

Illinois hospital improves patient care and staff productivity with Lexmark multifunction printers and routing software. New solution helps hospital print less, save considerable costs on hardware, supplies and maintenance, while improving the medication order management process.

OSF Saint Francis Medical Center speeds up physician medication order fulfillment

The Organization

From its beginnings in a two-story house in 1887, OSF Saint Francis Medical Center today is a major regional healthcare provider serving the 120,000 residents of Peoria, Ill. and the greater north-central region of the state.

With a staff of more than 800 physicians, OSF Saint Francis is a certified Level I trauma center, operates two Life Flight helicopters that transport about 1,600 patients annually and provides major surgical services around the clock. It is also home to Children's Hospital of Illinois, a 127-bed facility that includes world-class neonatal and pediatric intensive care units.

The Challenge

Dedicated to providing quality patient care that is safe, compassionate and caring, OSF Saint Francis is renowned for its high-technology, leading-edge medical services, including robotic surgery and heart, kidney and pancreatic transplants.

But despite all of its technology innovations, the process of writing physician medication orders on pads of paper hadn't changed in nearly a century. As OSF Saint Francis expanded into the major facility it is in today, the organization placed a high priority on eliminating the inefficiencies and potential safety issues inherent with those paper-based medication orders.

"The ultimate goal is quality patient care with a minimum of risk," said Pharmacy Operations Manager Vern Johnson. "It's essential to be 100-percent accurate while still delivering timely care."

In an early attempt to maintain service levels, OSF Saint Francis installed fax machines at its nursing stations and in its central, surgical and intensive care unit pharmacies. Though faxing did eliminate the hospital's practice of delivering physician orders via a pneumatic tube transportation system, new delays appeared.

With Lexmark multifunction devices and Lexmark Document Distributor, OSF Saint Francis today processes more than 50,000 physician order sheets every month, yielding more than 100,000 new medication orders.



—Peoria, Ill.
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"Faxes were not always legible, causing a potential safety issue," said Information Systems Project Manager Mike Pizzuti. "If a pharmacist can't read an order, the physician who wrote the order must be contacted for clarification before it can be filled, and that means more delays."

In fact, faxed documents are prone to speckles and errant lines. These can often show up on faxes as decimal points or dashes which could



OSF Saint Francis Medical Center in Peoria, Ill.

mean the difference between the correct dosage or one that is much too high or much too low.

Other challenges remained. With about 30 nursing stations relaying nearly 1,500 physician order sheets every day, the result of trying to reach the pharmacy fax machines was often a busy signal. Pharmacy personnel manually time stamped each physician order sheet to provide an informal audit trail. The hospital estimates that it took about six to seven minutes to send each physician order sheet and confirm its receipt by the pharmacy.

By implementing this new process, the hospital has eliminated printing physician order sheets in the pharmacy altogether. In one year, the hospital will print nearly 1.5 million fewer pieces of paper, saving valuable budget dollars previously spent on supplies, toner and equipment maintenance.

As faxes piled up, determining which were STAT or pediatric orders required sifting through the entire stack. If pharmacists were not alerted by phone to expect one, a STAT or pediatric drug order might unknowingly be delayed.

A better method was needed. That's when OSF Saint Francis turned to Lexmark.

The Solution

A team of healthcare-industry specialists from Lexmark developed a phased approach that would eliminate faxes and eventually do away with printing altogether, simultaneously reducing costs and improving patient care.

In the first phase, Lexmark replaced the fax machine in each nursing station with a networked multifunction printer (MFP) that provides scan, print, copy and fax capabilities in a single device.

In the pharmacies, a high-performance laser printer was installed and connected to the hospital network. Nurses still scanned physician order sheets, but instead of being sent as a low-quality fax over a telephone connection, a high-resolution image was transmitted through the network and printed in the pharmacy. This eliminated busy signals and confirmation became instantaneous.

To ensure legibility, OSF Saint Francis uses genuine Lexmark supplies in all of its Lexmark printers and MFPs.

"We immediately solved the legibility issue and that saved time and helped improve turnaround," said Pizzuti.

In the next phase, the hospital tackled the challenge of highlighting STAT and pediatric medication orders. Lexmark healthcare industry specialists developed a custom solution, tailored to fit OSF Saint Francis' unique requirements. Color-coded paper was loaded into the printers in the pharmacy. Nurses sent STAT orders using a specific keystroke on the MFP. These would be printed on special colored paper and to a specific printer bin in the pharmacy for easy recognition.

Using the patient's birth date embedded in the barcode, an algorithm was developed to determine the patient's age. All patients younger than 16 years of age have "Pediatric Patient" stamped in the upper left-hand corner of each order sheet.

The hospital estimates that it took about six to seven minutes to send each physician order sheet and confirm its receipt by the pharmacy. It now takes about 10 seconds for each order sheet to be sent successfully to the pharmacy.

In the third and final phase of the transformation, OSF Saint Francis moved to a completely electronic system. The MFP operator panel on each multifunction device was modified to create short cuts in order to differentiate routine and STAT medication orders. Now, when sending a physician order sheet, the nurse simply attaches a bar-coded patient label and touches two buttons in order to correctly route the order sheet to the pharmacy.

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No longer transmitted directly to a pharmacy's printer, the scan is instead routed to a server running Lexmark Document Distributor, a

flexible and easily customized document management and routing application. There, a unique barcode identifier is added and the image saved to an electronic document management system.

The hospital estimates that it now takes about 10 seconds for each order sheet to be sent successfully to the pharmacy. The system also enables pharmacists to manage and document the status of pending orders and automatically keeps a complete history file of all order transactions and documentation.

In addition, the image is routed to the pharmacy, but not to a printer. Instead, it is displayed on a workstation, eliminating the need for printing. STAT orders are displayed in a color-coded, online order queue and are no longer interleaved with normal orders, allowing them to be filled without delay.

“Pharmacists need to be experts on medications, not with computer technology, so it is crucial to have a process that is simple to learn,” said Johnson. “Training was simple and everyone understands this new process.”

Nurses can now view the order queue electronically to check on the status of their specific patient orders. For example, nurses are easily able to see that an order is pending and that the physician has been called to verify dosage. This queue visibility for nurses saves considerable time and prevents interrupting the pharmacist to check on the status of orders.

By implementing this new process, the hospital has eliminated printing physician order sheets in the pharmacy altogether. In one year, the hospital will print nearly 1.5 million fewer pieces of paper, saving valuable budget dollars previously spent on supplies, toner and equipment maintenance.

The new approach has another added benefit. Linked to patient data, Lexmark Document Distributor provides the ability to route orders to remote pharmacies in the ICU and surgery departments. This allows pharmacists in those areas to aid in processing orders during peak or unusually busy periods.

The Results

With Lexmark multifunction devices and Lexmark Document Distributor, OSF Saint Francis today processes more than 50,000 physician order

sheets every month, yielding more than 100,000 new medication orders. High-quality images assure complete accuracy. Productivity at nursing stations and in the pharmacies has improved. All orders are saved and archived electronically. Manual time-stamping of physician orders and follow-up confirmation phone calls are no longer necessary. The potential for errors has been drastically reduced.

By eliminating the need to print each physician order sheet, the hospital uses about 1,100 fewer reams of paper each year, said Johnson. Hardware wear and tear has been reduced and toner consumption slashed.

With all of the Lexmark devices connected to the network, their status can be monitored remotely and usage statistics aggregated into detailed reports.

With this project complete, OSF Saint Francis and Lexmark are not standing still – and neither are hospital staffers.

“Now that we have the ability to uniquely identify and process documents with a barcode, we are looking to put this technology to use elsewhere in the medical center,” said Pizzuti. “Other hospital departments are asking to tap into this powerful solution for additional patient benefits.”

As for working with Lexmark, Pizzuti characterizes the relationship as outstanding. “I’ve been in IT for 20 years and haven’t seen this level of response and cooperation from any other technology vendor, large or small,” he said.

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As OSF Saint Francis continues to grow in size and reputation, its patients can rest assured that their medication orders are filled without delay and without error. Lexmark’s healthcare industry specialists, MFPs and Lexmark Document Distributor software are just what the doctor ordered.