Executive effect evaluation template. Based on the data obtained from the examination, it would become probable to measure the influence on the existing services, organization, teams, as well as service and staff operators (Carayon et al. 2014).

Creation of a Patient Safety and Awareness Culture

The safety of a patient remains a priority for medical care institutions from the pharmacist and front line nurse practitioner to the Chief Executive Officer of the medical facility. Today's healthcare has become a complex, high-risk, labor-intensive and fast-paced industry. These concerns have contributed to the escalating rates of medication error. Methods that have

functioned for several years have become less safe and sufficient for patients in the nowadays' hospital setting (James, 2013). A precondition to the safety program basis for medication is a culture of error-reporting without fear of punishment from peers and management. Such an atmosphere will result in improved error reporting, and the information proceeding can get utilized to demonstrate the necessity for changes in the system.

Evaluating the Readiness of a Hospital

The addition of numerous layers of computerization without planning, integration and proper research can get the bar-code electronic system off to an unsteady beginning. As a result, it is appropriate to start with carrying out a detailed assessment and review centered on the contemporary medication practices. The purpose of the evaluation is towards determining the most suitable structure, comprising automation and processes, upon which to complement the bar-code system for administration of treatment (James, 2013).

Procedure for Evaluation and Selection of Vendors

The Oversight Team can recognize prospective vendors for the bar-code medication system based on the functioning framework examination and more importantly the subsequent comprehension of the workflow within nursing. Major constituents of the selection procedure of the vendor entail:

Identification of Suitable Vendors

Presentations by Vendors

Prospective vendors recognized ought to get requested to address to the Oversight Team. For the best outcomes, the team has to provide every vendor with a quick list of compulsory points to address when doing demonstration (Leung et al., 2015). Illustrations may comprise:

- Business history alongside the demographics such as quantity of staff and locality among others.
- Summary of drug store system constituents, containing database maintenance and setup that is methodical in addition to capabilities of bar coding.
- Outline of nursing system components and features, including issues such as;
 - i. Components for electronic documentation
 - ii. Testing for allergy
 - iii. Workflow linked to the simple check for the 5-Rs
 - iv. Automatic alerts. An example that which notifies if content of package varies from dose ordered
 - v. Stimulates collection of clinical data during time of treatment
 - vi. Process for informing the operator that the system is lagging and the order or patient information at the date of care is outdated.

Implementation Phase

The Period of Development

The point of care bar code medication is quite an undeveloped technology. Consequently, it is suitable to hire a development time within a small or limited locality such as within a single nursing unit in advance to officially signing off on approval and spreading out of the system. With the implementation of the bar-code electronic medical administration system, the word development period gets chosen over “probationary” or “assessment” since it evades consequences that the technology could get short-term and clearly expresses the goal of the project stage. The period of development becomes significant for authenticating the technical competencies of the system, user acceptance, usability and interconnected changes in workflow.

Throughout the period, any interface alongside system bugs gets fixed by the seller while procedural modifications get done by the medical facility. The step is crucial and a significant one which is not advisable to get done in a hurry (Radley et al., 2013).

A unit that employs numerous medications of changing forms, such as a group of surgery, provides a worthy choice as the preliminary unit. Units of specialty like the pediatrics or the Intensive Care Unit would probably get evaded when considering units for the pilot since they address particular subjects that will get less easy to address when experience on the system gets mastered.

Also, adding to sustenance obtained from information systems, nursing and pharmacy, the vendor should ensure the provision of both clinical and technical onsite support during the commencement of the pilot. There exists no suggested size for the period of development. As an alternative, some of the concerns identified will define its time (Borycki, & Keay, 2010). Nevertheless, the Oversight Team ought to deliberate on establishing the duration which no major issues before the development time considered ends.

The Plan for Roll-Out

The program must become concluded during the period for development to ensure immediate onset of the roll-out once it gets done. This is essential in ensuring a reduction in time utilized for the two systems while starting to make advantage of the new regime's safety benefits (Leung et al., 2015). The plan for the entire hospital roll-out to should get finalized quickly.

The components of the roll-out plan would entail:

- Enlargement of new areas on a weekly basis
- Scheduled training alongside unit conferences in new zones a week before the date of going live.

- Coverage sustenance

Evaluation of the Barcode System

The Evaluation System Action team will carefully observe for the proper utilization of the system alongside its connected procedures. To effectively do so, the development of a process flow measurement is necessary. The measurement of process flow should recognize problems within the process that may emerge. Such corrupt practices sidestep the care benefit of bar code scanning.

Illustrations of work around which have to exist on the point of attention scanning structure consist of:

- Additional bar-coded wristbands for patients are generated to circumvent scanning the worn wristband by a patient. In particular cases, they get taped to a wall in the room of the patient. However, some get reserved in the patient's room such that the operator can scan treatments before heading to the patient.
- Prescriptions get detached from packages that are bar coded in the medication room, while the new packages get perused later after passing the meds.
- Treatment scanning gets avoided in total and documentation of drugs done much later.
- Providing medication through indicating that it is non-bar coded when the treatment bar coded.

The system of measurement must also assist in identifying the procedural matters that make users to create the special workaround. As an illustration, when no procedure existed for a clinical practitioner to initiate a program alteration for a medication scheduled, the practitioner could have administered the prescription but scanned it later. The project team should endeavor

to solve the problems of the process and suggest enhancements remove such concerns permanently (Borycki, & Keay, 2010).

If the Bar-Code Medication systems tolerate the provision of non-bar coded goods, it might, as a consequence, be giving a constructed workaround which can get utilized improperly. The funders to this system recommend that entire prescriptions get barcoded without exemption and that the features of the system allow the alternative to circumvent scanning the drug bar code get cautiously assessed. Minimally, documentation through an electronic method has to reflect if a dosage gets administered short of scanning while establishing nursing processes for providing a dosage with a bar code that is unreadable.

Considerations of Regulations

Although the Food and Drugs Act has suggested a guideline for medications of bar coding by producers, that directive does not relate to drug store repackaging at onsite. The pharmacy practice gets regulated by the state panels of pharmacy and not the FDA. As the project progresses, no board activities report linked to chemist bar coding got conveyed. However, the inclusion of a bar code to an interior package for medication must not influence the ability of the pharmacy to adhere to present state guidelines. On the other hand, keep in mind that drugs which have got repackaged, as well as those containing bar codes, should never get sold or transferred to alternative amenities (Leung et al., 2015). If an outside bar coding and packaging assistance are required, the chemist should sign a pact with a registered medication repackaging corporation for such service.

For the pharmacy service which are non-24-hour, will demand dosages for treatment orders transcribed during off times to get scanned and issued before order entry the following daybreak. The pharmacy must function with the nursing department to institute a process for

doses reconciliation administered before entry of order against current orders obtained during off hours.

SMART Action Plan

Aims

The project aims got established on the SMART action plan where they were determined to be Measurable, Specific, Attainable, Time-bound and Realistic (James, 2013).

The primary goal of the project entails implementation of an electronic system for medication management as a fundamental part of the procedures in the nurturing home. This to progress patients' safety through decreasing medication errors alongside the absence of adherence to regulations and policy.

It will assist in improving the excellence of service through restructuring care, supplementing decision making process and provision of response on performance. The method will assimilate the general practitioner, the service of pharmacy and the institution through an automated procedure.

The primary objectives of the project include:

- By 30th September 2017, reduction of medication errors by 20%, in contrast to the audit medication error results conducted before the change.
- By 30th September 2017, reduction of near misses by 50% in comparison to near misses obtained from previous audit results before the modification process.
- By 30th September 2017, achieve a 45 minutes completion time for treatment administration rounds. The result will parallel with approximately a decline in time by 25%.

- By September 2017, the institution should have completely executed the bar code medication system of administration.

The change agent will provide training to achieve the above set objectives, solving all obstacles towards execution and assessing the change implementation against identified targets and goals. The business possesses a vision of employing information technology for documentation in the nursing sector while such a change initiates the introduction of that procedure.

Developing Multidisciplinary Project Groups

There are two primary multidisciplinary teams in the project comprise of the Oversight and Assessment Team. A nursing in collaboration with a pharmacy representative ought to function as co-chairpersons of the two teams to demonstrate that the divisions similarly manage the task. Together, they must plan routine conferences for the team alongside scheduled programs. If needed, meetings could get rescheduled a single day in advance or upon agreement; the team can hold additional meetings (Radley et al., 2013).

The Assessment Team

The process of assessing readiness for Bar-Coding System devices starts with suggestions for getting group evaluation membership. The team for assessment will research and evaluate existing process of medication workflow alongside interrelated processes to establish their readiness for the practice of bar-coding. The group must commence the evaluation before bar-coding medication management system vendor participation (James, 2013). Particular participants of the assessment team tend to become the bar coding system Oversight Team members which ultimately drives the project, hence it is advisable to be prudent in the selection of the assessment team.

The Oversight Team

The team will comprise of a subset of participants obtained from the original Assessment Team. Such a team is experienced and appreciates the challenges ahead of them since they have undergone through the process of evaluation. The Oversight team forms the change agents linked to the Bar-Code Medication Administration System hence, should entail persons who are responsible, reliable and valued affiliates of their divisions. The long-lasting members of the team ought to slightly comprise of decision-makers from the Departments of Pharmacy and Nursing Practice providing the co-chairpersons, the Department of Information Systems, Medicine, Nursing Education and Department of Quality Management (Borycki, & Keay, 2010).

The overall quantity of individuals on the Oversight Team must become maintained at a rational number such as a maximum of either six or eight. Consequently, consideration of forming minor teams to resolve individual bits of the project while involving additional process specialists. Using multidisciplinary action teams reveals an approach for quality improvement which results in effective planning and analysis.

Conclusion

Based on the findings obtained above, effective change administration may lead to effective and efficient Health Information Technology execution in the business. The change procedure was performed using the stages of the Health Service Executive Change prototype. The project is speculated to be an accomplishment as the objectives are made through the utilization of the SMART Action Plan. The largest obstacle bound to be experienced during the project is changing the culture of the organization. However, the achievement of the project

relies on staff empowerment and persistent communication of the vision to the workforce through the transition team (James, 2013). A clear and substantial sustenance from the administration is significant to the accomplishment of the project. Lastly, the change agent settles that nurse practitioners using their professional responsibility should have the paramount welfare of patients through application of the five rights of treatment administration. Additionally, established values reinforced through the employment of information technology, a decent professional judgment, and commitment to professionalism, will improve the quality of life of patients and that of practitioners who provide care to them.

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