Pharmacy Workflow Automation: Effectiveness, Efficiency & Safety
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Goals and Objectives

Pharmacists and Pharmacy Technicians:

Goals:
Based on professional developments, to provide the pharmacist and pharmacy technician with the fundamentals of workplace automation in a community pharmacy.

Objectives:
After completing this lesson a pharmacist or pharmacy technician should be able to:
1. Briefly explain the meaning of workflow automation.
2. Give two examples of workflow automation.
3. Explain why it is difficult to classify a particular vendor into a single type of workflow automation.
4. Explain why enlarging the prescription department or adding personnel is not always a smart move when expanding.
5. Give examples of vendors of the following:
   - Interactive voice response systems
   - Pharmacy management systems,
   - Semi-automated and automated dispensing technologies, and
   - Automated prescription pickup
6. Explain the components of an interactive voice response (IVR) system.
7. Explain the meaning of a pharmacy management system in terms of what it does.
8. Explain the difference between a semi-automated and a fully automated dispensing system.
9. Explain the meaning of an automated prescription pickup system and where it would be used.
Workflow Automation

The term “workflow automation” in a pharmacy can take on a variety of meanings. Many assume that it refers to the automated counting and packaging of pharmaceuticals. But workflow automation really refers to the entire process from receipt of a prescription order to the actual dispensing of a finished product.

The intent of workflow automation is to look at the overall pharmacy as a system. Then the question becomes how each part of the equation of “automated” can fit into and support the overall mission of the pharmacy.

When looking at workflow automation, consideration will be given to four areas of “automation,” namely:

1. Interactive voice response systems,
2. Pharmacy management systems,
3. Semi-automated and automated dispensing technologies, and
4. Automated prescription pickup

Each area is definable, although there are areas of overlap between and among the four types, and some vendors have products that serve more than one area.

Goals of Workflow Automation

Workflow automation is particularly useful in settings where delays exist in serving people, filling prescriptions, or dispensing product. As such, the ability of the prescription department to service everyone in a timely, efficient, and safe manner becomes a goal of paramount importance.

Adding personnel and enlarging the prescription department may seem like obvious solutions, but even these strategies have their shortcomings. Adding personnel is often expensive, especially when the pharmacy is not busy. Also, it is not always possible to locate qualified help. In addition, the problems associated with expanding the physical area devoted to the prescription department are limited by the realities of time and space.

In these situations, service is one of the most important facets of care to consider. At the same time, patient safety is equally important. It is through careful blending of these two goals that workflow technology has become so important to the modern pharmacy.

Interactive Voice Response Systems.

Pharmacy staff must routinely handle telephone calls for new prescriptions, prescription refills and other types of pharmacy-related inquiries. As such, the telephone is an important component of automated communication. Call volume is an important consideration given the significant increase in the number of prescriptions, pharmacist and technician shortages, and time restraints in responding to calls.

In a typical pharmacy the number of prescription call-ins may top 100 to 125 in a day, with the majority of calls received in the morning and evening hours. The advent of interactive voice response (IVR) systems, and related technologies, has been effective at addressing the challenges of call volume. Such systems are invaluable to pharmacists.

The first step in the IVR system is a custom and uniform greeting. The caller is then presented with a menu of choices which address the most common reasons for calling, such as requesting a refill. Patients may be given options such as leaving a message, calling the doctor for a new prescription, or calling for a vacation “override”. There is usually an option to talk directly with a member of the prescription department staff during working hours.

Some systems interface directly with the computer system and record the refill information in a computer queue. If used and promoted, such systems can record as many as 25-35% of all refill requests overnight. Orders are available to the pharmacist simply by turning on the computer which is most advantageous to the pharmacist.

Another type of IVR system is one with a similar but separate system for responding to calls from doctors and nurses. Such a feature is most useful during very busy periods or during hours when the pharmacy is closed, providing a means for the doctor to leave a message. The recording feature allows the pharmacy to most accurately interpret the order placed by the physician or nurse.
The personal touch often suffers when using an IVR system. But in today’s technical world, consumers appreciate the savings in time without regard to a loss in personal service. In any case, patients who wish to talk directly to pharmacy staff can bypass the IVR by simply pushing a button. Retrieval of the messages is simple. Recordings can be played over and over to carefully review the verbal order. Messages are date and time stamped and can be saved for future reference.

There are also applications that allow the caller to refill prescriptions via the Internet for later retrieval by the pharmacist. Patients receive a confirmation of the Internet order electronically.

IVR systems are multi-featured. Some systems can be programmed to offer one or more outgoing messages when a patient first calls. Examples include: announcements about availability of flu or shingles injections, or polio and mumps vaccines. An IVR system can be used to contact patients to tell them that their refills are fulfilling and available for pickup. Outgoing messages can inform patients about new services or changes in store hours.

**Figure 1**

**Interactive Voice Response.**

- Ateb, Inc. Raleigh, NC, 919-872-1275, [www.ateb.com](http://www.ateb.com)
- Telemanager Technologies, Newark, NJ, 800-600-0435, [www.telemanager.com](http://www.telemanager.com)

**Pharmacy Management Systems.**

The variety of systems and approaches to pharmacy automation make this area complex yet exciting. Pharmacies with as few as 30 prescriptions per day to well over 1,000 per day can benefit from these systems. Most of the systems are Window-based and are designed to “think like a pharmacist”. Features are intended to free up prescription department personnel for other duties (most often associated with patient care). Logic is in place to ensure patient safety and lend support to the clinical overview of patients. The major thrust of the system is to help the pharmacist fill prescriptions in a fast and safe manner while safeguarding profit margin.

Powerful databases retrieve patient, doctor, and drug information faster. Many keyboard and mouse-based shortcuts speed processing. Most provide automated National Provider Identification (NPI) and DEA registration lookups. Prescriptions can be scanned into the computer for storage and quick, accurate checking. The system automatically reports on drug-drug interactions without having to search for the answer. Prescription labels can be custom designed. Several systems have a link to **Facts and Comparisons**, medication guides, and pill imaging for easy identification.

With simple keyboard commands, related subsystems automatically fax, e-mail, or send refill requests to physicians via the Internet. Most systems are fully integrated with electronic prescribing (e-prescribing) systems.

The system flags a patient who has another prescription ready for pickup at the time of dispensing. Through the use of a wireless scanner, it is possible with some systems to scan the bar codes of prescriptions in the pickup bins to produce an exception report for follow up via telephone.

Most systems provide for electronic signature capture and retrieval at the time of dispensing for HIPAA, third-party, accounts receivable, credit-debit cards, and controlled substance purposes. Other modules offer a completely integrated accounts receivable program. In addition, credit and debit card processing may be available through the Internet. Some of the systems allow for controlled substances tracking for ephedrine and pseudoephedrine transactions.

The automated system also link to point-of-sale systems. Some systems feature inventory control, wholesaler ordering-replenishment, wholesaler price and cost updates, and order transmission and acknowledgement. Other systems provide label and sign making and promotional event support. Almost all have unequaled reporting and analytic capabilities.

Several vendors offer nursing home and nursing home consulting support as add-ons. There countless features that can be added to these systems. They range from basic to robust systems that vary according to need and cost.
Semi-Automated and Automated Dispensing Technologies.

The third type of workflow automation is associated with counting and measuring medications for purposes of filling prescriptions. The options range from semi-automated to fully automated systems. They offer tremendous flexibility and are designed to handle 50 to 50,000 prescriptions per day. Most automated machines are self-standing units that require very little space on the dispensing bench. Almost all systems are bar-code driven, thereby maximizing accuracy and safety.

The key to automation is accurate identification, placement, and labeling of each drug in the location (called a hopper or cassette). Once this is accomplished, errors are much easier to identify and control.

Semi-automated applications consist of pill counting machines that require a technician or pharmacist to pour tablets into a hopper or container for counting. Nearly 80% of all dispensing is performed by automation utilizing hoppers and cassettes.

Machines are driven by air, light, optics, or weight in order to count medications. Each method has its advantages and disadvantages, and each vendor is dedicated to a particular method.

Automated counters can range from those that count and dispense just a few of the most frequently dispensed drugs to larger banks that can allow the pharmacy to process more than 160 prescriptions per hour. Machines are available that handle up to three sizes of vials. These machines take up little space in the prescription department and require 110v power and no special wiring.

Some machines will permit full time operation even while hoppers or cassettes are being replenished.

Automated Rx Pickup.

In some pharmacies, the number of customers picking up prescriptions exceeds the ability to service everyone in a timely manner. In other cases, the prescription department is closed, as in the case of a prescription department within a larger store (such as a grocery store). In both situations, it is difficult for customers to retrieve their prescriptions in a timely fashion.

It is possible to set up the pharmacy with a convenient, secure, and private self-service pickup, even when the pharmacy is closed. Using automated pickup technology that remains under the control of the prescription department, you reduce clutter and confusion at “will call” counter while giving customers direct access to their non-refrigerated items.

In order to ensure privacy and accuracy, patients register with the prescription department beforehand. There they define a personal identification used to access the machine. The patient self selects the medication to be picked up.
The patient accepts or declines counseling before paying for the order electronically. If the patient accepts counseling, a pharmacist speaks with patient via a telephone on the machine. When the prescription department is closed, the telephone connects to a remote site where a pharmacist is available to answer.

The prescription pickup machine is filled with completed orders by pharmacy staff throughout the day and before the pharmacy closes. Clients save time in picking up prescriptions and enjoy the convenience, while pharmacy staff benefit by having more time to address complex patient issues. In addition, the automated prescription pickup (APM) reduces clutter and confusion in the prescription pickup area. Simplifying tasks will serve to reduce errors.

Experience to Date

There are many pharmacies using various methods of workflow automation. Many are using more than one method to achieve the benefits of modern automation. As pharmacies grow larger and busier, pharmacists get involved in more complex patient issues, and patient safety remains a major concern, there will be more and more automation available and widely used.

Today’s pharmacist will have to master a wider variety of workload technologies in order to provide service to the 21st century patient. There is simply no alternative to increased implementation of workflow technology. Pharmacists should seek opportunities to learn more about these and other types of technology in pharmacy and related fields.

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**Figure 4**

*Automated Prescription Pickup.*

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  www.parata.com