

# CASE STUDY

## Implementation of Auto Syringe-Filling Technology Improves Pediatric Pharmacy Performance



Automated unit-dose packaging and labeling of oral liquid medications improves efficiencies and patient care in pediatric pharmacy.



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### PRIMARY INTENDED OUTCOME

One big driver behind pharmacy automation is return on investment in the form of time savings, as well as the ability to free up pharmacists and technicians to perform other tasks within the pharmacy. The ultimate priority, of course, is enhanced patient care and safety. When a new product can make a positive impact on these considerations, it warrants attention.

Medical Packaging Inc.'s Auto-Draw® Oral Syringe Filling System is an intuitive, user-friendly tool that is changing the way pharmacies accomplish batch filling of syringes. Combined with the company's companion Auto-Wrap® Syringe Labeling system, the Auto-Draw® provides the ideal oral liquid medication packaging and labeling solution.

### THE CHALLENGE

When it comes to neonates and pediatric patients, one size does not fit all. Dosing is typically based upon the patient's weight and, to a lesser extent, age and/or body surface area. To manage these various dosage requirements, doses are custom tailored and subsequently prepared manually for each patient. This individual repackaging of oral liquid medications tends to be a time-intensive process.

However, there are opportunities to take advantage of clinically accepted, weight-based dosage ranges. There are situations where a given medication may be safely administered based on a weight or age range. In this situation, batching of doses and repackaging in corresponding aliquots is not only financially beneficial (i.e. repurposing individuals to perform other tasks), it is preferred.

For Enrico Ligniti, Pharm.D., Director, Pediatric Pharmacy Service Line for Cohen Children's Medical Center in Queens, New York, utilizing the Auto-Draw® and Auto-Wrap® Oral Syringe Filling Labeling System to batch-fill weight-range-based doses seemed like a potential opportunity for increasing efficiency and improving safety in his pediatric pharmacy.

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## THE AUTO-WRAP® SYRINGE LABELING SYSTEM

*Medical Packaging offers a companion system designed to pair perfectly with the Auto-Draw®. The Auto-Wrap® Syringe Labeling System automates the syringe-labeling process and is compatible with nearly any kind of oral or injectable syringe from ½ mL to 60 mL. It provides all the information that is required on a label and is extremely legible, while still allowing visualization of the amount drawn in the syringe.*

### THE DECISION

Most oral liquid medications are manufactured in bulk-sized bottles that must be divided into single-unit doses. Cohen Children's Medical Center is part of Northwell Health's extensive network of 21+ hospitals and provides care for a high volume of patients. "We typically administer 900 to 1,000 oral doses a day," Ligniti said, "and about 70% to 75% of those are either in oral-dose liquid form or solid oral-dosage form. The majority have to be repackaged for use."

Cohen Children's places a significant emphasis on building their clinical informatics technology to reflect formulary decisions in two main areas – the provider order-entry and clinical decision support tools, which offer suggested weight-range dosing and dosage-range checks.

"We created clinical decision support within our clinical informatics environment," said Ligniti. "When a provider goes in to search for a medication, the system will make a recommendation based on patient-specific parameters such as age and weight. When a pharmacist verifies an order, they have the ability to accept a default dosage form or perfect to another one. Embedding age or weight-based dosage range methodology, when clinically appropriate, will allow item perfection to a select group of predetermined items, thus allowing the advantages that come with batching and pre-drawn dosage forms."

Ligniti saw that the Auto-Draw® system could contribute to streamlining the process of adopting standardized weight-range-based doses by more efficiently and reliably preparing syringes ahead of time. Additionally, barcoded labels allow for scanning at the bedside, thus enhancing patient safety at the point of medication administration.

Part of the Auto-Draw's® success is its simplicity. "It's very intuitive," said Ligniti. "Quite frankly, it's taken very little time to train the staff in order to utilize the technology." The Auto-Draw® system features a user-friendly touch screen. Setup involves drawing an empty syringe to the desired graduation mark and then tapping the syringe to the screen; this accurately sets the draw to be repeated for the duration of that filling session.

"Our goal is the provision of exceptional pharmaceutical care to all of our neonatal and pediatric patients," Ligniti said. "Care can only be optimized when we harmonize evidence-based clinical practice standards, informatics, and operational capabilities. [We chose] the Auto-Draw® [because it] is one of those important pieces of equipment that helps us operationalize practice standards and marry them to information technology and patient safety practice expectations."

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Cohen Children's  
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Oral Doses A Day

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## THE RESULTS

The Auto-Draw® technology optimizes care by providing efficiencies in several ways. "We no longer have to spend time [in the pharmacy] drawing up individual doses," Ligniti said. "For select items, we are able to generate and turn around product much more quickly compared to what was previously a slow manual process."

A stock of pre-drawn, pre-labeled doses also enables Cohen Children's to utilize automated dispensing cabinets with greater efficiency. "We can reduce the number of patient-specific doses in patient medication cassettes, which were formerly filled with a day's worth of medications," Ligniti said. "Now, we fill the automated dispensing cabinet once a day with the required amounts of standard doses, thus alleviating some of the cart-fill burden."

In addition to enhanced patient safety, more accurate bill-upon-dispensing functionality is also possible via barcode through the companion Auto-Wrap® Syringe Labeling System. The filled syringes are automatically labeled with barcodes, so the nurse can scan the product at the bedside for product confirmation, which accordingly populates the eMAR and subsequent charge capture.

## THE CONCLUSION

For select items, repurposing of staff members, secondary to implementation of this technology, has resulted in a 25% decrease in preparation time. "In essence, we are able to repurpose some technician time to other departmental needs," Ligniti said, "and that time is now redirected to other responsibilities in the department, which is fiscally beneficial."

Cohen Children's has integrated the Auto-Draw® system, and Ligniti is working toward adopting this technology to benefit Northwell's network of more than 21+ hospitals. "We are in the beginning stages of rolling out the Auto-Draw® system locally," said Ligniti, "and we are also in the process of expanding it to our affiliated system hospitals, where we anticipate seeing similar gains in efficiency across the network."

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# The Perfect Solution

The Auto-Draw<sup>®</sup> Oral Syringe Filling System is an easy-to-use solution that automates batch filling of oral syringes with speed, accuracy and repeatability. The Auto-Wrap<sup>®</sup> Syringe Labeling System automates the process of labeling syringes by producing a printed label and automatically wraps the label around a syringe in one single motion. Whether you use one or both systems, MPI produces high-quality pharmacy packaging products that deliver the ultimate precision and performance for your oral liquid packaging solutions.

Auto-Draw<sup>®</sup> Oral Syringe Filling System works with most brands of oral slip syringes and is capable of filling up to 50mL in volume of varying viscosities. It is ideally used for oral liquid medication doses 1mL or greater.

## Benefits

- Compact footprint
- Easy-to-navigate touchscreen interface
- Automates batch filling of syringes with speed, accuracy, and repeatability
- Works with most brands of oral slip syringes
- Use of inexpensive & disposable tubing makes for easier clean-up between batches
- Minimal amount of disposable materials required
- Cost-effective packaging



Auto-Wrap<sup>®</sup> Syringe Labeling System is an easy-to-use solution that automates the process of labeling syringes. The label design is managed through MPI's Pak-EDGE<sup>™</sup> UD Barcode Labeling Software. Labels are exclusively for use in the Auto-Wrap<sup>®</sup> system and are available in three different sizes.

## Benefits

- Assists in increasing throughput
- Significant time savings - Up to twenty (20) syringes per minute
- Accommodates any type of oral or injectable syringe (½ mL up to 60 mL)
- Open face design allows for easy loading of label stock and access to all controls
- Cost saving - low cost per dose (CPD)
- Reduces the incidence and likelihood of Repetitive Stress Injuries (RSI)



**Pak-EDGE<sup>™</sup> UD**  
Barcode Labeling Software

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