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Manage Inventory to Grow Your Pharmacy

A pharmacy's inventory is one of its biggest budget line items. Find out how three pharmacies are using advanced analytics, their pharmacy management systems, automation, and other services to ensure their inventory is a valuable resource. see story on pg 13

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There is a lot of potential for these devices, but also limitations.

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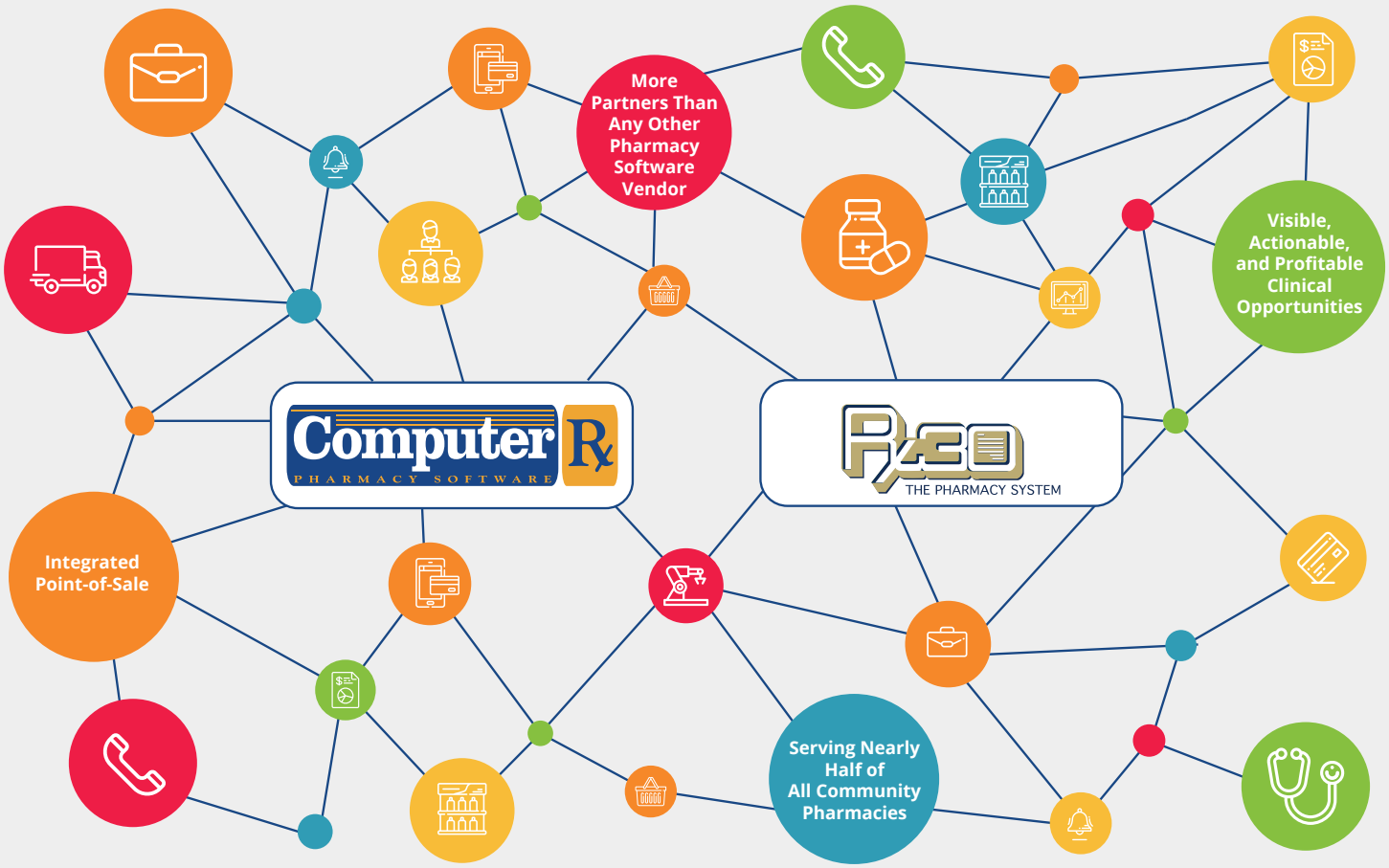
The Art and Science of Inventory Management

Your Pharmacy Management System Should Faciliate Your Success



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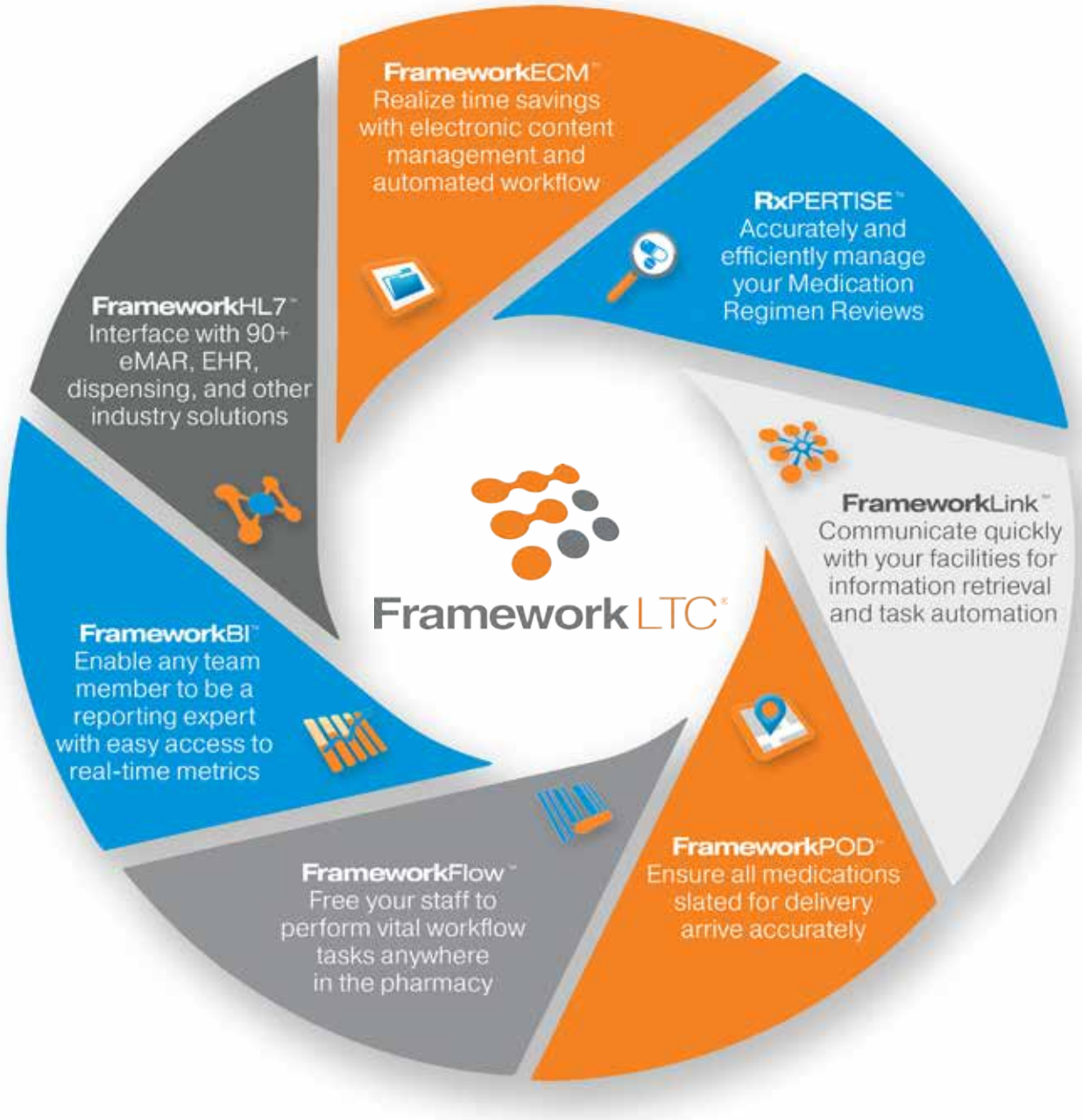

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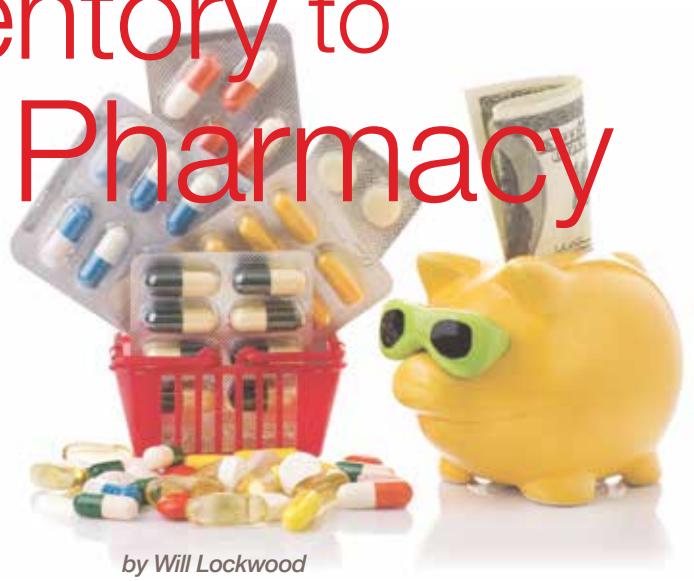
FOR THE PHARMACIST

Nov | Dec 2018
The intersection of technology and management.

Manage Inventory to Grow Your Pharmacy

A pharmacy's inventory is one of its biggest budget line items, and an area that requires daily attention. Find out how three pharmacies are using advanced analytics, their pharmacy management systems, automation, and other services to ensure that their inventory is a valuable resource and not just bottles on the shelf.

Story begins on page 13



by Will Lockwood

Plus*... Advice from around the industry on how to do more with your inventory.

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8 Wearables and Pharmacy: Gaining Momentum

by Timothy Dy Aungst, Pharm.D.

There's an accelerating interest in creating ways to leverage the internet and mobile devices to impact healthcare. Companies such as Amazon, Apple, and Google, as well as many others that aren't household names, are moving into the medical space looking to expand services and capitalize on the promise of consumer-focused wearables. The only questions are, what can they do with technology, and who will use it?

10 The Art and Science of Inventory Management

by Maggie Lockwood

Focused on inventory at his four stores in Tulsa and Muskogee, Okla., pharmacist and owner Chris Schiller wanted better inventory management that left less on the shelves, while maintaining the ability to fill walk-in prescriptions. With Datarithm inventory management software, he found a solution that hit the right balance — and immediately saw financial improvement.

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Volume 38, No. 6
nov/dec 2018

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ComputerTalk (ISSN 0736-3893) is published bimonthly by ComputerTalk Associates, Inc. Please address all correspondence to ComputerTalk Associates, Inc., 492 Norristown Road, Suite 160, Blue Bell, PA 19422-2339. Phone: 610/825-7686. Fax: 610/825-7641.

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Printed by Times Printing LLC.

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The ASAP Connection

ONE OF THE HALLMARKS of the American Society for Automation in Pharmacy (ASAP), in addition to its pioneering work in setting the reporting standard for prescription drug monitoring programs, is that it holds two conferences each year — one in January and the other in June.

The content of these conferences plays primarily to how technology is the springboard for helping pharmacists better manage the financial, operational, marketing, and clinical aspects of a pharmacy. In addition are topics that cover legislative initiatives and other developments that can influence the future direction of technology applications.

Let's take a look at the program content for the upcoming ASAP annual conference in mid-January (Jan. 24 and 25) to see what I mean. One topic will cover the current and future application of artificial intelligence. This is an area that is certain to improve decision-making. The current state of compounding is another area that will be discussed. Next-generation data metrics for pharmacy comparisons is something that needs to be understood and is also on the program.

The Amazon-Berkshire-JPMorgan venture has received a lot of press on how it will upend the insurance industry's grip on healthcare. Will it succeed? What is the likely outcome here, and how does this play out for pharmacy? This too is on the agenda in January. And every year there is an update from IQVIA on pharmaceutical trends, issues, and forecast — a component of the program that has always been well received for the insights provided.

E-prescribing has transformed how prescriptions are "written," but accuracy is still an issue with these prescriptions. You will hear what is being done to improve accuracy and how is it being measured. This is something that should be important to every pharmacist.

That gives you the flavor. Now you may ask, where is this conference being held? The location will be The Sanctuary on Kiawah Island in South Carolina, with close proximity to Charleston.

There is one other benefit for pharmacy owners in attending. You get to meet and talk to the senior-level people from the various companies providing technology applications for pharmacy.

You can see the program in its entirety by going to asapnet.org. The registration form and hotel information are also available at the website.

I serve as executive director of ASAP and am pleased to say that the conferences have always been enjoyed by all who attend. You might want to give one a try. **CT**

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Transaction Data Systems (TDS) is partnering with community pharmacies to fight the opioid epidemic with the release of NarcFacts through Computer-Rx and Rx30 systems. "Community pharmacy is uniquely positioned to impact substance abuse through daily patient engagement. Our pharmacy management platforms now help pharmacies facilitate change with the care continuum," says Jude Dieterman, TDS president and CEO. "It's tools like these, which integrate PDMP (prescription drug monitoring program) review into the pharmacy's workflow, that are going to help community pharmacies make a big impact on the opioid epidemic."

Using the NarcFacts integration, pharmacies are alerted to overlapping pharmacies and prescribers, high doses, duplications, or other potential problems directly through the pharmacy management platform. From the alert screen, pharmacists can learn more about warnings, access multistate PDMP data , and view an interactive prescribing graph and geomap of dispensing history.

"NarcFacts is an innovative solution designed to integrate seamlessly with the pharmacy management software to become part of the pharmacy's daily prescription-filling process," explains Jeff Pohler, TDS clinical services VP.

OmniSYS and **ScriptPro** have entered into a partnership where ScriptPro's SP Central Pharmacy Management System will process incoming calls through OmniSYS's Fusion-Rx in real time.

"Together, we are making IVR technology more accessible to every size of pharmacy operations, enabling pharmacists to offer options to their patients and facilitate prescription adherence," says ScriptPro Executive VP and CEO Bill Thomas.

When patients leverage the integrated solution to refill a prescription or check on an existing refill, they are presented with the real-time status. Responses include ready for refill, no refills, expired, and too soon, with an option to request that the pharmacy should contact the doctor if the prescription has expired.

"We are thrilled to partner with ScriptPro, a company that shares our passion for providing superior technology solutions to pharmacies," says John King, OmniSYS CEO.

Micro Merchant Systems has announced that its signature PrimeRx pharmacy management platform has successfully completed testing for transacting pharmacist electronic care (eCare) plans to meet CPESN (Community Pharmacy Enhanced Services Networks) requirements for clinical integration.

PrimeRx successfully met HL7 performance requirements, which include the capability to fully support network pharmacy eCare Plans. Pharmacy eCare Plans are a relatively new tool to capture, manage, and share critical patient medical information across patient care teams. The eCare Plan replaces existing processes in which patient records are often maintained in manual files or spread across multiple systems.

The PrimeRx solution also enables documentation of all services rendered to each patient, which is an essential strategy in the effort to gain access to reimbursement for services. Through the integration with CPESN, participating pharmacies are ensured seamless access to patient records, as well as automatic transmission of claims to payers.

Akbar Merchant, president and owner of Micro Merchant Systems, notes that the PrimeRx system has the potential to be a "game changer" in pharmacy management. "We built PrimeRx with the pharmacist in mind. We wanted to provide a platform to facilitate the management of patient data while also streamlining pharmacy workflow and operations," Merchant says.

MicroMerchant has also announced the appointment of Brian Courtney, Pharm.D., as chief revenue officer for the company. He comes to the company with an extensive background in the pharmaceutical industry, with more than 17 years of experience with companies ranging from startups to industry leaders. Most recently, he was senior VP of strategy and business development for Fagron North America, a leading pharmaceutical compounding company.

Brian Courtney

"One of Brian's initial challenges will be to hire a team of software sales professionals to support our Midwestern, Western, Southeastern, and Southwestern regional expansions," says Merchant.

PrescribeWellness released the results of its "Opioids in America: Consumer Views and Use" survey. Conducted online by Propeller Insights on behalf of the company in July, the survey explored more than 1,000 adult Americans' habits surrounding opioid

medications, as well as their viewpoints on the appropriate use of prescription opioids.

Nearly 53% of respondents have taken an opioid medication, and 14% are currently taking an opioid on a daily basis. Almost 70% believe they are less likely than others to become addicted, the top reason given that they are very careful with prescription drugs. Nearly 16% do not believe opioids can be addictive.

Having seen family or friends experience opioid addiction is the main reason why the remaining 30% feel more likely to become addicted themselves. Those across every generation, income, and educational background give family or friends as their main reason for feeling more likely to become addicted, especially the following:

- Over 42% of Gen X respondents (35–54 years old).
- Over 30% of those with a college degree or higher and 35% of those with some college or less.
- Sixty percent of those with less than high school-level education.
- Nearly 40% of those with an annual income of less than $50,000, compared to 31% of those with an income of $100,000 or more.

When it comes to knowledge of prescription opioid medications, 41% did not correctly identify codeine as a opioid and 33% did not identify Vicodin as an opioid.

"As evidenced by the survey, most Americans do not believe they are a candidate for opioid addiction and feel less likely than others to become addicted," says Farah Madhat, Pharm.D., senior VP of pharmacy for Prescribe-Wellness. "As pharmacists on the front lines of patient care, we must not only educate our patients and their loved ones, but work with other members of the healthcare team to assess the situation, ensure proper treatment, and step in to proved counseling support."

Integra Solutions LTC released Logix 3.0, the latest version of its custom pharmacy business process automation software. Logix provides process automation designed to create automated solutions eliminating repetitive, error-prone manual tasks, freeing pharmacy staff for higher output and faster service.

In addition to the initial set of standard Logix workflow processes, Executive Director of Product Management Louie Foster has worked closely with institutional pharmacy leadership and staff to identify the most critical additional automation for rapid implementation, and time and cost savings. "Logix 3.0 offers full DocuTrack integration, with intelligent task creation, workflow guardrails, and more automation capabilities." says Foster. "We concentrated closely on our new stock processes to deliver key processes with demonstrable ROI [return on investment] value."

Pharmacist Carol Garrand, director of operations for PropacPayless Pharmacy, which serves 33,000 beds from locations in Washington, Oregon, and California, implemented Logix in 2017. "One of the first benefits we have seen is an automated faxing process for our RTS [return to stock] notices. That one process automation saved us half an FTE [full-time equivalent] of processing, just given the volume of manual faxes that we send," noted Garrand. Download the key new Logix 3.0 process automation features and read more from Integra's Louie Foster at https://wp.me/p9LtTd-SX.

BestRx and **Script Management Partners (SMP)** have announced an immunization module that enables independent pharmacies to offer enhanced immunization programs.

The relationship between BestRx and SMP started in April 2018 to customize an immunization module that uses data from the immunization registries to prompt pharmacy staff with notices directly in the workflow when patients' records are accessed for prescription processing. Aside from reporting immunizations to the registries, the integration allows SMP to access patient data and suggest vaccines of which a patient may not otherwise have been notified. The module went live in August and is receiving excellent reviews, according to the companies.

"Pharmacies that don't have access to a system such as BestRx's must do these processes manually, which is labor intensive and creates more likelihood of reporting errors," notes Sam Pizzo, co-founder of SMP.

In commenting for BestRx, Hemal Desai, president of the company, says, "Pharmacies we support wanted the ability to report to registries, so we knew we wanted to partner with SMP to develop the right resource for our clients." Read more from Desai and see how one pharmacy has benefited at https://wp.me/p9LtTd-1jp. **CT**

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Wearables and Pharmacy: **Gaining Momentum**

by Timothy Dy Aungst Pharm.D.
Contributor

THE ADVENT OF WIDESPREAD INTERNET access and possession of mobile devices such as smartphones and tablet computers has increasingly led to the expansion of new services that were unthought of a decade ago. In an era in which an individual can order food to be delivered, request a ride, and search for a date all with just a few finger gestures, it comes as no surprise that there is a booming field looking at how we can leverage the internet and mobile devices to impact healthcare. Companies such as Amazon, Apple, and Google, which were before known for their tech or commodity supplies, are now moving into the medical space, looking to expand services and capitalize on a booming market. The only question is, what can they do with technology and who will use it?

With that being the case, the pharmacy market is itself an open feast of possibilities. While leveraging technology to impact the delivery and packaging of medications for patients may be on the forefront, alternative services are being explored as well. Medication adherence, drug safety, and access are large areas of interest, and the exponential growth of devices that can be used for medication management has spurred many disruptive technologies to arise in the start-up sector. The advent of small sensors and the internet of things (IoT) infrastructure has increased the prospect of patients being monitored digitally for health and clinical outcomes. Wearables are perhaps at the current forefront of such technology. Many devices have entered the market that can be worn peripherally on the patient (e.g., wrist mounted) or attached directly to the body for higher data collection (e.g., blood glucose). Of particular interest to the pharmacy field, these technologies may pave the way for increased opportunities for medication oversight by pharmacists with an eye on improved clinical outcomes and patient safety, as seen in the figure.

THERAPEUTIC OUTCOMES WITH WEARABLES

Wearables as a whole have made major advances compared to devices available less than a decade ago. Past wearables were focused primarily on health and wellness, via such things as step measurements and calculations of caloric expenditure; we have arrived at new standards for the metrics available from wearables. For example, almost all wrist-mounted wearables — from fitness trackers to smartwatches — now incorporate heart rate measurement. Alongside this, we are seeing other vital measurements being advanced, including body temperature and oximetry.

Perhaps two therapeutic areas merit primary focus at this time, given health and wellness goals and the specter of widespread diabetes and cardiovascular disease in the U.S. population: Blood pressure and blood glucose are becoming areas in which which the wearable market is quickly gaining traction.

While multiple products exist on the U.S. market that are Bluetooth-enabled blood pressure devices, there is an increased interest in wearable devices that allow for continuous monitoring. One example of a blood pressure-monitoring device is Omron's Zero, which is a wrist-mounted device to measure and track blood pressure throughout the day. There are also recent patents from Apple that indicate they are looking for their own blood pressure measurement device. This could be a standalone device or another form factor (e.g., wristband) that can be integrated with the Apple Watch. Given current recommendations in the ACC/AHA hypertension guidelines for the ambulatory monitoring of blood pressure, these devices may find greater importance in patient care than in the past.

The blood glucose market is seeing more disruptive innovation overall and seems to be viewed by many companies as the golden goose. Traditional blood glucose measurement has routinely been handled in the patient's home using self-monitored blood glucose (SMBG) devices, relying on the use of a lancet to access a drop of blood collected on a testing strip and read through an intermediary device. These devices have seen some upgrades, similar to blood pressure cuffs, with the addition of Bluetooth to upload data via a mobile app to the user's smartphone. While SMBG will likely be a mainstay of care for the time being, continuous glucose monitoring (CGM) technology is also undergoing drastic innovation. Companies like Dexcom and FreeStyle (which utilize a wearable patch with a microneedle to track blood glucose) are bringing CGM devices to the market, with the later finding a spot on many pharmacy shelves. Perhaps even more interesting is

the push for an alternative means of CGM with technology that eliminates the need for a microneedle through the skin and instead uses either light or other means to track blood glucose indirectly. Notably, part of Google has teamed up with Alcon/Novartis to investigate the creation of eye contact lenses that can track blood glucose, with others looking for wrist-mounted passive devices for CGM.

At this time these devices are in their infancy, but with payers and insurance companies increasingly covering the devices for patients, mainstream adoption is around the corner. Utilizing these devices for patient monitoring will become a pressing concern in the near future, along with not only who prescribes and dispenses them but also who guides patients in their utilization and monitoring.

TRACKING ADHERENCE WITH SENSORS

Sensor-based technology has also significantly impacted how the medical field can measure and assess patient adherence with pharmacotherapy in their daily lives. Foremost are companies like Proteus Digital Health and etectRx, which are manufacturing bioingestible sensors that send out a data burst when they dissolve, indicating a patient took his or her medication. A limiting factor to these devices is that a peripheral device must be worn to capture the data burst and pass it on to a mobile device or tertiary data repository for tracking adherence. The Proteus system relies on a patch worn above the patient's stomach, that can also track other data about the patient, including activity and related vitals. This system is being adopted by the broader market, with the first FDA-approved "smart pill," Abilify MyCite, from Otsuka Pharmaceuticals in conjunction with Proteus, coming to market in 2018. The Abilify MyCite is designed to track adherence in patients with bipolar disorder, depression, and schizophrenia. At this time, there are over 20 other drugs in the pipeline exploring sensor integration, with primary emphasis on being infectious disease, oncology, and mental health.

Outside of oral medications, inhalers and injectable therapy delivery devices are also being investigated. Companies like Adherium and Propeller Health are creating sensors that can be attached to inhalers and detect when a patient uses an actuation of his or her therapy. All of this data can then be broadcasted to a central repository for providers and caregivers to monitor and get insights into adherence.

LIMITATIONS TO WEARABLE MARKET

The hype behind the wearable market and its role in healthcare is quite high at this time, but some skepticism is warranted. One of the most significant limiting factors for the use of wearable- and sensor-based technology in healthcare practice is global integration into the workflow. At this time, most companies utilize their own standalone platform that does not integrate into an EHR (electronic health record) or pharmacy system, thus creating another system a team or workforce must master, creating a barrier to use. Other considerations include cost, whereby the use of the technology may not have demonstrated clinical evidence significant enough to justify inclusion in clinical guidelines and uptake of coverage by insurance companies and related payers (e.g., federal agencies, pharma). Lastly, the rapid pace of technology has seen many companies invest in hardware only to be usurped by the "next big thing," which is a concern for an organization that spends heavily on research and development of a form of technology one year that's then outdated the next.

PHARMACY CONSIDERATIONS

While there are many companies and organizations currently interested in the use of wearable technology, pharmacy would do well to pause and carefully assess the market. Determining what technology is worth investigating and possibly integrating is the prominent issue at this time. Could such technology use be beneficial in an MTM (medication therapy management) service or patient-monitoring program? Perhaps, but ultimately, there's the question of which staff would be responsible for the use of this technology and how it can benefit patients overall. No matter what, the next step is the integration of the technology with pharmacological products supported by pharmaceutical company backing, such as the Abilify MyCite system. It may be that at first only the specialty pharmacy market and specific ambulatory pharmacy systems may utilize this technology, but odds are that it will slowly trickle down everywhere. **CT**

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Digital Health Guided Medication Management

Visit wp.me/p9LtTd-1pj to see a graphic illustrating a guide on where wearables and devices help meet clinical support.

The Art and Science of Inventory Management

by Maggie Lockwood

INVENTORY MANAGEMENT, such as having a variety of medications on the shelf ready for the walk-in customer, is as much an art as it is a science. "I didn't want our service to suffer," says Chris Schiller, Pharm.D., who co-owns the four-store Economy Pharmacy with his wife, Becky. To eliminate surplus while still having a variety of medications on the shelf to handle any patient need, "It's really hard to do this and still keep your service level," Schiller says. "But our service level hasn't suffered," he continues. "It's just as good as it was before, and we have increased cash flow, which was really my goal — to operate more effectively."

The couple bought the business two years ago after working there for 20-plus years. Schiller says that he knew one of the first aspects of the business he wanted to change was inventory management. Although he used perpetual inventory through his Computer-Rx system and regularly reviewed reports to keep the shelves clear of unused inventory, Schiller wasn't seeing the results he needed.

The four stores, two in both Tulsa and Muskogee, Okla., fill about 37,000 prescriptions a month across a variety of practice settings: Three of the four stores are stand-alone pharmacies; one is in a medical building. Three stores offer compounding service, and Economy operates a robust adherence packaging and delivery program. "We service every type of patient," says Schiller. "We deliver, we have a double drive-thru — we do just about everything."

"There are so many things you need to worry about, and having inventory managed at this level means we don't have to worry about it. We can still offer a high level of service while keeping our inventory numbers lean."

– Chris Schiller, Pharm.D.

A few months after purchasing Economy, Schiller compared third-party inventory management systems at a trade show. He knew he needed something that worked across the four stores, was easy to use, and would intelligently manage the inventory so he would have everything he needs without wasting money with unused stock. He chose Datarithm because he liked how it would tie the four stores together, and he liked the idea of working with a small company.

"What I liked about Datarithm is it's using our actual inventory to set order points," says Schiller. "It can tell us we have an item in stock but won't be dispensing it for a few months in that location, so we can transfer it to a location where it will be used sooner. This really helps us manage our inventory."

Datarithm is cloud-based software that forecasts usage based on each pharmacy's historical dispensing data. Pharmacists set order points and other metrics to fit their goals, and the software identifies surplus and advises on returns. This is a powerful tool, especially with expensive drugs that aren't fast movers.

Instead of purchasing an item again, the software shows Economy staff where a specific item is in stock at another store, and the quantity, says Schiller, significantly reducing unnecessary ordering. "We still have quite a bit of surplus, in my opinion, but it's obviously down significantly."

LET THE SOFTWARE DO ITS WORK

At first the staff was hesitant to let the

software make the inventory decisions, says Schiller, due to the age-old pharmacist's dilemma: fear of change. "I told them this was change for the good, and just let the system do what it's supposed to do," Schiller recalls. "It's been doing a fantastic job. They make adjustments occasionally, but it has, in my opinion, made my staff's job easier and more fun."

Schiller and his staff still conduct audits to verify what's actually happening with inventory, but he says the software does pretty much everything when it comes to day-to-day inventory management. This means less time managing exceptions like the expensive drug for one patient, which used to require a manual order point set to have just-in-time fulfillment. Now the system predicts when that drug is needed, and indicates when staff should transfer between stores if it's already in stock.

"Without this intelligence you're just driving blind," Schiller says. "What's helped us a lot is knowing when we can return medications or should order more. With the software reviewing our dispensing history, it makes it a lot different from trying to do it by yourself through reports in your computer software."

The balance sheet tells a powerful story. Shortly after Economy implemented the Datarithm solution in the spring of 2017, Schiller says, he had $1.6 million on the shelf. Today, he has decreased the inventory by 30%, or $500,000. The returns went from 15% to 19%. Over the course of this time he has returned $633,000 worth of medications and transferred, rather than buying again, $150,000. The surplus is down $215,000. Schiller thinks he's still carrying a little too much surplus, but overall the results are more than he had hoped for.

"There are so many things you need to worry about, and having the inventory managed at this level means we don't have to worry about it," he concludes. "We can still offer a high level of service while keeping our inventory numbers lean."

A GOOD INVESTMENT

The integration between the pharmacy system and Datarithm is seamless and takes into account the demographics and needs at each store. An example of the benefit of a unified inventory system is with the expensive drug for one patient in an adherence program. Since the software is looking at the various locations and is able to see there is some on the shelf at another store, there is no need for the staff to manually change an order point or zero out inventory to trigger a reorder.

Focused on inventory at his four stores, two in both Tulsa and Muskogee, Okla., pharmacist and co-owner Chris Schiller wanted better management that left less on the shelves, while maintaining the ability to fill prescriptions for walk-in customers.

"As long as we do our audit reports and follow the recommendations for returns, the software works great," says Schiller.

His staff at first wanted to override the system recommendations, but Schiller was adamant about letting it run and avoiding the desire to override its recommendations. "We're creatures of habit, and when you've done something for 20 years it's hard to imagine a better way to do something," he says. "If we're going to continue, we have to change and not be hesitant to invest in something. I think it's well worth the money." **CT**

Maggie Lockwood is VP and senior editor at ComputerTalk. *She can be reached at maggie@computertalk.com.*

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Manage Inventory to Grow Your Pharmacy

by Will Lockwood
VP | Senior Editor

Will can be reached at
will@computertalk.com

A pharmacy's inventory is one of its biggest budget line items, and an area that requires daily attention. As such it can be one of two things. Managed poorly, it's a drain on your time and cash flow. Managed intelligently, there is a wide range of positives. From finding the cash you need to invest back in your pharmacy, to ensuring the highest levels of patient service, pharmacists who look for ways to manage their inventory more intelligently are seeing gains. We'll find out how three pharmacies are using advanced analytics, their pharmacy management systems, automation, and other services to ensure that their inventory is a valuable resource and not just bottles on the shelf.

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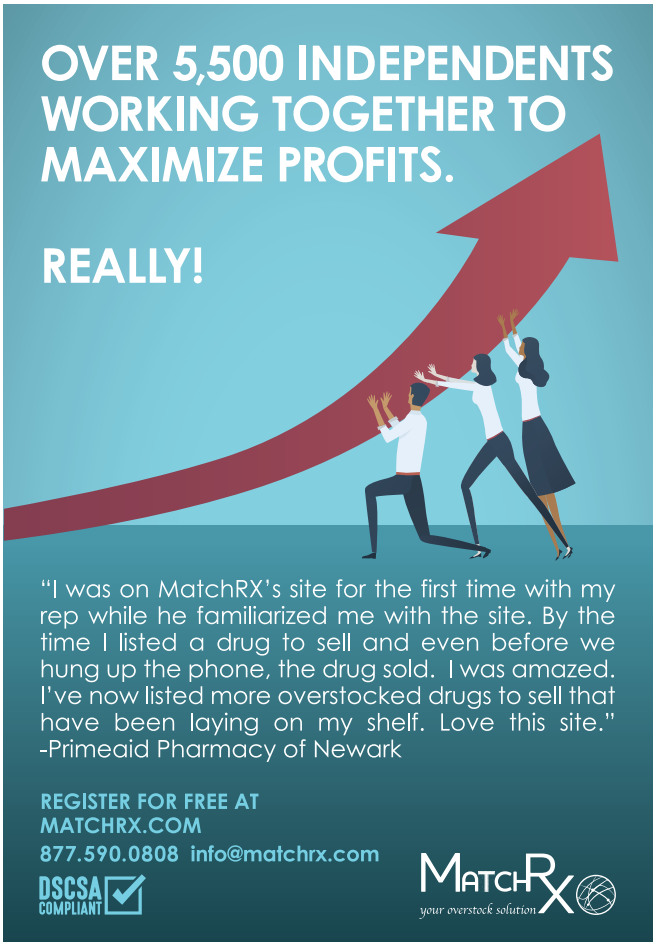
Analytics for All

Whether you run an independent pharmacy or are charged with managing inventory at a chain, there's an important set of tools that have come to the market in recent years: inventory analytics. This is a suite of tools that use your historical inventory data to train algorithms that in turn provide data-driven insights into your inventory — offering forecasts and recommendations, as well as keeping an eye on unusual activity.

Weis Markets is one example of a chain that's made inventory analytics a central pillar of its operations, according to Rick Seipp, R.Ph., VP of pharmacy. Weis Markets operates 146 pharmacies in seven states, but primarily in Pennsylvania and Maryland, and has built pharmacy into a significant contributor to overall revenue over 35 years.

Still, as Seipp tells it, the company had some pretty antiquated inventory practices as recently as 2011, when the pharmacies were still filling out a paper order book. There was also a big problem, Seipp reports, with managing stock that was at risk of expiring. With these and other inventory challenges in mind, Weis Markets began working with Supplylogix and achieved full rollout in 2012. And while this partnership has been key for bringing in cutting-edge inventory management practices with impressive operational and financial results, Seipp notes that the most important benefits ultimately accrue to the patients. "Our number-one priority is making sure that we are everything to our customers and we have great customer service," says Seipp. "So from an inventory perspective, it's absolutely critical that we're making sure Weis Markets pharmacies are in stock appropriately and that patients are getting their medications when they need them."



On the other end of the scale, George Fotis, Pharm.D., became the new owner of Drug City Pharmacy in Baltimore, Md., in 2018, but with some real work to do. The business is hardly that small, even with just one location. It's been a cornerstone of the community since 1954, and Fotis reports very high prescription volumes and additional offerings that range from durable medical equipment to a post office to check cashing and a grocery and liquor department. "We're really an all-purpose general store," says Fotis.

George Fotis

But, Fotis realized, Drug City Pharmacy was also working with a very outdated inventory mindset. The standard practice before Fotis took over was to keep the shelves full of stock, buying based on the deals wholesalers were offering. That led to boxes of expired bottles on the shelves, sometimes with dust on them. "You may think you are buying right based on the specific deals," explains Fotis, "but that ends up being a recipe for buying just way more than you need."

Inventory analytics turned out to be just the remedy for this situation, and one of Fotis's first orders of business as the new owner was to reach out to Datarithm about getting inventory and purchasing under control. What he found out was that he should be looking for a target number of around $600,000 for inventory. "I couldn't believe it, because we were carrying close to $1.4 million in inventory at the time," says Fotis.

Bill Osborn

And then there's Osborn Drugs, which is a partnership of 18 independent pharmacies with 24 locations in Oklahoma, Kansas, Arkansas, and Missouri. President Bill Osborn, Pharm.D., reports that the group moved to perpetual inventory years ago, with an immediate positive

impact of something on the order of a 30% reduction of inventory on hand. But the Osborn Drug pharmacies had then been looking for that next step, which ended up being software from OrderInsite, which has powered further gains from inventory..

Perpetual Inventory: Hard Work, But Worth It

Let's pause, though, and talk about perpetual inventory a little more. Remember that one question you need to answer is, what do you actually have in stock? And the answer to this comes from the painstaking process of implementing and maintaining a perpetual inventory process. "That's the foundation," says Fotis. "Without it you're up the creek."

At Drug City Pharmacy, Fotis started with completely zeroing inventory and then going back and loading everything in again. It was a lot of work, but a clean current inventory has to be the starting point. From there, Fotis has leveraged his inventory analytics and EDI (electronic data interchange) ordering to set order points and maintain an accurate current inventory within his PioneerRx pharmacy system.

"If anything is below the reorder point our algorithms set, it goes on an order," says Fotis. "Then I get an EDI transaction from the wholesaler directly back into PioneerRx that updates my stock numbers based on what's actually being delivered. So I don't have to do any sort of manual receiving whatsoever."

With this process, inventory is never going to be off — in a perfect world. Of course, any pharmacist will tell you that things happen, and so keeping a perpetual inventory requires ongoing effort.

This is where cycle counts come in, according to Fotis. This means that you physically count around 30 products every day to ensure that the actual stock on hand matches the inventory numbers in your systems. Every couple of months you'll have counted through your entire inventory. Fotis is using Eyecon tabletop counters to make this cycle count process quick and accurate.

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76% of malpractice claims are wrong Drug (50%) and wrong Strength (26%). The Eyecon 9420 greatly reduces these risks.

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What You Have and What You Need

In fact, it's important to start any dive into inventory with two questions: What do you have right now, and what you need to order? Packed into this simple one-two is a pile of data reflecting shifting demand based on seasonality, generic rollouts, payer preferences, and more. And the closer you can keep inventory to a just-in-time ordering model, the better for your pharmacy's cash flow. As George Fotis notes, you fill a prescription and you don't get paid for it for four to six weeks. So if you've paid for that inventory and it's been sitting on the shelf for weeks already, well, it's easy to see how you can end up with hundreds of thousands of dollars tied up.

The work doesn't end with answers to these two questions, though. As Rick Seipp explains, you also need to ensure that you don't end up with excessive returns or expiring stock. This is a major, ongoing focus at Weis Markets pharmacies, according to Seipp. As you can see, inventory management is complex and needs to be data driven, making it a prime area to let technology carry the burden.

In Bill Osborn's view, there's another wrinkle here, too. The power of combining analytics and perpetual inventory is that not only can you use it to set reorder points intelligently, but you can also unload the burden of deciding when it makes most sense for those points to trigger a purchase. For example, reports Osborn, let's say you've got a patient on an expensive medication that you buy in bottles of 100 and dispense in 30 counts. "OrderInsite can set the perpetual inventory reorder point for us at 29," says Osborn, "but it can also look at our dispensing data and identify the next patient who's going to need this medication. That way we're not restocking the drug immediately after dispensing it, but instead we are smart and wait until just before we need to dispense it again to actually place the order."

This keeps the cash for that buy invested elsewhere until the right time. It's something that would be almost impossible to manage at any scale without technology. "This is one example of why we had a 25% decrease in inventory within the first three months of using OrderInsite," says Osborn.

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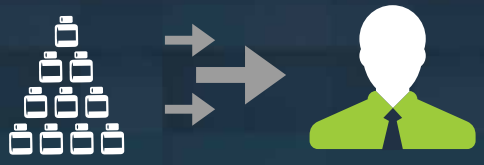

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Look Back, Look Forward

Returning to the topic of software-driven analytics then, the question Rick Seipp suggests asking yourself is, how do you repeat off of what you know happened in the past, whether it's in the most recent trends or in deeper historical data that can reflect seasonality and longer-term prescription cycles? "We're on a 30-day prescription cycle," says Seipp, "and we're looking for our inventory system to work hand-in-hand with our medication adherence system and our dispensing system to identify opportunities and make sure that we have that right product come in when we need it. And when we have the right

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by Jennifer Wilcox, Senior Account Executive, Datarithm

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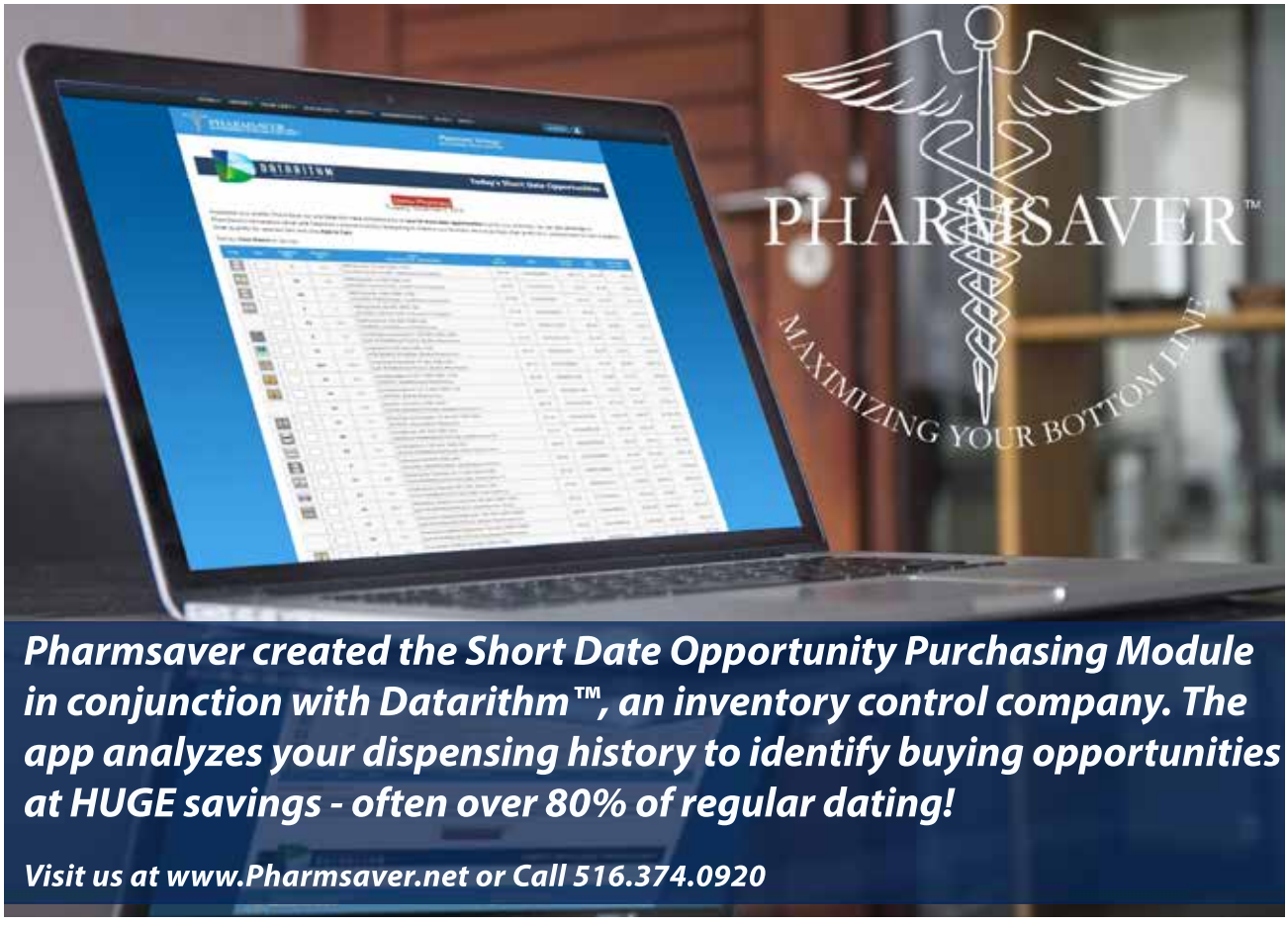

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product in stock, our other processes work smoothly too, such as communicating to the patient that her medications are ready."

Supplylogix gives Weis Markets pharmacies the foundation to execute successfully day in and day out, according to Seipp, and it also provides flexibility to change. "A great example is that in the last three months, we've looked at our entire algorithm and asked, do we have the right products in stock?" says Seipp. "Are we investing our money appropriately in inventory? We are constantly vigilant to make sure that we're not overspending or underspending on inventory."

Getting Smart About Inventory

George Fotis makes minimizing out-of-stocks a major goal at Drug City Pharmacy. It goes back to that desire to provide the best service to patients, as noted by Rick Seipp. But you can't fall into a better-safe-than-sorry mentality, Fotis notes, and this is where he's found that analytics is making him much more intelligent about his inventory.

"Software algorithms take the guesswork out of deciding on-hand numbers for your stock," he says. "We can set, for example, a 30-day look back and a goal of maintaining a day's supply in stock. This data is then what sets the ordering parameters within our pharmacy system. These algorithms do the hard work of weeding through your inventory for things like that bottle that was used once in the last 30 days, but was never used before. It keeps us from making the very natural mistake of reordering it based on that recent but unusual usage." Likewise, it's easy to train algorithms to look for the dispensing of certain medications that's ramping up or down — for example, when a new generic comes out. Overall, Fotis finds that analytics is keeping him from being caught off guard by demand.

Move It, Don't Lose It

Reducing the financial risk of returns and expired stock is one of the cornerstones of Weis Markets

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Reports easily exported:

Export CSV files for additional analysis and backup data.

Extended data capturing:

Eyecon can capture the lot and serial number, and expiration dates, when the new DSCSA (Drug Supply Chain Security Act)-mandated 2D barcodes are scanned.

Cycle counts:

A cycle count interface is also supported so that inventory management systems can send the list of drugs to be cycle-counted to the Eyecon, which then prompts the user to perform those counts faster and more accurately.

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pharmacies' partnership with Supplylogix, reports Rick Seipp. But what if you were able to find a way to use your at-risk stock, rather than return it? This is where Supplylogix Pinpoint Transfer has come to play a critical role for Weis Markets, providing data-driven recommendations for moving stock between locations. "Pinpoint Transfer has really helped us dramatically in this space," says Seipp. "Over the last several years we've transferred around $67 million worth of product between our stores using Supplylogix's Pinpoint Transfer technology, which is a pretty amazing number."

This is so important because once a product is in stock, the best outcome operationally and financially for Weis Markets is to dispense it. Seipp reports that the Pinpoint Transfer algorithms are highly reliable, with about a 75% approval rate for recommended transfers and, even more importantly, close to 90% of what is transferred is then dispensed. "When we transfer a product, we're moving it very successfully," says Seipp.

Bill Osborn speaks to the importance of using transfers as well. Osborn reports that he and other pharmacy staff use the OrderInsite dashboard daily, pulling up views that can be arranged in a variety of ways, from a single store to groups of stores to all the pharmacies together. "I can tell you everything about the inventory in our stores from this dashboard," says Osborn. "It's incredible." And from here he's also able to get actionable data on product that could benefit from a transfer to a location where it's in demand. "We're moving significant amounts of inventory from store to store this way," says Osborn.

You don't have to have multiple locations to get the benefits of moving at-risk stock. George Fotis has successfully leveraged a service from MatchRX to sell to other pharmacies the excess product that he couldn't return, because the bottles were opened, for example. "I would always see this one bottle of Glumetza on our shelves, which is a metformin extended release and about $10,000 a bottle," he says. "We had half a bottle sitting there, and we weren't going to use it. I put it up on MatchRX, and it sold almost instantly to someone who didn't need a full bottle either. I think we've been able to move about $100,000 in open product on MatchRX."

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The Constant Is Change

The need for software to do the heavy lifting in managing inventory is heightened by the fact that the issues that impact inventory literally never stop changing. For just one example, Rick Seipp explains that when a generic first comes out, the brand can still be maintained on formularies for some time, differing payer by payer. Weis Markets is able to leverage its transfer program to make sure that product moves out of an area where it's fallen out of favor and into an area where it's still on formulary and in demand, reducing the risk of it ending up outdated.

Bringing algorithms to bear on your inventory brings other benefits as well, according to Seipp. For one, Weis Markets has important audit capabilities through Supplylogix that help to identify areas of risk and ensure processes are working the right way. The ability that analytics has to sift through the data and find suspicious activity is an important part of Weis Markets' efforts to protect its assets and remain in compliance.

And then there's the wild, complicated world of generics ordering. This is another prime example of how powerful inventory management software can make an impact. Here's what's happening at Weis Markets, as reported by Rick Seipp. The pharmacy tracks generic inventory based on the generic product identifier (GPI), which is a 14-character hierarchical classification system that identifies drugs from their primary therapeutic use down to the unique interchangeable product, regardless of manufacturer or package size. Supplylogix allows Weis Markets to look across inventory at all pharmacy locations and roll up the quantity on hand by GPI. This means ordering is then done based on this higher-level identifier, rather than by individual generic NDC. This, in turn, ensures that Weis Markets is transitioning smoothly to the generic NDCs within a GPI with the best availability and pricing, and ensuring that they're delivered to the right locations. "It's a key way for us to be nimble in our ordering," says Seipp. "It's so important to take a dynamic approach to how you stock NDCs — especially these days, since formularies vary so much across our locations and change so frequently."

Advanced algorithms come into play with generics at Osborn Drugs as well. The pharmacies have their own generic warehouse,

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and contract every year for committed generic purchase volumes from Osborn Drugs' primary wholesaler, McKesson. As such, it's important for store orders for generics to be fulfilled both to make best use of the Osborn Drugs warehouse and to ensure that it meets its committed purchases requirements."We send each store order to OrderInsite every day," says Bill Osborn. "They look at these and use the logic that we give them to determine where the generics come from." If it's a product that Osborn Drugs warehouses, then that has priority. If the warehouse is out of stock, then the order goes to McKesson. And the algorithms are also reviewing whether McKesson has a significantly less expensive generic in stock that's preferable to the contracted item. "This process has increased dramatically our compliance with our committed purchases while improving our warehouse utilization at the same time," says Osborn.

Managing Cash, Managing Risk

Using software analytics to run inventory management frees up not just cash, but time as well. Weis Markets staff are focusing less now on the nuts and bolts of inventory and more on the practice of pharmacy through clinical opportunities, immunizations, medication therapy management, and more. "We're not having to make decisions on inventory or trying to coordinate all our locations throughout the day." says Seipp. "We've got the confidence to let SupplyLogix run things on the whole, with the need for only targeted input from our staff."

But let's not forget that cash. Healthy cash flow is the lifeblood of a business. The cash that George Fotis was able to free up from inventory was incredibly valuable to him as a new owner. He reports seeing his cash flow improve immediately, and subsequently reinvested in his pharmacy by purchasing a lot of needed technology. "I bought an RxSafe, a few Eyecons, and we brought in PioneerRx as our new pharmacy management system," he says. "Essentially, all that extra inventory turned out to be the cash we really needed to put back into the pharmacy to bring it up to date." That's an example for any pharmacist on an ownership path and any pharmacy looking for the resources to make its strategic goals possible.

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Tallying Up

Getting your inventory rightsized and under control is not an impossible task. It just takes the right tools, and the payoff is impressive when you tally it up. "Inventory is down 41% since I started using analytics in February of 2017," says George Fotis. "Our turns improved by 51%. So to me there's no question that you have to bring analytics in if you want results. People will say, 'I can do this on my own,' butyou just can't achieve the same level of sophistication and keep up with the ongoing effort required."

To Bill Osborn, getting an inventory analytics package into your pharmacy technology suite is the next level. "We are more efficient in getting our patients the medications they need, and that's helping them be more compliant," he says. "In addition to that, we've freed up truly significant dollars in inventory capital for our pharmacies to use in different ways. So the ability to work with our inventory data this way has already made a huge impact. I think there are going to be more and more ways that it will benefit us and our patients as we go forward, because we're going to be able to see opportunities that, frankly, we haven't even thought of yet."

Getting your inventory rightsized and under control is not an impossible task. It just takes the right tools, and the payoff is impressive when you tally it up.

Rick Seipp concurs that finding the right inventory management partner is the way to create the correct inventory level, by absorbing the information provided and allowing you to make a difference for pharmacy operations and for your patients. "I will say that getting a handle on our inventory has been a big part, very frankly, of Weis Markets pharmacies being able to go from 118 locations eight years ago to 146 now," he says. "It's allowed us to have our capital invested in the right places, to have the right inventory, and to service our patients the right way." **CT**

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Miscellaneous Things to Ponder: Hospitals, Anxiety, and Amazon

George Pennebaker, Pharm.D.

HOSPITALS (PATIENT'S VIEW)

In the last few weeks I have spent time in a couple of hospitals. Once for me and a couple of times accompanying others who needed help understanding hospital-English words, phrases, and abbreviations. While there, I observed.

The main observation was that all of the professional staff and just about all of the nonprofessional staff knew and acted in a manner respecting the patient and making sure that all of the patient's needs were met. Every issue was addressed. Every question was answered. All of the ancillary services (labs, EKGs, scans of one type or another) were easily scheduled and had as few problems as possible.

One of the primary reasons for things being so well managed is that the professional staff waltzed in with a computer mounted on a rolling platform. It gave them full access to the patient's information and enabled real-time entries on the chart. Orders could be added, observations recorded, and any other important information entered in real time.

Hospital gowns: They still tie in the back. It is awkward for patients, physicians, and nurses. Patients are walking in the corridors holding their IV pole in one hand and the back of their gown with the other, hoping they are staying decent. I asked Google why gowns are still tied in the back and received answers that were far from satisfactory. (Most answers were of the "that's the way we have always done it" variety.) Someone needs to design a better gown and have that design standardized so it gets used in every hospital.

Sleep interruptions: Just when the patient gets comfortable and starts getting a good night's sleep; someone pops in to do something. Most of those somethings can be done at some other time (e.g., emptying the trash) or done automatically (e.g, blood pressure readings). I understand that a patient needs observation, but it still seems to be a bit too much at times.

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Today's news cycle is no longer cyclical. It is continuous. It goes on 24 hours a day, seven days a week, for 52 weeks a year. We used to get news once a day, from newspapers or evening TV. Now your "phone" or the radio is constantly streaming it to you.

That was creating stress for me. I strongly felt that I needed to know what was going on. However, I was getting into a sort of constantly worried, depressed state. I went to my bookshelves searching for something to occupy my mind more pleasantly.

I discovered Sir Arthur Conan Doyle. *The Adventures of Sherlock Holmes* is a book full of stress relief. Read one or two of those excellently crafted stories to put your mind in a better place. (Sometimes it takes three.) The stories are complicated and demand your concentration. They are also fun, set in the fantasy world of England more than a century ago.

Put a copy of *The Adventures of Sherlock Holmes* next to your comfy chair. Read it prn. It has helped to put my life back to normal. Get a copy from Amazon for $18.72. Or go to your local bookstore — if you still have one.

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Amazon now has a prescription delivery service. !! Code Orange: Anxiety Alert!!

(Have your copy of Sherlock Holmes ready to read after this one.)

Jeff Bezos recently bought (for $1 billion) a mail-order pharmacy service that has some interesting packaging systems that are a bit difficult to replicate in a retail pharmacy setting. We all know that Amazon knows how to get stuff to you accurately and quickly. Just ask my wife and our UPS driver, Tony, who stops here several times a week.

Jeff Bezos does not advertise the new service as an Amazon service. He uses the name of the mail-order pharmacy that he bought (PillPack).

Amazon has already rattled, shook up, and/or destroyed and replaced product sales and distribution in many industries. Now the whole world of pharmaceuticals, from the manufacturer shipping pallets, to patients swallowing their pills, will change.

I expect that soon PillPack will be nego-

tiating drug prices to determine which products it will favor.

There is an interesting principle to understand. Whenever someone who knows what he or she is doing puts together an enterprise that others will not like (usually because their business will be harmed), the new enterprise will be squeaky clean, very legal, and very difficult to challenge in public or private venues.

I believe that we all have to accept that the prescription drug distribution system at the patient level will change soon and significantly. The only drugs that will be difficult to change will be Schedule II drugs and antibiotics that can't wait until tomorrow. It will be interesting to see what happens to them. Maybe Amazon drones will deliver them to the patient's doorstep.

THE BIG BOTHERSOME SIDE EFFECT

Sometimes side effects can be huge. Patients seldom understand the drugs they are taking. Pharmacists have been in a position to provide that understanding. It used to be "You can't have the pills until you talk to me." The loss of that essential communication will degrade healthcare. It is not replaced with multipage fine-print brochures that rapidly go into the wastebasket. It is not replaced with phone numbers to call "if you have any questions." A face-to-face conversation is the ultimate communication tool.

There is an interesting principle to understand. Whenever someone who knows what he or she is doing puts together an enterprise that others will not like (usually because their business will be harmed), the new enterprise will be squeaky clean, very legal, and very difficult to challenge in public or private venues.

The thing that has to happen is to have pharmacists in places where they can counsel the patient. I believe that a pharmacist needs to be one of the full-time people in the primary care setting. Pharmacists need to be in the physician's office. There are places where this is being tried, developed, and made permanent. It is working.

All of the above is anxiety inducing. Grab your copy of *Sherlock Holmes*. Stave off the orange alert. **CT**

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Partnering to Educate Future Pharmacists

Brent I. Fox
Pharm.D., Ph.D.

Joshua C. Hollingsworth
Pharm.D., Ph.D.

WE BOTH HAVE YOUNG CHILDREN. In the months leading up to their arrival, well-intentioned family and friends generously shared their advice and the experiences they'd had with their own children. They wanted to help prepare us for the change that we were about to experience. Those of you with children know very well that nothing can prepare you for their arrival: It is the most exciting and frightening event in your life.

We are also both pharmacists and educators of tomorrow's healthcare professionals. Neither of us entered pharmacy school with the plan of (or even the remotest interest in) becoming educators. But, as Bill Felkey once said in reference to an old Yiddish adage, "People plan and God smiles." We had plans for our futures, but other opportunities presented themselves. And here we are today doing our part to help prepare future healthcare providers for their careers.

Maybe it is a result of our role as educators, but we find ourselves seizing on countless teaching opportunities with our children each day. Certainly, we want to help mold them into individuals who provide valuable contributions to society. We believe parents have a responsibility to guide their children in how to value others (and themselves) and to treat others how they would like to be treated. These are common norms in our society. But are we going too far when we delve into the intricacies of the Saffir-Simpson Hurricane Wind Scale with a 3-year-old? Or, when an episode of Vampirina (a children's cartoon) leads to a discussion of the Electoral College? Maybe it is simply the educators in us.

THE OPPORTUNITY

Did you know that you have an opportunity to provide a pivotal role as an educator of tomorrow's pharmacists? Every pharmacist and pharmacy technician who reads *ComputerTalk* has an opportunity to help prepare today's pharmacy students for the careers they will soon enter. Exactly what are we referring to? A little more than a decade ago, two papers that examined the current state of pharmacy informatics education in U.S. schools of pharmacy were published. A ten-year follow-up to one of those papers was published this year (see link in box below). The papers found that approximately one-third of pharmacy schools provide informatics education, both a decade ago and currently. While a dissection of the exact informatics topics that are taught will likely reveal substantial differences across schools of pharmacy, the take-home message of some 60% of schools not providing informatics education is important.

It is important for three critical reasons. First, our accreditation standards dictate that we teach the materials. Second, the Institute of Medicine has indicated that informatics should be a core pillar of health professions education due to its role in practice. Third, can you envision a pharmacy setting that is NOT supported by some form of information technology? Some will argue that informatics and information technology are distinctly different fields. However, in the world of pharmacy practice (regardless of the setting), these terms are intricately related. Informatics is the optimal use of information for decision-making. Information technology is the platform that enables how we use information.

So, where do you come in? This is where our seemingly irrelevant discussion of taking advantage of teaching opportunities comes into focus. Does your pharmacy provide rotation experiences for pharmacy students, or shadowing experiences for high school students? If not, we encourage you to provide these opportunities. One of the most challenging aspects of teaching

The State of Pharmacy Informatics Education in the United States

The *American Journal of Pharmaceutical Education* found in a 10-year follow-up study that little progress has been made to increase the importance of informatics in pharmacy schools. Read the entire study here:

https://www.ajpe.org/doi/pdf/10.5688/ajpe6332

informatics-related topics in an academic setting is having access to the systems that students will encounter in practice. This is where your position in a pharmacy provides a distinct advantage: You have access to the systems, providing real-world teaching opportunities.

REAL-LIFE EXPERIENCE

We have found that we are most successful teaching these topics when we contextualize them in the medication use process. This allows students to consider the systems that are used as a medication travels from the pharmacy shelf to the patient, initiated by the creation of a prescription. We will begin with prescribing. Teaching opportunities related to prescribing can focus on the role of the clinical decision support system (CDSS) for prescribers and pharmacists. Which CDSS modules are active in your pharmacy system? Do prescribers optimally use their CDSS? Data vendors have more than 20 different CDSS modules. How did your pharmacy decide which modules to activate? Also, what was the decision process for deciding the thresholds that must be met before an alert fires? A teaching opportunity related to prescribing would be incomplete if e-prescribing was not discussed. Depending on your comfort level, a discussion of standards would be appropriate here (e.g., NCPDP SCRIPT). What challenges do you face with e-prescribing? It is likely that some prescriptions do not come into your pharmacy management system perfectly. How do you normally address these situations? An additional, timely topic is the role of e-prescribing in preventing drug diversion.

This is where pharmacists provide a distinct advantage: You have access to the systems, providing real-world teaching opportunities.

Once perfected by pharmacy staff, prescriptions are dispensed. There is a vast array of technology involved in dispensing medications in the community setting. These technologies primarily focus on solid oral dosage forms because they represent the majority of prescriptions that leave the pharmacy. Students benefit by seeing these technologies in action, ranging from countertop counting systems to robots that count, pour, label, and cap complete prescriptions. What benefits do these systems offer the pharmacy? What challenges are associated with these systems? A critical discussion can occur around the ways these systems help minimize errors and adverse events. These systems are not perfect, so it would also be important to talk about how they may inadvertently automate errors.

The patient and medication then leave the pharmacy. The dedicated infrastructure for monitoring patients' response to medications is quite different in hospitals from that in the community. This does not mean that patients in the community cannot be monitored. This is actually an exciting area of development as patients are adopting consumer electronic devices that monitor clinical measures that can indicate response to medications (e.g., blood pressure, blood glucose, asthma control, etc.). As you know, the challenge with patients collecting this data in their daily lives is integrating the data into existing clinical systems, like those in the pharmacy. This reality provides a great opportunity to discuss the challenges (access, validity, timeliness, etc.) of using patient-generated data. Additionally, the larger challenge that pharmacy faces in terms of bidirectional, real-time data sharing with other providers' systems should be discussed.

We have found that the *ComputerTalk Buyers Guide* (https://www.computertalk.com/buyers-guide) is a useful resource in our teaching efforts related to informatics and health information technology in the pharmacy. A quick glance at the lists in the *Buyers Guide* will reveal that there are many more topics that can be discussed with students. Here, we focused on the topics to which students most easily relate. We are interested in hearing about your experiences teaching students about these topics. **CT**

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In the Works: Major Change to the NDC Number

Marsha K. Millonig
B.Pharm., M.B.A.

IT MAY NOT BE EXCITING

or cutting-edge except to those of us in information technology, but the pharmaceutical supply chain and pharmacy profession's operations are tied to an infrastructure that depends on a 10- or 11-digit number, the National Drug Code, or NDC number. Nearly every step in the pharmaceutical product manufacturing, distribution, and pharmacy operation uses the NDC code. And the Food and Drug Administration (FDA) is running out of NDC numbers, requiring a look at how the code is structured. Nearly every system will be impacted. It is like the Y2K for pharmacy.

Let's take a quick review of what the NDC is, and how it is structured and used. Drug products are identified and reported using this unique, three-segment number NDC, which is a universal product identifier for human drugs. The three segments of the NDC identify the following:

- The labeler
- The product
- The commercial package size

The NDC number's first set of digits identifies the labeler (manufacturer, re-packager, or distributer). The second set of digits is the product code, which identifies the strength, dosage form, and drug formulation for a specific company. The third set of digits is the package code, which identifies package sizes and types. The FDA assigns the labeler code, while the company assigns the product and package codes.

The NDC was designed as 10-digit number that contains the three segments just noted. The NDC will be in one of the following configurations:

- 4-4-2; for example, 1234-5678-90
- 5-3-2; for example, 12345-678-90
- 5-4-1; for example, 12345-6789-0

Since the NDC is limited to 10 digits, a firm with a five-digit labeler code must choose between a three-digit product code and two-digit package code, or a four-digit product code and one-digit package code. Because the number may be in three different formats, it conflicts with the Health Insurance Portability and Accountability Act (HIPAA), which calls for an 11-digit NDC. One of the major goals of HIPAA was to enforce health information standards. As a result, many systems that used NDC numbers would add a leading zero to the shortest code segment, creating a de facto 11-digit NDC number. The FDA notes that since a zero can be a valid digit in the NDC, confusion may result when trying to reconstitute the NDC back to the FDA 10-digit standard format. For example: 12345-0678-09 (11 digits) could be 12345-678-09 or 12345-0678-9, depending on the firm's configuration.

USE OF THE NDC

NDC numbers are used on a widespread basis. Prescribing, dispensing, reimbursement, safety, clinical management, supply chain management, pharmaceutical manufacturing, and labeling, among other systems, are all dependent on the use of the NDC number (see box on next page). No doubt you can think of many more than I have listed here. A significant issue with many legacy systems that predate the NDC number "shortage" issues is that these systems were hard-coded for the 11-digit format — one reason it was the standard chosen in HIPAA. Hard-coding is the software development practice of embedding data directly into the source code of a program or other executable object, as opposed to obtaining the data from external sources or generating it at runtime. Hard-coded data typically can only be modified by editing the source code. Data that is hard-coded usually represents unchanging pieces of information. Well, not in the NDC number's case any longer.

THE NDC SHORTAGE

The FDA has said that within the next 15 years the NDC format will have to be changed to accommodate longer numbers because of the increase in new labelers entering the United States market and the fact that the FDA is running out of five-digit labeler codes. The five-digit labeler code format provides the FDA with 90,000 labeler codes, and the agency anticipates running out in 15 years. In a 2016 notice, the FDA stated when that when this happens it will begin assigning 6-digit labeler codes. As a result, the agency will be adding two 11-digit formats to the NDC arsenal (6-3-2 and 6-4-1). The FDA has acknowledged that some

stakeholders have promoted the idea of a single, standard NDC format during the comment period on that rule. (To view the rule, "Requirements for Foreign and Domestic Establishment Registration and Listing for Human Drugs, Including Drugs That Are Regulated Under a Biologics License Application, and Animal Drugs," see https://www.federalregister.gov/documents/2016/08/31/2016-20471/requirements-for-foreign-and-domestic-establishment-registration-and-listing-for-human-drugs.)

THE FDA IS LISTENING

The FDA is beginning the long process of seeking input on the NDC number's future format. It held a hearing on Nov. 5, 2018. Public comments are being sought through Jan. 5, 2019. The agency published the notice, "Future Format of the National Drug Code; Public Hearing; Request for Comments" in the Aug. 7, 2018, *Federal Register*, which can be accessed at https://www.federalregister.gov/documents/2018/08/07/2018-16807/future-format-of-the-national-drug-code-public-hearing-request-for-comments.

The hearing's purpose is to obtain and discuss stakeholder feedback on the future format of the NDC number. The FDA is seeking feedback on the following topics:

- The impact of transitioning from a five-digit labeler code to a six-digit labeler code, including the business, economic, information technology, and medical/clinical practice impacts, and its impact on the safety and security of drug products.
- Issues associated with the current lack of NDC uniformity in the marketplace.
- What should the FDA consider as it explores any further changes or expansion to the format or length of the NDC?
- How to best transition to a new format for the NDC.

They have focused questions for those who testify and provide comments, including:

- How would you describe your business or area of focus (e.g., payer, hospital, healthcare practitioner, benefit manager or administrator, pharmacy, manufacturer, re-packager, wholesale distributor, third-party logistics provider, drug compendium, standard-setting organization, or government entity)?
- How do you or your members use the NDC?
- What challenges does your organization or do your members face with the current NDC, and how do you overcome these challenges?
- What changes, if any, would you or your members need to make to your systems to accommodate the six-digit labeler code formats?

The areas that use and rely on the NDC:

- NDC assignment to a new drug product and its appearance on the product's label.
- FDA product approval systems and the NDC product directory.
- Pharmaceutical distribution systems.
- All item-level databases that drive other health information systems.
- Any drug information or clinical information system.
- E-prescribing platforms.
- Pharmacy dispensing/workflow systems and related labeling provided to the consumer.
- Pharmacy inventory systems and shelf-placement methods.
- Immunization and other product registries.
- Prescription drug monitoring programs.
- Medication error-reporting systems, including the FDA and the private sector.
- Returned-goods systems.

The move toward a different NDC format will impact nearly every system touching healthcare where medication use happens. The enormity of this activity during the next decade and beyond cannot be understated. It may take that much time and longer to update and recode systems to manage the new format. It could indeed be even bigger than the preparation for the Year 2000. I encourage you to think through the implications for your company and the organizations you are integrated with, both up and down the vertical channel **CT**

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Predictions for 2019

Don Dietz
R.Ph., M.S.

Melissa Krause
Pharm.D.

AS PART OF MANY CONSULTING

AS PART OF MANY CONSULTING projects, we are often asked to predict a future environment and its impact on our clients. As we analyze market conditions, we have a few prognostications for 2019. A few themes are going to impact pharmacy in 2019. These are that pharmacies will continue to gain ground as healthcare destinations, including the expansion of immunizations administered by pharmacists; managing at-risk opioid patients; and continued market consolidation.

Some have projected a slowdown in the growth of specialty drug costs, partly in response to pressure on manufacturers to limit price increases. However, speaking from a holistic standpoint, specialty pharmacy growth is on track to continue in 2019, due to specialty products comprising the majority of new drug approvals and an increased focus on rare diseases. Specialty pharmacy is an area unto itself; however, that we will discuss further in a future column.

We've previously advocated for the possibility of bifurcating the pharmacy profession into two roles — dispensing pharmacists and clinical pharmacists. However, all pharmacies will need to focus on expanding the clinical services they offer to remain competitive, and we see more of this happening in 2019. We also see the growing supply of pharmacy graduates leading to a competitive job market and stagnant salaries.

RETAIL PHARMACY AS HEALTHCARE DESTINATION

The major chains will continue to look at potential synergies in offering additional healthcare services such as helping to identify patient health needs and appropriate levels of care. For example, Walgreens announced in October of this year that it is expanding its partnership with LabCorp to open at least 600 "patient service centers" inside Walgreens locations over the next four years. These sites offer specimen collection services for testing that is performed at LabCorp's regional and specialty labs. Some Walgreens locations are also adding urgent care centers through partnerships with UnitedHealth Group and MedExpress.

Now that the CVS acquisition of Aetna has been approved, expect the new organization to focus on the CVS retail pharmacies and MinuteClinic locations in becoming primary treatment locations to improve patient access to primary care and eliminate wait time for a physician appointment.

Walmart has demonstrated an increased emphasis on healthcare as well, as it is the company's second-largest employee expense, after wages. Through its partnership with Humana, we expect Walmart to become increasingly focused on healthcare services in its stores. While its employees and families will be the initial target audience, we anticipate that this will rapidly expand to its customers, with parallel benefits of expanding store visits and spending.

IMMUNIZATIONS BEYOND FLU

Immunizations administered by pharmacists have been growing for several years and expanding beyond flu shots. The demand for shingles, pneumonia, and travel-related vaccines will likely continue to grow as patients see pharmacists as healthcare providers. Recent updates to the recommendations for vaccines such as HPV may further expand the patient pool for vaccines that pharmacists can administer at reasonable reimbursement rates.

OPIOID RISK MANAGEMENT

One area of emerging opportunity for pharmacists is to get involved in the opioid crisis by helping to identify and triage at-risk patients. As a public health initiative, pharmacists can help screen patients. In Virginia, pharmacists are conducting SBIRT (screening, brief intervention, and referral to treatment) and getting reimbursed for the service by Virginia Medicaid. This provides a valuable service to the community while expanding the role of the pharmacist and allowing patients to see more ways that pharmacists can help improve their health. Other states will likely look to Virginia as a model of expanding the pharmacist's role in public health.

On the dispensing side, there are concerns

about suspicious ordering systems that can lead to a cutoff of opioid products for legitimate orders. It is fundamental for distributors to take reasonable and appropriate measures to understand the normal transactions typically conducted by their customers and identify any transactions that are suspicious in nature. For example, if a pharmacy typically orders one bottle of a particular controlled substance per week, and the distributor notices an exponential increase in the ordering of this substance, further steps may need to be taken to ensure appropriate use. We see more efforts made in 2019 to address this problem, but the industry would be well served if the DEA (Drug Enforcement Administration) issued guidance in this area.

We also see the expansion of mandated e-prescribing of controlled substances and the increased focus on using PDMP (prescription drug monitoring program) data (both registering and checking before dispensing), as a means to identify fraudulent and/or potential abuse. With prescribers now legislated to use e-prescribing for Medicare Part D controlled substances, this process could flow over to all prescriptions.

The Pharmacy Quality Alliance's Opioid core Measure Set will bring increased focus on opioid management, specifically in the areas of concurrent use of opioids and benzodiazepines (COB); use of opioids at high dosage in persons without Cancer (OHD); use of opioids from multiple providers in persons without cancer (OMP); and use of opioids at high dosage and from multiple providers in persons without cancer (OHDMP).

All pharmacies will need to focus on expanding the clinical services they offer to remain competitive, and we see more of this happening in 2019.

CONSOLIDATION CONTINUES

In 2018, we saw Fred's, based in Tennessee, sell 185 of its pharmacy files to Walgreens, leaving Fred's operating 600 stores, but only 162 with pharmacies. The path to success for the remaining Fred's pharmacy locations is unclear, and they may be divested at a later date.

We expect the remaining Kmart pharmacy locations will close, as mounting debt offers no other path to survival and creditors have run out of patience for a turnaround. In most pharmacy closures, prescription files are bought and moved to a nearby location of the purchasing entity, reducing the number of retail pharmacy locations.

We'll continue to see more of the same when it comes to reimbursement rate pressure, staffing personnel in pharmacies, and the need to optimize operations to stay efficient. Rates will continue to trend downward, particularly as consolidation continues with the payer side of the equation, such as with Cigna/Express Scripts and Walmart/Humana. This will lead supermarket pharmacy operators to scrutinize marginal pharmacy locations and likely close unprofitable pharmacies. Management will also evaluate whether or not to include a pharmacy in a new store's footprint.

There is some good news for pharmacy, though. We are hearing that the CVS/Aetna deal is the virtual end of the stand-alone PBM (pharmacy benefit manager) model. Moves to shared-risk models like this may help align incentives to control overall healthcare costs, even though prescription utilization may rise to help achieve that control.

FINAL OBSERVATIONS

We anticipate a strong economy continuing in 2019, with prescription volume growing slightly (in the low single digits), once we account for the increasing number of 90-day supplies at retail. Pharmacies should expect continued margin pressure from PBMs, with little relief from their suppliers on the purchasing side. Pharmacy chains will look at all levels of cost containment — from reduced hours to tactics in managing labor costs (such as improving the pharmacist/technician ratio), and possible pharmacist wage reductions in competitive markets. From a technology perspective, pharmacy owners will consider investments that improve workflow efficiency, improve patient compliance, and reduce labor costs. **CT**

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NCPA 2018 Annual Convention

More photos available online: wp.me/p9LtTd-1p3

The National Community Pharmacists Association held its 2018 Annual Convention in Boston, Mass. For news from the convention, visit www.computertalk.com/tag/2018-ncpa-convention/. Also, check for session slides and other resources at convention.ncpanet.org/program/.

From left, Liberty Software's Jeremy Manchester, Sherri Pickens, and Vince Leonard, with Jared Caldwell and Max Caldwell from Caldwell Discount Drug Co.

Rx30/Computer-Rx's Kimberley Carroll with Timothy Lehan from Lehan Drugs.

Barry Feely from Medicine Man North Pharmacy at the ScriptPro booth with Brendan Berko.

Nick Sawhney, second from left, from Sawhney Pharma with BestRx Pharmacy Software's Stephen Barnes, left, Hemal Desai, and Vikas Desai, right.

From left, attendee Tim Garofalo with Datarithm's Dave Belinski, Dan Sullivan, and Jennifer Wilcox.

TCGRx's Heather Martin in conversation with attendees.

From left, SoftWriters' Greg Clarke, Tiffany Kidwill, Dan Kennedy, and Bri Jenko, far right, with Darrin Silbaugh from Harrisburg Pharmacy, second from right.

Micro Merchant Systems' Sheila Dewalt, second from right, listens to questions.

Joe Ferullo from MCPHS University with PioneerRx's Gina Groves.

From left, QS/1's Dennis Antici, Randy Burnett, and Mario Oliver, with Riverside Family Pharmacy's Katie Bauer.

PharmSaver's Phillip Idziak, left, with Joseph Chammas from Sudbury Pharmacy.

IQVIA's Miranda Rochol and A.J. Lipka.

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- Next-Generation Data Metrics for Pharmacy Comparisons
- Drug Prior-Authorization Trends and Responsibilities
- IMPACT: Diabetes Prevention
- The Amazon-Berkshire-JPMorgan Health Venture: The Latest
- Legislative Update: What to Expect in 2019
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JIM HRNCIR, Owner, Pharmacist,
Las Colinas Pharmacy

"What I really like about them is if we have something that isn't working for us, we can call them and say what can you guys do to help us do it better."

STACHIA BAXTER, Pharmacy Manager,
Roanoke Pharmacy

"The system is user friendly and because every pharmacy is different, they will customize it to your needs."

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