

White Paper On Robotics

Abstract

Pharmacies face new challenges to survival. Surrounded (literally in many cases) by national chain pharmacies, smaller community pharmacies must deliver a higher level of customer service and patient care, essentially positioning themselves as a valued healthcare resource to their customers. Chain pharmacies face high employee turnover and hospital outpatient clinics increasingly compete with chain pharmacies for in-demand pharmacy professionals.

One solution gaining acceptance to respond to all of these pressures is automation. Robotic dispensing is demonstrating potential to offload more than half of pharmacies' prescription volume, at higher speeds and with greater accuracy than manual filling, refocusing staff resources on patient care.

- Why automate?
- When should you automate?
- And what should you know to maximize the potential of your investment?

These are among the questions that this White Paper seeks to answer.

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Section 1 - Why Automate?

The business case for automating prescription processing closely mirrors the universal drivers for technology innovation and adoption: increased demand, improved efficiency and accuracy, and scalability. This section also examines the unintended benefits of automation that can be realized.

Innovation Driver No. 1: Increased Demand

Perhaps the most basic and powerful driver to automate is when a business faces market demand that consistently outpaces labor force capacity. When this occurs the options are to hire or identify an alternate way to increase productivity; typically, automating repetitive tasks to elevate the level of the work performed by human resources.

In pharmacies, where the primary focus is patient safety/accuracy, annual prescription volumes are on the rise, with no end in sight. The NACDS reports that U.S. pharmacies filled an estimated 3.14 billion prescriptions in 2002 and projects that the volume of dispensed prescriptions will balloon 46 percent over the next five years. The projected increase in available pharmacists over the same period will be a modest 5.4 percent, according to The ThomsenGroup.

Innovation Driver No. 2: Enhanced Accuracy and Efficiency

Any time human beings perform repetitive tasks the question must be asked, "Is this the most efficient and accurate way to do the work?"

A literature search of human accuracy in performing repetitive motion and counting tasks on assembly lines conducted by The ThomsenGroup found people can achieve 90 percent accuracy under optimal conditions. In every case, however, this level quickly degenerates over time, with increased rates of repetition or lack of adequate breaks. Further, as more people are introduced to the process, the level of confusion

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increases. Robotic technology is best suited to highly repetitive tasks, which they perform with consistently high accuracy, approaching 98 percent or better.

Innovation Driver No. 3: Scalability

Investing in people to meet growing demands requires explicit and implicit human resource costs, as well as expanded workspace, training, etc. And the pressure to find and add qualified staff is ongoing. Automation offers significant productivity expansion that alleviates capacity as a concern over the long-term.

The Allure of Unintended Benefits

An exciting and easily overlooked dimension of automation is the significant, unintended benefits that accrue from improved efficiency, reduced labor requirements and simplified processes. Consider these examples from the history of pharmacy technology.

- **Computer Systems** - Although computer systems entered retail pharmacies in the late 1970s, they did not become a business standard until the last decade. Initially implemented to automate adjudication, which effectively reduced processing times to seconds per transaction, improved connectivity has led to myriad new capabilities. Today's in-store computer systems expedite order entry, maintain patient records, facilitate DUR checks and provide comprehensive online drug libraries.
- **Barcodes** - Barcode scanning introduced a new wave of possibilities not expected when they first appeared on Wrigley's Spearmint chewing gum. The safety benefits of scanning technology in pharmacies created a push by the FDA for industry-wide bar coding of pharmacy products. Today, bar coding enables pharmacy technicians to take on more prescriptions without compromising patient safety. It also played a key role in facilitating the next generation of robotic dispensing.

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- **IVR** - IVR has evolved from a glorified answering machine to edgy workflow technology. Some pioneering pharmacies began using IVR to avoid interruption while filling important prescriptions, then the introduction digital recording opened the door to receiving, storing and transmitting information directly to the pharmacy management system. Some systems now schedule prescriptions to save time for both pharmacy and patient.

Why Automate with Robotic Dispensing?

Despite a predicted leveling of prescription volumes, many pharmacies continue to see annual prescription increases of 10 percent or more. With the new Medicare prescription benefit, volumes are predicted to increase as much as 30 percent. Additionally, some insurance companies are beginning to allow pharmacies to dispense 90-day supplies of certain medications, increasing both inventory requirements and time required to manually fill these larger prescriptions.

At the same time the gap of qualified pharmacists widens over time. Many pharmacies are struggling simply to fill all their current prescriptions and are overextending their staff resources in order to ensure high quality and accuracy.

Robotic dispensing is the only solution that brings the benefits of complete prescription fulfillment. The latest generation of robotic prescription dispensing systems goes beyond pure counting to introduce complete prescription processing, from vial selection and labeling to counting, capping and sorting, alleviating the need for direct human intervention with every prescription.

To Stay Competitive

Savvy community pharmacies know personalized customer service is their competitive edge. Change only makes sense when it advances your pharmacy's ability to protect and advance this advantage. Will a new technology give you more time with customers? Will it free resources to provide other value-add services?

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Pharmacies cannot plan to meet growing prescription demand with human resources alone. A full-time pharmacist increases a pharmacy's capacity by about 75 to 100 prescriptions a day. Finite limits existing physical space exponentially increase the cost to staff for demand once renovation or expansion is required. An additional consideration is the time and distraction required to recruit the right talent.

To Improve Quality and Safety

A 2003 study of 50 community and outpatient pharmacies by Auburn University discovered that dispensing errors (classified as everything from the wrong label to the wrong drug) occur at a rate of four errors per day in a pharmacy filling 250 prescriptions per day. This means that at current rates an estimated 51.5 million errors occur each year.

Robotic dispensing standardizes the prescription filling process, preparing prescriptions in exactly the same way every time. In a typical retail pharmacy, about 82 percent of the drugs are countable oral solids, making them all candidates for automated processing.

Today's sophisticated robotic dispensing technology relies on bar-code matching to ensure the right medication is dispensed, and provides tracking and checking at any point in the prescription-filling trail, a safety measure not available with manual filling. This highly accurate process offers owners/managers the peace of mind to feel comfortable distancing themselves from the filling process. Once safety is assured, pharmacy owners can begin to consider if it is effective to have the highest paid resources in the pharmacy counting and pouring vials.

When is the Right Time to Automate?

Ask any pharmacist - in a chain, community or clinic - and he'll tell you that it's not the daily volume that gets you, it's the "crunch times": those high-stress bottlenecks first thing in the morning and at the end of the day. So, whether a pharmacy is doing

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500 or 200 prescriptions a day, if demand during those peak periods exceeds what the existing staff can handle, it's time to look at robotics. If a pharmacy is considering hiring another pharmacist or technician to ease the workload, it's time to look at robotics.

Any pharmacy in a growth mode really needs to take a closer look at how automation can position the business, competitively, for future growth. Investing in expanded capacity through automation may help accelerate and ease the growth curve. Early adopters will be ready to evaluate a technology solution ahead of the curve, before prescription volume exceeds capacity, but every pharmacy should take a serious look once that critical point is reached.

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Section 2 - How to Automate

How your pharmacy automates will be guided by your most pressing points of pain: long wait times, prescription errors or staffing issues. In many cases the “pain” can be differentiated by practice setting.

Once you identify the point of pain in your pharmacy (e.g., long wait times, prescription errors or staffing issues) you can follow some definitive steps to determine your pharmacy’s automation plan.

1. **Prioritize your pain.** Which issues cause the greatest pain? Which have the greatest impact on your business’ bottom line? For example if your employees consistently work long hours to complete prescriptions, your pharmacy incurs the costs of overtime, as well as wear-and-tear on employees that eventually leads to increased turnover.

If customer wait times are the greatest source of pain your pharmacy faces short-term customer service issues that may lead to lost business and the opportunity cost of negative word-of-mouth.

2. **Assign a dollar value to the pain.** Estimate the cost of that pain in dollars. Then, estimate the future cost of the issue(s) if not resolved. If staff overload is the issue, calculate what you’re spending a month on overtime and annualize the cost. Then, estimate the cost of making a replacement hire, including recruitment and training time, in addition to compensation.
3. **Assess the non-monetary costs.** If your pharmacy is experiencing an increase in prescription errors what is the cost of those errors continuing or extending downstream to be identified by the patient rather than your pharmacy staff?

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Community pharmacies, whose niche is personalized service, may find pharmacists are simply too overloaded to be out in front with patients, eroding the pharmacy's market position over time.

4. **Identify untapped growth opportunities.** Develop a list of things you would do in your pharmacy with extra capacity. These may include accomplishing activities during the business day now done after-hours, personally greeting customers from *in front* of the pharmacy counter, introducing new services and product lines, or providing more assistance with OTC products.
5. **Quantify the total cost of automation.** Outside the direct technology investment are ancillary costs that affect the cost of deployment, which may include training, equipment maintenance, expanded space requirements or business disruption during installation.

Prepare Your Pharmacy

Robotic dispensing will change your pharmacy's processes and workflow. Leverage the impending change to refresh your pharmacy's overall environment and workflow. Carefully consider how your pharmacy does things now and how the technology will impact it.

If you are planning physical changes to the pharmacy take the opportunity to update your pharmacy to further enhance efficiency. For example, the robot will centralize 200-plus of your most commonly dispensed drugs, so consider where to locate it to minimize travel. Create a circular work area.

- **Pre-packs** - Twenty to 50 percent of prescriptions are pre-packed. Consider bringing them forward so they are within easy reach when you get prescriptions on the robot.

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- **Lighting** - Increasing lighting increases efficiency. Create a well-lit area for the pharmacist to validate prescriptions; the right lighting increases dispensing accuracy.
- **Storage** - Consider where you store medications and how much prime real estate they occupy on your counter.
- **Will Call** - This is an ongoing challenge in most pharmacies. Once prescriptions are bagged they are typically stuck in alphabetical shelves or slots and are inconvenient to locate and age.

Prepare Your Staff

If you don't address the human element, people will find ways to bypass new systems. The two main employee barriers to automation are fear of job loss and fear of not being able to learn the technology. The first barrier is linked directly to management positioning/communication. The second depends on having a high-quality system with a strong support program.

It is in the business's best interest to educate and invigorate employees in advance about the potential of robotic dispensing to enhance their jobs and accelerate business growth. Their positive anticipation of new technology and its arrival helps ensure a successful transition.

Know Your Vendor

Finally be sure to choose a company you can trust. Following are some recommended steps to follow in evaluating and selecting a robotic dispensing vendor.

- Research the latest innovations in robotic dispensing through professional industry/trade organizations. Understand the primary market(s) served by each type of technology. Narrow your options to solution that target your market segment.
- Contact companies whose offerings suit your needs and request information. Understand how they position their product in terms of features and benefits.

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- Arrange a tour of pharmacies with similar characteristics to yours, which have had their system in operation for more than six months.
- Visit the manufacturing facility to understand the commitment to quality in the processes, as it reflects the reliability and durability of the machine.
- Request pricing proposals to include ongoing maintenance and consumable costs and other hidden costs (i.e., additional shipping and installation, interface charges, etc.).
- Understand what financing arrangements the company can support, including operational or capital leasing options. Sit down with your accountant to understand the impact of the purchase and financing vehicle on your business year.
- Weigh all of these factors in making a decision.

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Section 3 - What to Expect When You Automate

Automation saves labor and enhances efficiency, but it creates a new set of activities to gain the full benefit of the technology. Before implementing robotic dispensing establish new procedures and manage to them, including:

- Inventory Management - With robotic dispensing, if inventory is not properly managed, inventory costs can become onerous. Evaluate the cost of increased inventory versus the cost of more frequent replenishment. Your robotic dispensing system should have inventory management capabilities to report actual usage and current inventory levels.
- Maintenance - Define a maintenance and replenishment schedule that targets off-peak hours.
- Ongoing Training - Develop a plan for training new and part-time employees. Training is very important. Be sure that staff will get appropriate training and that it is well thought out. Most training should be able to be accomplished during work hours.

After overcoming the learning curve, pharmacies report they begin to feel the full impact of new technology within about four weeks. The entire staff must be committed to fully integrating the system into daily processes. Be conscientious in avoiding "benefit erosion." Your vigilance is needed to ensure employee compliance with the new technology and ensure the investment's benefits reach patients in the form of increased pharmacist availability and new service or product lines.

To maximize the business benefit of automating the prescription filling process try to be strategic in redirecting your pharmacy's resources. Create a strategic business plan that identifies and prioritizes such opportunities as:

- Key performance metrics to track and validate benefits on an ongoing basis.
- Expanded professional development to enhance technicians' abilities and knowledge, led by the pharmacy manager.

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- Additional services, based on the list of growth opportunities you highlighted during your pharmacy's technology evaluation phase
- Future automation options to valuate. Use robotic dispensing as a springboard to new and expanded automation.

The Bottom Line

Automation that delivers efficiency in size, productivity and cost holds potential to fundamentally change the face of an industry, reforming how work is accomplished while opening the possibility to new opportunities.

Distinguishing "transforming" technology from engaging gadgetry depends on the industry expertise and informed skepticism of the decision-maker.

Fully leveraging the power of the automation is a collaborative effort led by the stewardship and vision of management and supported by employees' full engagement. The worst thing you can do is just plug it in and forget about it.

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Vendors That Provide Robotics for Community and Outpatient Pharmacy

AutoMed

875 Woodlands Parkway
Vernon Hills, IL 60061
888.537.3102
Carl Geberbauer/Greg Gautier

Innovation Associates

627 Field Street
Johnson City, NY 13790
607.798.9376
Mary Reno

McKesson APS

700 Waterfront
Pittsburgh, PA 15222
800 243 2465
Dan Pantano

Microfil

8080 Jericho Road
Bridgman MI 49106
269 465 0448
Henry Beattie, III

Parata Systems, LLC

2810 Meridian Parkway, Suite 176
Durham, NC 27713
919.433.4300
Pete Klein

ScriptPro

5828 Reeds Road
Mission, KS 66202
913.384.1008
Sherry Coughlin