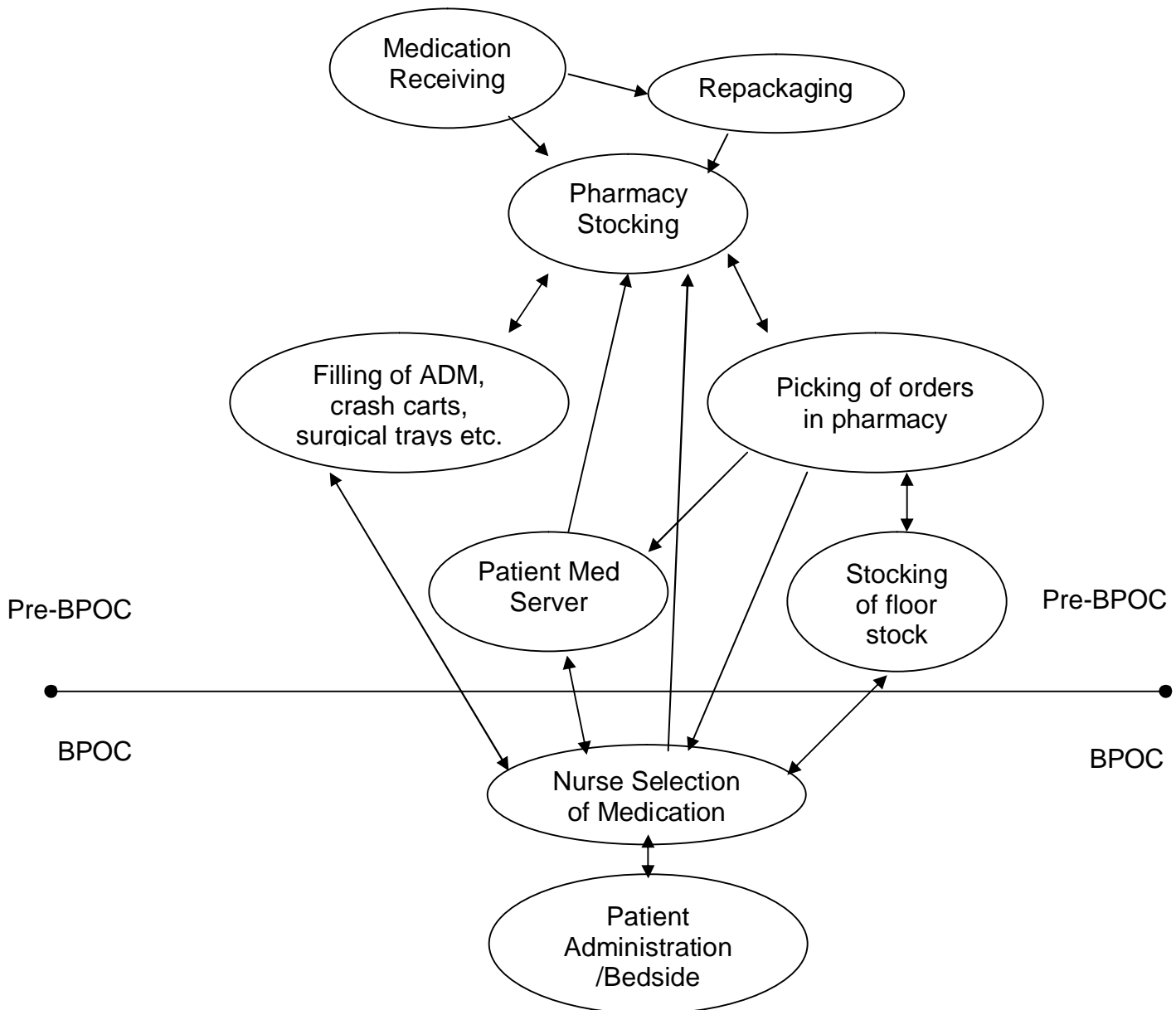


Bringing Hospital Pharmacy Medication Distribution into the 21st Century Using a Simple Grocery Store Technology the *Bar Code Scanner*

I believe we can all agree that the overall goal of medication distribution is to have the right medication at the right location at the right time. This sounds so simple until we really examine all of the movement and storage locations involved in the medication distribution process needed to get a medication to the patient.

If we diagram out the medication distribution process with the arrows indicating the directions the medications may move between each area it looks like this, Not so simple is it?

Look at all the places we can make mistakes!



Where In the Medication Distribution Process Do Errors Originate or Occur?

The sources of Medication errors can be broken into 8 primary areas.

- 1) Medication Ordering/Processing
- 2) Medication Preparation/Packaging
- 3) Pharmacy Department Medication Placement/Storage
- 4) Pharmacy Medication Dispensing
- 5) Pharmacy to Floor delivery
- 6) Administration (BPOC)
- 7) Documentation
- 8) Monitoring of Patients

In the investigation of medication errors, we realize that they can occur at virtually every step in the Medication Distribution Process up until the product reaches the patient. When an error analysis is done it is often found that if even one of the steps would have been handled differently - an error would have been prevented.

Currently, we see a great deal of focus on barcode scanning during medication administration at the patient's bedside (BPOC), as a method to prevent medication errors (the 5 R's). BPOC is an important element in preventing medication errors; however, we shouldn't ignore improvements that can be made in all the steps that precede the medications arrival at the patient's side.

Examining these areas in more detail allows us to examine each for the possible application of bar code scanning technology. Doing so reveals the following steps, usually performed by:

Pharmacy personnel

- A. The **documentation/entry** of medication orders, paper or verbal, into the Medication Administration Record
- B. The **repackaging** of medications
- C. The **receiving, storing and restocking** of medications i.e. in the pharmacy
- D. The **selection of** "First Doses", "Stat", "Now" and "Daily" orders in the pharmacy department for delivery to a nursing station or patient.
- E. The **filling of** Automated Dispensing Machines (ADM), crash carts, floor medication storage areas, patient med bins etc.

Nursing personnel

- F. The **ordering** of medications for a patient by a nurse, physician etc.
- G. The **selection** of the medication from a storage area to prepare for a patient

- H. The **actual administration** of the medication
- I. The **documentation** of the medication's administration
- J. The **monitoring** of the medication's effect on the patient.

Steps G & H are addressed by **Bedside Point of Care (BPOC)**. Notice that this occurs at the patient's side, which is currently where most of the error reduction effort has been focused.

Steps B, C, D, E, are addressed by a process I call **Pre-BPOC™**,

Pre-BPOC, *Preparing for Bedside Point of Care*, describes the steps involved in the Medication Distribution Process before the medication is administered and looks at ways to use simple barcode scanning interventions to eliminate errors before they reach the patient.

The odds increase dramatically every time the wrong product moves through a step of the distribution process towards the patient.

How can we use bar code scanning to prevent medication distribution processing errors?

By scanning and comparing the following types of bar coded data:

1. NDC Number to NDC Number
2. Location to Location
3. Patient to Patient
4. Combinations of the above

It is easy to see how beneficial applying bar code scanning would be in preventing errors throughout the medication distribution and administration process.

Let's examine several examples where bar code scanning solutions may be used to help eliminate *Pre-BPOC* errors. Some I have described in more detail.

1) **QA checking of unit dose preparation.**

Steps involved

1. Scanning a pick list of products to repackage against the stock containers selected for repackaging to make sure the proper stock containers were selected. NDC to NDC # matching.
2. Scanning a stock container against a pre-printed package label to assure that the proper product for the pre-printed label was selected before repackaging. NDC to NDC # matching
3. Provides a mechanism for the pharmacist to double-check the final product, i.e. the right label with the right drug after the repackaging is completed. NDC to NDC # matching &/or NDC scanning to view a picture of the product that should be in the packaging.

2) **Stocking of medication in the Pharmacy department.**

3) **Filling First Doses, Stats, Nows, Daily orders etc.**

- 4) **Stocking of medications outside of the pharmacy.**
- 5) **Filling and replenishing of med carts/cassettes/trays/ crash carts/ boxes.**
- 6) **Filling of 'automated dispensing machines' (ADM) to assure that the items placed/replaced in the ADM are accurate.**

Assuring that the correct drug product is place in the correct canister, bin, or location in the ADM. (Pyxis, medDispense etc.)

This is a NDC to NDC number barcode check. It checks the product's NDC number bar code against an NDC number barcode on the location's canister, bin, drawer etc. in the ADM.

- 7) **QA of the dispensing machine/robots.**

The 7 situations covered above are parts of Pre-BPOC, the steps in the Medication Distribution Process where bar code scanning technology can have a positive intervention in decreasing errors. Implementing BPOC becomes highly site-specific because BPOC solutions are based on the unique site-specific distribution and hospital wide information systems in place at each facility.

Summary:

Only through the use of both Pre-BPOC and BPOC bar code scanning will we be able to minimize medication errors.

Addressing Pre-BPOC situations now is an affordable, purposeful and well thought out method to get the pharmacy and hospital staff accustomed to the use of barcode scanning. This can be a welcomed precursor that aids in determining the needs of the institution about BPOC before the decisions on the large investments in hospital information systems and equipment required for BPOC are made.

The only question in everyone's mind should be; how quickly can I implement bar code scanning throughout the medication distribution process? Do we continue to except deadly accidents like occurred at the Methodist Hospital in Indianapolis or do we stop them now by implementing inexpensive and simple bar code scanning technology.