



Duncan Regional Hospital reduces medication error risk with IntelliDOT® BMA™

“Implementation went very, very well... It went so well that we brought the rest of the departments on in one big bang.”

Roger Neal
CIO
Duncan Regional Hospital

Customer: Duncan Regional Hospital (DRH), one of the premiere Oklahoma hospitals for medical excellence

HIS integration: MEDITECH Magic

Pain point: To better protect patients and improve workflows with a bedside medication administration system

Cure: DRH nurses, pharmacists, and IT experts chose IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA)

Benefits: DRH has decreased potential errors below the national average and reduced drug waste

Since 1977, Duncan Regional Hospital (DRH), Duncan, Oklahoma, has built a state-wide reputation for medical excellence, advanced technology, and nationally recognized levels of patient satisfaction. The 167-bed hospital provides acute care, comprehensive rehabilitation services, home care, hospice, and a full range of healthcare services to the surrounding Stephens County communities.

Like all hospitals, DRH faces the ongoing challenge of managing the medication administration process – getting the right medication to the right patient at the right time, screening for allergy and drug interactions, and documenting administration accurately and consistently.

“One of the reasons we started looking for a bedside medication administration system was to better protect our patients and provide a safer environment,” says Roger Neal, Chief Information Officer at Duncan Regional. “We also wanted to provide back-up to our nurses who administer the drugs, as well as help the pharmacy streamline notification of discontinued orders.”

With the hospital’s existing system, pharmacists had to fax discontinued orders to multiple floors, where the fax could possibly be lost or misplaced. *“Streamlining this process to provide a safer environment for our patients was our main goal,”* Neal says.



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“It’s not that we had catastrophic issues,” Neal continues. “But we’re not naive enough to think that we were doing things perfectly all the time. Although we didn’t have a way to track it, we were probably at the national average of potential medication errors. We wanted to do everything we could to lower that number.”

Streamlining nursing workflow

“The nursing staff at DRH knew that they needed a better way of managing medication administration at the bedside. At the same time, the pharmacy staff asked us to start investigating the different medication administration systems,” says Neal. “They wanted something to make their jobs and the nurses’ jobs easier and provide better, safer patient care.”

To find the right barcode point-of-care (BPOC) system for DRH, Neal put together a steering committee consisting of representatives from nursing, pharmacy, and IT. They made a lengthy list of system requirements: integration with the MEDITECH Magic HIS; compatibility with Oracle, SQL, and other core systems; compatibility with main hardware partners, HP and Dell; and the ability to provide a technology roadmap to ensure that the system could evolve to meet future needs. DRH also wanted flexibility in the type of barcodes the system could scan, not only on patient wristbands, but also on the drugs in the pharmacy.

After a comprehensive evaluation of BPOC systems against DRH’s requirements, the committee regrouped and selected IntelliDOT Bedside Medication Administration. *“The number-one advantage that we liked about the IntelliDOT System was the device itself,” Neal says. “The CAREt® handheld is really small and light. The nurses liked it and thought they could easily carry it around all day. Also, the device seemed very intuitive and easy to use.”*

Seamless integration with Pyxis

IntelliDOT also ranked number one with the pharmacists. They liked the ease with which they could simply scan to reorder missing medication and how CAREt integrated smoothly with the Pyxis Med Cabinets, which the hospital had been using for many years.

“Integration with the Pyxis workflow made it pretty much seamless for the pharmacists,” Neal says. “They didn’t have to make a lot of workflow compromises to make it work. IntelliDOT really fit into the normal pharmacy workflow, so that ranked at the top for them.”

IntelliDOT was also a winner from the IT perspective. *“IntelliDOT really fit our strengths as far as being able to use the wireless network we already had in place,” Neal says. “We could continue to use the same hardware vendors and the backend processes remained the same.”*

“So across the board, IntelliDOT solved our two top challenges,” Neal adds. “It fit our workflows, so we didn’t have to make compromises or major sacrifices to use the product. The CAREt System already did what we needed it to do from day one.”

MEDITECH Magic integration

The DRH committee began its evaluation in January and selected IntelliDOT CAREt in July of the same year. Implementation took place in November, approximately 120 days after selection. The first two units that went live with the CAREt System were DHR’s long-term care facility and its comprehensive rehabilitation department. Today DRH uses CAREt handheld devices hospital-wide for all of its in-patient care.

“Implementation went very, very well,” Neal says. “IntelliDOT did an outstanding job helping us fix any little things

here or there. It went so well that we brought the rest of the departments on in one big bang.”

IntelliDOT CAREt also integrated seamlessly with MEDITECH Magic, the hospital’s existing HIS. The DRH committee also considered MEDITECH BMV, which is designed to work with a computer on wheels (COW) unit. While considered a good product, MEDITECH BMV did not fit the workflow criteria DRH needed for its nursing staff.

“Most hospitals like ours have been around 30-plus years and the rooms are pretty small and not like lavish hotel rooms,” Neal says. “By the time you take in all of the other equipment you need in there to take care of the patient, it’s difficult to get a COW in the room. So we wanted to find something that was smaller and more mobile and IntelliDOT CAREt met that criteria.”

IntelliDOT also worked closely with DRH’s interface vendor and provided good documentation in the form of an HL7 interface specification. DRH sent live pharmacy orders to a test system for about 3-4 months, during which IntelliDOT monitored the orders to ensure that everything was accurate. “IntelliDOT worked really well with our interface vendor to get everything right,” Neal says. “IntelliDOT’s documentation made that part very easy from an IT perspective.”

Outstanding IntelliDOT support

To ensure quick adoptability, IntelliDOT trained super users at DRH and also held training classes for all users.

“When the system went live, we actually had IntelliDOT trainers up on the floors going with the nurses every time they went to administer a medication, looking over their shoulders, answering questions,” Neal says. “We also had people from

the IT department and the super users throughout the facility to ensure that if there were questions there would be immediate backup support. We did that for about a week after the units went live, and everyone was comfortable after that.

“As far as IntelliDOT’s support goes, IntelliDOT is by far our number-one partner in that regard,” Neal adds. “Their tech support team is phenomenal. You can call them 24 hours a day and they’re incredibly responsive. Support is one of the toughest pieces of being a technology company, and IntelliDOT has nailed it.”

Healthy benefits: Improved patient safety and reduced costs

One of the most important benefits to DRH since adopting the IntelliDOT CAREt System is a reduction in the potential risk for medication administration errors. “Since implementing IntelliDOT, we’ve seen a 39 percent reduction in missed doses and that continues to grow daily,” says Neal. “In the last year, IntelliDOT has prevented a number of medication errors that we may not have caught without the system in place.”

In addition to improved patient safety, other business-related benefits include:

- Reduced drug waste
- More accurate billing of medications
- Increased efficiency of medication administration
- Increased nurse productivity

“By using an option on the CAREt System, we can charge the patient’s bill once the nurse scans the drug, so that helps not only in reduced loss of drugs, but also the billing is more accurate,” Neal says. “Our CFO is very supportive of the system, because she can see what





About IntelliDOT

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it is doing in terms of a safety standard. But financially there's a lot of gain that can be made by adding this system as well."

Expanding with CAREt Specimen Collection System

Feedback from CAREt users has been very positive. Neal notes that everybody, from the nurses to the pharmacists and the IT staff, has been very supportive of the system and its hospital-wide adoption. In fact, response to the CAREt System has been so supportive that DRH is adding IntelliDOT Phlebotomy Specimen Collection™. "We're moving beyond the medication administration solution in

CAREt to add the lab specimen product, which works using the same device and lets you work the same way," Neal says. "But now we're also giving that benefit to the phlebotomists, who are now more confident that they're going to draw the right specimens on the right patients.

"Adoption of the IntelliDOT CAREt System has been a very successful project for us," concludes Neal. "I don't think anyone here would say that we should have done it any differently. CAREt is a very good product and we've had a very good experience with it."



Jane Phillips Medical Center creates a “safety culture” with IntelliDOT® BMA™

“The IntelliDOT System is straightforward, does exactly what it says it will do, and does it well.”

Erin Claiborne
Pharmacy Manager
Jane Phillips Medical Center

Customer: Jane Phillips Medical Center (JPMC), a provider of sophisticated and compassionate healthcare services in Oklahoma

HIS integration: Cerner Millennium

Pain point: JPMC did not have a good system in place for preventing medication errors and tracking near misses – posing a big risk to patient safety

Cure: IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA) was an “easy fit” at Jane Phillips Medical Center and was implemented quickly hospital-wide

Benefits: JPMC has reduced serious errors by 100 percent and achieved accurate medication documentation while becoming a safety culture organization

Jane Phillips Medical Center, Bartlesville, Oklahoma, is a 144-bed community hospital delivering sophisticated and compassionate care in the Tulsa-based St. John Health System. A few years ago, JPMC took a proactive step toward improving patient safety with a project to implement a barcode medication administration system.

One key challenge was that the hospital did not have a good system to report how many medication errors were actually occurring. Administrators relied on self-reporting, and they suspected that errors were grossly underreported.

Either employees didn’t want to report their errors or else they simply were not aware that they had made an error. In addition, nurses used handwritten MARs, so medication documentation was not always accurate.

“We didn’t have reliable statistics for medication error rates at our facility, yet we knew errors were occurring based on the national data,” says Marc Rafferty, Pharmacy Informatics Coordinator.

“We accepted the fact that we are like any other hospital in America and we knew we needed to prevent medication administration errors.”



An easy process to choose IntelliDOT

Rafferty and Erin Claiborne, Pharmacy Manager, headed a search for a barcode medication administration system that would not only be effective at preventing medication errors, but first and foremost, easy to use. The selection team knew that ease of use translates into a system that nurses will use comprehensively assuring high compliance. The hospital also wanted a system that could achieve 100 percent scanning compliance and that would improve documentation. Ultimately, JPMC wanted to establish a new safety culture driven by the capabilities of the new barcode system.

Over a three-year period, JPMC reviewed several BMA vendors, including the hospital's HIS provider Cerner. One stood out as the best fit for meeting the goal of preventing medication errors at the bedside: IntelliDOT BMA.

"IntelliDOT stood out because it had a very simple keypad and was one third the weight of some of the other products," Rafferty says. "We liked the single handed operation, either right or left handed. It was an easy process for us to choose IntelliDOT because there wasn't anybody else doing it quite the same way."

A single focus on patient safety

The JPMC pharmacy led the IntelliDOT BMA implementation, which began in April. Representatives from pharmacy, nursing, IT, and IntelliDOT formed an implementation team that met weekly.

"Throughout the meetings we never lost our focus that the goal of this project was to enhance patient safety by preventing medication errors," Claiborne says. "Everyone on the team had a deep understanding and appreciation of that goal."

The hospital's Sixth Tower nursing unit was the first to go live with the IntelliDOT BMA on July 16. Two weeks later, the implementation continued with one or two more nursing units going live every other week with completion in September.

"We met every go-live date," Rafferty says. "The IntelliDOT System worked so well that we were able to bring up the entire hospital in approximately 2 months. I think that's unprecedented. We were very, very pleased with that."

Claiborne also notes that IntelliDOT trained all of the JPMC nurses in two to three-hour sessions that included hands-on training in the nursing units. When each area went live, IntelliDOT was on-site during every shift to answer questions and help with workflow issues. Rafferty also credits the JPMC internal team for working well with IntelliDOT and making the implementation a success.

"IntelliDOT was always on call to support us, even if they weren't in the building. We don't see that level of customer care from anyone else," Rafferty says. "I think IntelliDOT stands alone in that area."

Claiborne agrees. *"Even today, as their clients have grown and their business has grown, you can still call IntelliDOT's customer service line and get a live person to answer the phone," she says.*

A safety culture driven by IntelliDOT

IntelliDOT BMA screens approximately 2,800 medication administrations on a daily basis at JPMC. The pharmacy staff of 8.5 full-time pharmacists and six pharmacy technicians both use and maintain the IntelliDOT system – no additional staff had to be hired. In addition, as part of the project JPMC modified its medication order entry process to ensure that

"IntelliDOT works very well in our setting. We are proof that you don't have to be a big hospital to implement such a critical technology as IntelliDOT."

Marc Rafferty
Informatics Coordinator
Jane Phillips Medical Center

order entry practices were more consistent from pharmacist to pharmacist.

“We’re not a 24-hour pharmacy, but the perception is that you need to be a 24-hour pharmacy to use a barcode medication administration system,” Rafferty says. *“But IntelliDOT works very well in our setting. We are proof that you don’t have to be a big hospital to implement such a critical technology as IntelliDOT.”*

Rafferty and Claiborne are also satisfied with the way the IntelliDOT system’s barcode reader can scan 100 percent of the hospital’s medications.

“I think that’s an important factor that separates IntelliDOT from other systems,” Rafferty says. *“We saw other competing systems struggle to scan some brands during the vendor evaluations.”*

Most of all, JPMC wanted this project to establish a new culture focused strongly on patient safety, especially during the medication administration process. According to Rafferty, the spirit of a safety culture has permeated the entire organization since the IntelliDOT BMA System went live two years ago.

“We’re very proud of this project and we feel that we are a safety culture organization as a result of the IntelliDOT implementation,” Rafferty says.

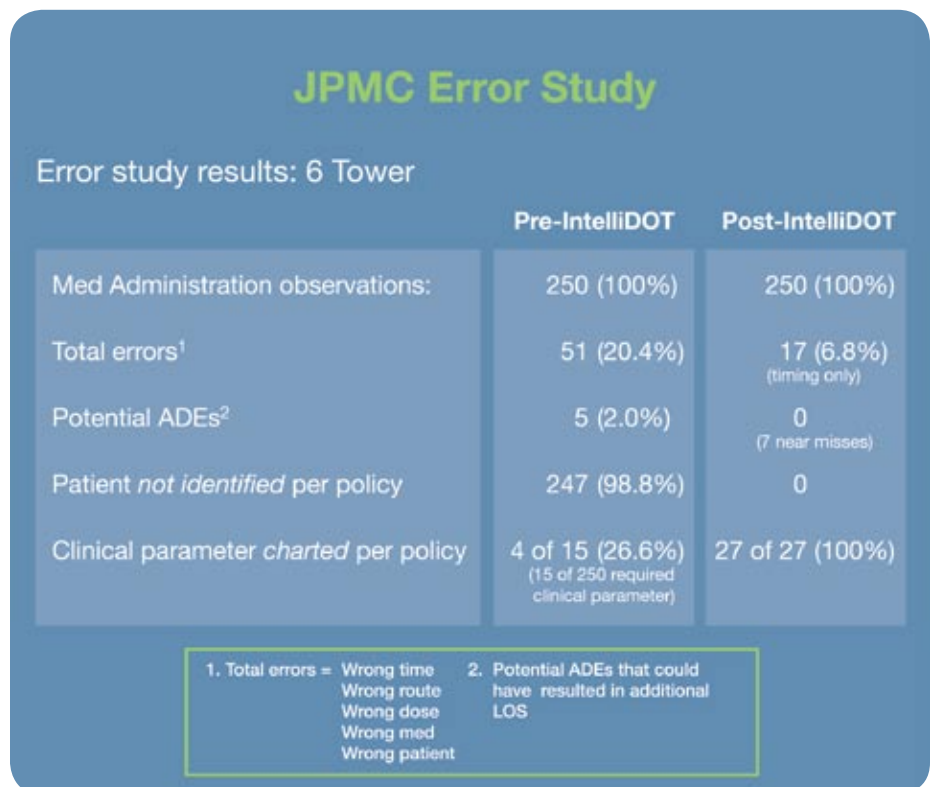
The fact that the IntelliDOT System does not permit workarounds contributes greatly to the safety culture. Rafferty and Claiborne note that they didn’t want a system which allowed workarounds, such as having the same barcodes on both the patient’s wristband and other documents allowing patient barcode scanning to take place away from the bedside. IntelliDOT ensures that the patient ID barcode exists only on the patient’s wristband and cannot be easily reproduced, so nurses must confirm

patient identity by scanning the wristband that the patient is wearing.

“If your vendor doesn’t require that the nurses take the medications to the bedside, and doesn’t require that they scan the patient’s wristband, then they’re not doing barcode medication administration justice and not doing it right,” Rafferty says. *“One of the distinguishing features that we noted when we were comparing systems was that other systems allowed workarounds and IntelliDOT’s didn’t. IntelliDOT has really done its homework in that area and really got that piece right.”*

Benefits that prove an improvement in patient safety

Observations of 250 medication administration procedures before and four months after the implementation prove that JPMC is achieving the benefits of improved patient safety with IntelliDOT. The study showed that medication errors were reduced from 20.4 percent (51-250)





About IntelliDOT

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to 6.8 percent (17-250). The 17 remaining post-implementation errors were timing errors, meaning that the medication was either given early or late as defined by hospital policy. According to Rafferty, this represents a 67 percent reduction in the medication error rate at JPMC. Serious medication errors were reduced from 5 out of 250 in the pre-implementation observations to 0 – a 100 percent reduction.

“With the IntelliDOT system we can track our medication error rate and our near-miss data for the first time,” Rafferty says. *“We can also track compliance by running IntelliDOT’s compliance reports so we can see that IntelliDOT supports consistent scanning at the bedside very well.”*

The post-IntelliDOT observation also showed that IntelliDOT caught 7 near misses out of the 250 post observations. *“In these cases, the IntelliDOT System alerted the nurses that it was a not the correct medication and they stopped at that point,”* Claiborne says. *“Had we not had the alerts of the IntelliDOT system, those seven near misses might have become medication errors with potential harm to the patients.”*

Rafferty says that the near-miss data shows that JPMC is preventing between 10 and 15 serious medication errors per day – an excellent rate considering that JPMC dispenses 2,800 doses of medication per day. *“Near-miss data is some of the best data you can have because it doesn’t reach or harm the patient,”* Rafferty says. *“After IntelliDOT we saw our near-miss data go up, because now we have a system that captures that data in real time. We can actually get an idea of how many errors might have occurred, which wouldn’t be possible without IntelliDOT.”*

In addition, the hospital also saw a remarkable improvement in the documentation of pain scale follow-ups after administering pain medications. Documentation compliance is now 100 percent.

Key benefits include:

- Improved medication documentation
- Ability to capture near-miss data
- Elimination of duplicate doses
- More consistent order entry practices
- No risk of system workarounds

On a number of fronts, IntelliDOT has greatly enhanced and improved medication administration safety at JPMC. *“The IntelliDOT System is straightforward, does exactly what it says it will do, and does it well,”* says Claiborne.



Southwest Mississippi Regional Medical Center improves patient safety with IntelliDOT® BMA™

“I know that CAREt has helped our processes become much more effective, efficient, and safe.”

Katie McKinley
Assistant Administrator
Nursing Services

Customer: Southwest Mississippi Regional Medical Center (SMRMC), an integrated healthcare system providing state-of-the-art services to rural communities

HIS integration: McKesson

Pain point: To find a BPOC system that wouldn't change nurse workflow or allow workarounds that compromised patient safety

Cure: IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA) met requirements for a user friendly system that adapted to existing nurse workflow

Benefits: Using IntelliDOT BMA, SMRMC has increased patient safety and nurse efficiency

Southwest Mississippi Regional Medical Center (SMRMC), McComb, MS, serves 170,000 people in seven rural Mississippi counties and two parishes in eastern Louisiana. As an integrated health system, the 160-bed SMRMC provides comprehensive advanced healthcare services that are comparable to metropolitan areas more than 60 to 100 miles away.

In response to patient safety initiatives by the JCAHO and other national quality groups, SMRMC started looking at barcode point-of-care (BPOC) medication administration safety systems as early as 2000. However, the evaluation

committee made up of nursing, pharmacy, and IT staff rejected each one as being too difficult to use. The nurses said they knew they wouldn't use them.

SMRMC required that the new BPOC system had to be user friendly, adapt to the nurses' existing workflow, and be easily adoptable so that nurses would use it. In December 2005, the committee evaluated several vendors with the latest generation of BPOC solutions. This time they found a system that everyone agreed on and really wanted to use: IntelliDOT BMA, part of the CAREt® System.

“The IntelliDOT staff was here to do all of the training sessions to get us ready to go live at each rollout phase ..”

Katie McKinley
Assistant Administrator
Nursing Services



“When we first discovered the IntelliDOT CAREt System, we had some doubts because it seemed too simple to be true, but after evaluating it further we really liked it,” says Katie McKinley, Assistant Administrator, Nursing Services, SMRMC. *“Many of the other systems we looked at required making changes to the workflow process. Also, other systems had issues with the software that would allow staff to bypass certain procedures or create ‘workarounds’ that could compromise patient safety. That isn’t possible with IntelliDOT.”*

Foundation in the pharmacy

After a pre-implementation study in early 2006 and a pilot trial that summer, SMRMC began implementation of the IntelliDOT CAREt System in the fall, starting with the hospital’s pharmacy.

“We did a lot of ground work in the pharmacy,” McKinley says. *“IntelliDOT sent a pharmacist and a technical person to work with our pharmacy group to get those meds that did not already have barcodes into the barcode system, as well as get everything automated. It was important to have the formulary integrated with the IntelliDOT application so that the medication barcodes in the pharmacy and the nursing unit would match.”*

The CAREt System first rolled out to the post-op surgical unit. From there SMRMC took it hospital-wide with the exception of the OR suites and the ER department. *“We hope to roll out CAREt to the ER by next year,”* McKinley says.

McKinley notes that the implementation was a team effort with IntelliDOT, whose representatives participated in the initial on-site meetings. If reps couldn’t be present, they dialed-in via conference call from wherever they were.

“We had three different teams working on three different aspects for the rollout,” McKinley says. *“In addition to developing timelines for project milestones, one of the teams focused on developing clinical prompts to be built into the CAREt System. These included some triggers and safety features based on certain medications.”*

Integration with the existing McKesson HIS “seemed seamless” according to McKinley. *“Everyone worked together very effectively,”* she says.

During the implementation, IntelliDOT trained 12 nurse “super users,” who were available along with the IntelliDOT technical team to assist the rest of the staff on the day the CAREt System went live. Each hospital staff member also went through a 4-hour training session.

“The IntelliDOT staff was here to do all of the training sessions to get us ready to go live at each rollout phase,” McKinley says. *“The transition was very smooth.”*

“Aha” moments for nurses

The IntelliDOT CAREt System meets all of the hospital’s requirements for a user-friendly BPOC solution that adapts to the nurses’ existing workflow. As McKinley points out, the CAREt handheld unit is very small and lightweight and fits easily in the nurse’s scrub or lab coat pocket. The unit has a simple, point-and-press operation – just hit the OK button to verify information. Nurses can operate the keypad with only one hand, leaving the other hand free during medication administration to assist the patient with their water or juice, or other tasks.

“That used to be a problem when the nurse had to have both hands on the laptop computer,” McKinley says.

“The CAREt System isn’t cumbersome like the computer on wheels system, which is heavy to push and too big to take into our small hospital rooms. Leaving the cart in the hall violates fire safety codes for hospitals, so the CAREt System has helped us eliminate that problem.”

Most importantly, the CAREt System is a solution that nurses at SMRMC actually use. *“Our compliance is a steady 96-97 percent,”* McKinley says. *“As long as we have patient emergencies, we’re going to have a handful of meds that are documented on a computer workstation away from the bedside, and not documented with the CAREt handheld, but I think the compliance rate speaks for itself. Our nurses are using it and using it consistently.”*

“The nurses will tell you that it’s a good feeling to know that when they’re clocking out at day’s end that they gave the right medicines to the right patients,” McKinley adds. *“And that they’re giving them on time, or if they didn’t, at least they could document why.”*

The nurses have had what McKinley calls *“aha”* moments – when they have gone into a patient’s room, scanned the wristband, then scanned the medications, and the CAREt handheld indicates *“no orders found.”* They try again and get the same message.

“That’s a red flag, so they come out of the room and realize that they were in the wrong room,” McKinley explains. *“If the CAREt handheld had not given them that message, they would have given the patient in room 22 that med and documented it on the patient in room 23 and would not have known the difference. These incidents have awakened us to the fact that we are humans and that we’ve probably made mistakes in the past that we’ve never known about.”*

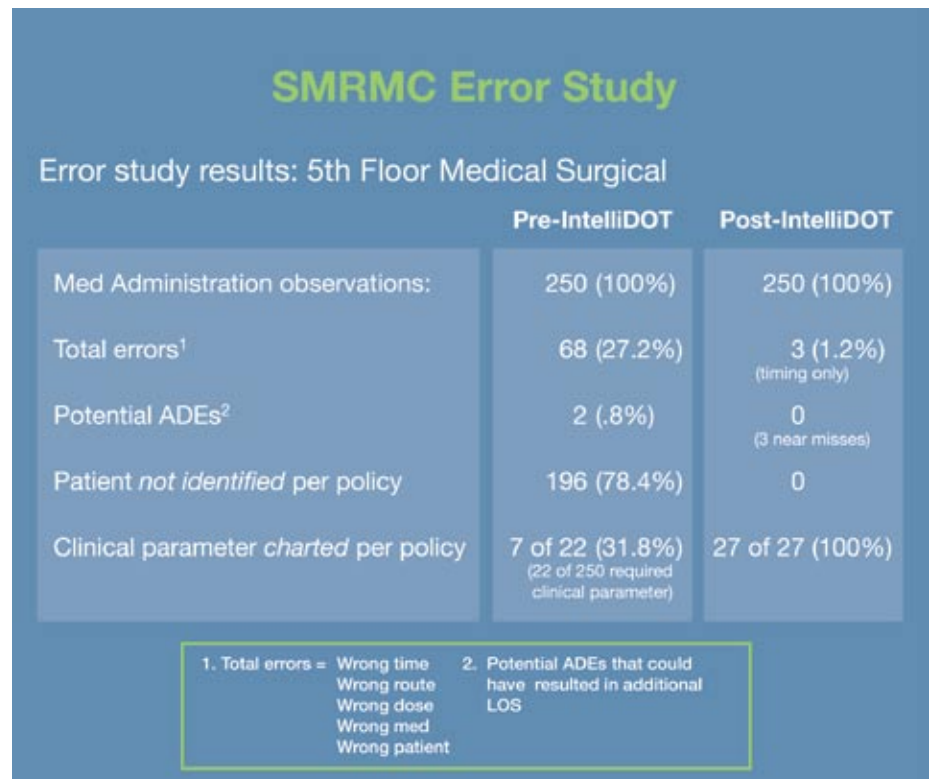
But as patients take a more proactive role in their own healthcare choices – and become more aware of hospital safety issues through highly publicized incidents – they, too are appreciating the extra measure of safety that the CAREt System provides.

“We have actually had patients refuse to take their medications until they get their armband scanned, because they’re accustomed to that now and they recognize that it is a safety feature,” McKinley says.

Benefits of being an “IntelliDOT hospital”

After two years with the IntelliDOT CAREt System, prevention of medical errors continues to be a high priority at SMRMC. The hospital has realized benefits all the way from the pharmacy, to the patient bedside, to the business office.

An observation of 250 medication administration procedures both before





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and after implementation proves that the IntelliDOT CAREt System is making a big difference in reducing the risk of errors at SMRMC. The hospital reduced total errors from 68 (27.2 percent) to 3 (1.2 percent) which were timing-related errors only, and reduced serious errors or potential ADEs from 2 (.8 percent) to 0. Thanks to the alerts in the CAREt System, three near misses on serious errors were caught. In addition, 100 percent of patients are identified by barcode wristbands per hospital policy and JCAHO standards. Clinical charting is also 100 percent compliant.

Other benefits include:

- Nurses spend fewer hours on reconciling medications
- Enhanced communication between nurses and the pharmacy
- Improved accuracy in medication auditing process
- Records are more accurate and auditing is more efficient

McKinley also notes that the CAREt System has resolved a problem with documenting patient reassessment after the administration of pain medication. *"IntelliDOT gave us the option to tie in a trigger to document the patient's response after any narcotic that is administered,"* she says. *"CAREt documents that in real time."*

Overall, the IntelliDOT CAREt System has helped SMRMC achieve a paradigm shift to true accountability at the bedside and a new standard of excellence in patient safety. Based on this success the hospital is considering the addition of the IntelliDOT Blood Product Administration™ and IntelliDOT Vital Signs Collection™ modules.

"The CAREt System has a little computer brain that has a far greater range of applications than what you would think when you first look at the unit," McKinley says. *"And it's designed by nurses, and that's what makes it so user friendly. I know that CAREt has helped our processes become much more effective, efficient, and safe."*



Parkview Medical Center raises the bar for patient safety with IntelliDOT® BMA™ and IntelliDOT PSC™

“ . . . unless you have that very last check at the bedside, there’s no way to really know the number and kind of errors that are occurring.”

Eileen Dennis
CNO
Parkview Medical Center

Customer: Parkview Medical Center, a provider of acute and behavioral health specialty services in Pueblo, Colorado

HIS integration: MEDITECH Magic

Pain point: Parkview wanted to take its process improvements to a higher level and implement them throughout the facility

Cure: Implement IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA) as well as IntelliDOT Phlebotomy Specimen Collection™ (IntelliDOT PSC)

Benefits: Parkview has significantly improved medication administration and reduced adverse drug events (ADEs)

Parkview Medical Center, a 305-bed healthcare organization in Pueblo, Colorado, provides acute healthcare and behavioral health specialty services to the residents of Pueblo County and Southeastern Colorado. Working together on a quality improvement team, the hospital’s department administrators and IT department had made some significant changes and improvements to hospital systems and processes over the years. However, they realized that they had gone as far as they could with the current systems. In 2004, they began to look for new barcode technology for a bedside medication administration system capable of taking Parkview

Medical Center to the next level of efficiency and patient safety.

“We already knew that medication administration is the one area where there is a great deal of risk to patient safety and a great need for improvement,” says Eileen Dennis, CNO at Parkview Medical Center. *“We were aware of the well-documented statistics and we did everything we could to eliminate the risk, but unless you have that very last check at the bedside, there’s no way to really know the number and kind of errors that are occurring.”*

Dennis and the quality team had specific requirements for a barcode point-of-care (BPOC) system and so did the Parkview nurses. They did not want to be tied to computers on wheels (COWs), but many of the solutions at the time were tethered, bulky, and complicated to use. “We wanted something that was more convenient and easy for the nurses to use,” Dennis says. “We thought that a handheld wireless device would be ideal, but we weren’t sure where to go for that.”

The right BPOC system at the right time

Parkview already had a Pyxis medication cabinet system in place, and as synchronicity would have it, one of its contacts at Pyxis had recently joined IntelliDOT. This person happened to contact Dennis about IntelliDOT BMA – just at the right time.

“We had several companies come in to do demonstrations, but IntelliDOT caught everyone’s eye right away because it was wireless, small, and handheld,” Dennis says. *“It didn’t take us much time to know that IntelliDOT was the direction we wanted to go.”*

Parkview Medical Center has the distinction of being the second hospital to adopt the IntelliDOT System. The hospital rolled it out to its first area, the 30-bed ICU step-down unit, in June 2005. Parkview and IntelliDOT continued to work closely together on a phased unit-by-unit implementation until the system was hospital-wide.

Parkview’s Director of ICU Step-Down and Director of Pharmacy co-championed the IntelliDOT project, while Dennis as CNO, represented the administration and provided guidance.

“The director of the ICU step-down unit and the pharmacy director took roles as project leaders,” Dennis says. *“It all felt right, even though we were on the leading edge of this technology. IntelliDOT was a good partner all the way. We knew some of the people from working with them at Pyxis, so we had confidence in them and that made it easier.”*

Like many IntelliDOT users, Parkview based its IntelliDOT System training on a super-user model. IntelliDOT trained several nurses from each 12-hour shift, who then trained their peers in using the IntelliDOT handheld as each of the hospital floors went live. Each nurse also had both classroom training and hands-on training with the IntelliDOT handheld unit.

“IntelliDOT was here on-site with every single floor we rolled out,” Dennis says. *“It was truly a joint effort between IntelliDOT and Parkview. There was never an issue or glitch that they couldn’t work out or fix.”*

Parkview was the first hospital to use IntelliDOT’s “nurse verification” software, enabling nurses to “verify” pharmacy’s interpretation of physician orders. Here’s how it works: When a new order is entered by pharmacy for one of the nurse’s patients, an icon lights up on their handheld. The nurse can go to the nearest workstation and check the pharmacy order entry against the actual written physician order. If the order is correct, the nurse verifies it. If the order is incorrect, the nurse can “quarantine” the order and send a real-time electronic note back to pharmacy, informing pharmacy of the correction and ask for the order to be re-entered. The program has proved to be extremely effective. Studies completed jointly by pharmacy and nursing showed that five pharmacy order entry errors were caught daily using the feature.

“IntelliDOT has been an amazing partner.”

Eileen Dennis
CNO
Parkview Medical Center

Doing the best for patient safety

“Our nurses say that they feel better knowing that they’re doing the right thing for the patients by using the IntelliDOT System,” Dennis says. *“They go home at night knowing that they did the best possible thing they could do for safe medication administration. We’ve had several nurses who went to work somewhere else and came back here and they say they felt naked at the other institution that didn’t have that kind of protection for them.”*

Significant improvement in safe medication delivery

As CNO, Dennis is strict about reporting and does not allow non-compliance when it comes to using the IntelliDOT System. She and her nursing directors review monthly reports and the nurses themselves receive “report cards” to let them know how they’re doing in regard to using the system.

Dennis believes that a hospital’s administrative team is responsible to the patients to ensure that nurses use the IntelliDOT System. *“When you put in any system that is meant to make patient care safer, the administrators must make sure that it is being used and that there are no workarounds,”* Dennis says. *“User compliance is well above 99 percent. The IntelliDOT system really does catch the errors, and you can see that in the number of times that a nurse will cancel out and go back to check the orders.”*

Observations of 250 medication administration procedures both before and after the IntelliDOT implementation at Parkview revealed that the hospital reduced total medication errors from 51 out of the 250 administrations observed in the pre-study, or 20 percent, to 19 out

of 250 or 8 percent in the post-study. The 19 errors post-IntelliDOT involved medication given at the wrong time, since reminders were not activated for certain low acuity medications. Serious errors or ADEs were reduced from 5 out of 250 in the pre-implementation observations to 0 – a 100 percent reduction.

Parkview was also able to achieve 100 percent compliance for identifying patients by barcode to meet its internal policy and Joint Commission standards. The hospital is also 100 percent compliant in charting clinical parameters.

In January 2008, Parkview enhanced its IntelliDOT System with the house-wide implementation of IntelliDOT Phlebotomy Specimen Collection, which assures safe and accurate specimen collection when phlebotomists and nurses draw blood and other specimens at the bedside. The hospital is also considering adding IntelliDOT Vital Signs Collection™ module.

The right thing to do

When asked about return on investment gained from the IntelliDOT System, Dennis speaks to what is more important.

“We haven’t done a lot of work on ROI, because the benefits are obvious if you’re providing safer care or shortening the length of a patient’s stay because a nurse caught a potential error,” Dennis says. *“We could run the numbers, but the larger issue here is that adopting the IntelliDOT System was just the right thing to do for our patients.”*

Doing the right thing has put Parkview in the industry spotlight. In recognition for outstanding contributions to patient safety, Parkview was honored by the Colorado Safety Coalition at the 2007





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Patient Safety Conference for the hospital-wide deployment of the IntelliDOT System.

Dennis credits IntelliDOT for their support and partnership in helping Parkview achieve such honors. *“More than anything, when you install any kind of technology, the partnership you have with the vendor is critical,”* Dennis says. *“IntelliDOT worked well for us and with us. They’re an amazing partner.”*





Carlisle Regional Medical Center eliminates errors and saves time with IntelliDOT® BMA™

“Everyone thought that IntelliDOT was a great choice and we liked the fact that nurses have had a huge input into its design and capabilities.”

Michelle S. Rarick, RPh
Director of Pharmacy
Carlisle Regional Medical Center

- Customer:** Carlisle Regional Medical Center, a comprehensive regional healthcare system in Pennsylvania committed to the delivery of consistent, safe, and high quality care
- HIS integration:** McKesson
- Pain point:** Carlisle Regional’s medication safety team recognized the need to improve processes and decrease errors
- Cure:** Carlisle Regional’s corporate parent, HMA, chose IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA) for its 57-hospital network
- Benefits:** Nurses have eliminated serious errors and pharmacists have saved time with improved MAR documentation

With a rich history of compassionate caregiving dating back to the late 1800s, Carlisle Regional Medical Center, Carlisle, Pennsylvania now boasts a new hospital facility with over 225,000 square feet and 165 beds. Carlisle Regional’s campus includes an acute care hospital, outpatient surgery center, pain management center and cancer center in its continuing commitment to providing excellent care and services.

In 2002, Carlisle Regional formed a medication safety team, whose first project involved creating a flow chart of the medication administration process

– all the way from physician ordering through administration and monitoring.

“We looked at the flow chart to see what medication errors occurred and pinpointed where they occurred in the process,” says Michelle S. Rarick, RPh, Director of Pharmacy at Carlisle Regional Medical Center. *“We found that many of the errors occurred in administration and transcription. Doses were being missed and delivered late. We realized that the only way we could decrease these errors would be to have a barcode point-of-care system in place. You just can’t rely on humans to catch the errors.”*

A nurse-designed solution for 57 hospitals

Rarick and the medication safety team reviewed several barcode point-of-care (BPOC) vendors and approached the hospital's corporate parent, HMA, with their request for a system. HMA launched its own search for a BPOC solution that it would implement not only at Carlisle Regional, but across the entire network of 57 hospitals. In 2004, HMA implemented a Zero Medication Error program. The program included using medication barcoding technology in each hospital. In 2006, HMA signed a contract for IntelliDOT's BMA system.

"Everyone thought that IntelliDOT was a great choice and we liked the fact that nurses have had a huge input into its design and capabilities," Rarick says. "Many of the other systems we looked at were built by IT people, who don't work with the device on the front lines like nurses do. So it was important to us that the IntelliDOT System was designed by nurses who would actually use it."

The initial implementation of IntelliDOT BMA in the HMA network took place at one of its hospitals in Oklahoma. After a pilot period, HMA extended the implementation to Carlisle Regional and several others.

Carlisle Regional's medication safety team took a lead role in planning the adoption of the IntelliDOT System. Working closely with the IntelliDOT representatives, the team drew upon policies and procedures from the pilot in Oklahoma to ensure a successful implementation.

Carlisle Regional began taking units live with IntelliDOT BMA in May 2007

starting with the medical surgical unit. After this initial success, a new unit went live every two weeks and by late June 2007, the entire hospital was using the IntelliDOT System.

"The IntelliDOT implementation went very smoothly and we had no problems at all integrating with our core McKesson HIS," Rarick says. "IntelliDOT and McKesson worked very well together."

As part of the training process, IntelliDOT brought in its nursing and pharmacy experts to prepare Rarick and nursing management to lead super user training for the pharmacy and each nursing unit. *"The IntelliDOT training was very thorough and its representatives were very receptive to questions," Rarick says. "When we went live on each unit, they accompanied the nurses on their rounds and helped them become more comfortable using the CAREt device."*

Live verification of patient safety

IntelliDOT BMA has made it easier for nurses and pharmacists to verify that they are making the right decisions to promote patient safety. Before IntelliDOT, for example, nurses had a computer-generated MAR, but they had to print it out, carry it with them on rounds, and hand-write notes.

"Unless a nurse had the MAR in her hand and was paying attention to it, she could easily miss a dose that was due if she got busy doing other things at the bedside," Rarick says. "It might be the end of her shift at 3 p.m. when she realizes that she missed a patient's dose at noon. The IntelliDOT handheld really makes a difference since it gives the nurse a complete list of medications

"... we had no problems at all integrating with our core McKesson HIS."

Michelle S. Rarick, RPh
Director of Pharmacy
Carlisle Regional Medical Center

due at bedside so nurses administer all medications. Plus, the reminders in the IntelliDOT CAREt® handheld prevent missed-dose errors now.”

Having a live electronic MAR in the IntelliDOT System accessible from any computer workstation also helps pharmacists review and double check orders and save time and steps doing it. That’s important for a busy hospital pharmacy that dispenses approximately 2,000 doses per day.

“Pharmacists like that they can see the up-to-date, live MAR right here in the pharmacy department as they are entering orders,” Rarick says. “I can pull up a patient’s MAR instantly, without having to run out to the floor to check with someone. Having the IntelliDOT System has cut down on a lot of phone calls, too.

“Also, as the pharmacists enter orders, the nurses verify them through the IntelliDOT System and that gives us another double-check of what we’re doing,” Rarick adds. “Now we have verification that nurses have the right medication and dose. So the IntelliDOT System is a big time saver for Pharmacy.”

Proven to eliminate errors

Although IntelliDOT BMA was easy for nurses to learn and use, it was a big change at Carlisle Regional. And while some nurses resisted it at first, they were quickly won over as they began to see the ways it helped them improve patient safety.

“Nurses have come to me and said, ‘I wasn’t sure about using this in the beginning, but now I absolutely love it, because last night it saved me from

making an error’,” Rarick says. “Some needed a little more support from the IntelliDOT trainers, but they got it. Everyone’s glad we have CAREt, because they know it’s safer for the patients.”

Rarick notes that Carlisle Regional has seen a reduction in the number of medication administration errors as a result of errors caught by IntelliDOT BMA. Because the hospital hadn’t had a barcode system, there had been no way to know if a medication had been given to the wrong patient.

“The IntelliDOT System makes the medication administration process safer, and in the end that’s what is most important,” Rarick adds. “Of course, nurses save time, too, because the CAREt handheld documents everything for them, but it’s the safety factor that makes the IntelliDOT System so valuable to us.”





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Providence Healthcare Network strengthens commitment to patient safety with IntelliDOT® BMA™

“In fact, one of the key selling points of IntelliDOT was that it could seamlessly chart back to our EPIC eMAR.”

Bill Kitchens
Solutions Development Analyst
Providence Healthcare Network

-
- Customer:** Providence Healthcare Network, a respected not-for-profit network in Waco, Texas
- HIS integration:** EPIC
- Pain point:** Providence wanted to eliminate all adverse drug events (ADEs) by July 2009
- Cure:** Providence chose IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA) as part of its strategy to fulfill patient safety initiatives
- Benefits:** IntelliDOT BMA enables Providence to identify near misses and stop potentially serious medication administration errors before they reach the patient
-

Founded in 1905, Providence Health Center, part of the Providence Healthcare Network, is Waco's first and newest hospital. Today it supports the community across the continuum of care through a variety of services including long-term, psychiatric and acute care. In 1989, Providence Health Center relocated to a new medical campus in West Waco.

One of the strategic goals for Providence was to take human error out of medication administration and eliminate all ADEs by July 2009. Providence had already made improvements on several levels through a project called CLEAR Meds, which focused on safety measures such as

ensuring clear and legible orders, as well as confirming that they were interpreted and administered according to the five rights of medication management. But Providence wanted to do more with barcode point-of-care (BPOC) for medication administration.

“When we went to HIMSS in February 2007 to look at barcode systems for medication administration, we found IntelliDOT and realized right away that we needed their system,” says Jay Scherler, Vice President, Business and Support Services at Providence. *“One of the things that impressed us was that the IntelliDOT System would document for*

“Our past experience with an HIS vendor is that BPOC is something they just dabble in as a secondary offering that has not been as well thought out. Providence didn’t want to be a guinea pig. BPOC is the only thing IntelliDOT does, and we knew they could get it installed quickly and that it would work.”

Jay Scherler
Vice President
Business and Support Services
Providence Healthcare Network

the nurse. Also, the IntelliDOT team had an answer for everything we were concerned about, like preventing the nurse from overriding the system. Other barcode system vendors we talked to at HIMSS hadn’t thought through any of those scenarios.”

“Our reason for wanting to adopt the IntelliDOT System first and foremost was patient safety,” says Brenda Davis, Vice President, Clinical Services, at Providence. “Nobody wants to harm anyone, but nurses get busy and they get in a hurry. A barcode system takes the human element out of it, and as long as you follow the prompts you will have a safe medication pass.”

One of the smoothest implementations

After installing a wireless network in the fall of 2007, Providence was ready to proceed with the installation of IntelliDOT BMA in the spring of 2008. Providence was also completing a major expansion project, which included the hospital’s pharmacy. Providence asked IntelliDOT to take the lead on preparing the pharmacy for IntelliDOT BMA, which needed to occur in conjunction with a project to add an automatic drug dispensing carousel. The management team at Providence felt confident in IntelliDOT because BPOC was its only business.

“Our past experience with an HIS vendor is that BPOC is something they just dabble in as a secondary offering that has not been as well thought out,” Scherler says. “Providence didn’t want to be a guinea pig. BPOC is the only thing IntelliDOT does, and we knew they could get it installed quickly and that it would work.

“What also impressed us about IntelliDOT was that there are more clinical people than IT people working for them,” Scherler adds. “That was a big selling point.”

IntelliDOT BMA went live first in “profiled” units, which are inpatient floors on which pharmacists review or profile all medication orders for drug or allergy interactions before they are passed on to the nurses. The dialysis and medical surgical unit was brought up within three weeks, followed by one profiled unit per week. Scherler describes it as an easy implementation with no issues. *“I can’t imagine a cleaner install than what we had,”* he says. *“It was one of the smoothest implementations I’ve ever experienced.”* The next phase of the IntelliDOT rollout will target the non-profiled areas, including the ER, operating rooms, and the cardiology unit.

IntelliDOT BMA electronically sends the medication administration data captured at bedside through an interface to the hospital’s EPIC, Healthcare Information System (HIS). The interface employs Boston WorkStation, an automation technology from IntelliDOT alliance partner Boston Software Systems, to perform simple tasks on screen within the EPIC eMAR.

According to Bill Kitchens, Solutions Development Analyst at Providence, one process is used to route medication orders from EPIC to the IntelliDOT handheld. Then, when a nurse administers a medication and verifies it on the IntelliDOT handheld, a second process sends an HL7 message from IntelliDOT via Boston WorkStation, which then translates the HL7 message so that it can populate the EPIC eMAR.

“The IntelliDOT and EPIC interface with Boston WorkStation works very well,” Kitchens says. *“In fact, one of the key selling points of IntelliDOT was that it could seamlessly chart back to our EPIC eMAR.”*

Kitchens adds that the IntelliDOT implementation has been a major change for

some of the hospital's departments. "A few departments went from paper directly to IntelliDOT, so that was a big learning experience for them," Kitchens says. "Most of the departments, though, had already been documenting in EPIC through its eMAR. Overall, the IntelliDOT System is working extremely well in all departments."

A gigantic leap in preventing human error – and saving precious time for nurses

The benefits of IntelliDOT BMA start in the pharmacy at the dispensing stage. Pharmacists interpret the doctor's order, enter it into the EPIC pharmacy information system which adds the medication to the patient's profile in the dispensing cabinet, and all information is passed into the IntelliDOT System. Nurses get an alert on their IntelliDOT handheld that one of their patients has new orders. This prompts the nurse to verify the pharmacy order entry by comparing it to the doctor's original order, adding a valuable real-time check to pharmacy order entry. So instead of assuming that the pharmacist has interpreted the orders correctly, the nurse actually confirms them – taking away the risk of human error in pharmacy as well.

"When the nurse scans the patient's wristband at the bedside with the IntelliDOT handheld, she is confident she is administering the medication intended for that patient," Davis says. "While one can still have near misses, I think we are making a gigantic leap towards taking human error out of medication administration with IntelliDOT BMA."

Davis and Providence's nursing management also like the way IntelliDOT BMA automatically documents patient identity, medications given and other information. Since medications are scanned at the

bedside and automatically posted on the EPIC eMAR, nurses no longer have to spend time entering this information directly into EPIC, saving hours of valuable time each day. "That's been revolutionary for our staff," Davis says. "Before IntelliDOT, a nurse might give a medication but wouldn't have the time to enter it on the chart. Later, another nurse reviewing the patient's chart might duplicate the order because they weren't aware that the medication had been given earlier. Again, IntelliDOT protects the patient against human error."

Taking safety seriously

After only several months of using IntelliDOT BMA, management at Providence have begun to use reports from the system to see the expected benefits of identifying near misses and eliminating serious errors before they reach the patient. Before IntelliDOT, Providence relied only on staff reporting of errors, which was usually not accurate because errors were either not caught or underreported.

"With IntelliDOT we can make error reporting less of a personal problem and take an objective approach to categorizing errors and near-misses and examining why they happened," Davis says. "Is it the same drug all the time, or a look-alike, sound-alike drug? Is the same physician's order being misinterpreted every time? IntelliDOT BMA gives us this information."

Other expected benefits include:

- More accurate billing due to better medication documentation
- Improved productivity in Pharmacy and for nursing staff
- Less paperwork and fewer menial tracking tasks in Pharmacy





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“We certainly anticipate that using IntelliDOT BMA will strengthen our commitment to be a safe organization,” Davis says. “We have sent a clear message to our staff that we are willing to apply technology and resources to bring about safer medication practices. We also believe that our adoption of the IntelliDOT System shows the general public that Providence takes patient safety seriously.”

Overall, Davis and Scherler agree that IntelliDOT BMA is everything that it was promised to be in a BPOC system.

“I would encourage anyone on the fence waiting for a barcode medication administration system to consider IntelliDOT,” Scherler says. “Give us a call and we’ll be happy to have you come out to see how IntelliDOT BMA works at our hospital.”





Halifax Regional Medical Center increases patient safety and nurse confidence with IntelliDOT® BMA™

“I haven’t seen anything else on the market that has the ease of use and mobility of the IntelliDOT System.”

Robert Gordon
Director of IS

Halifax Regional Medical Center

Customer: Halifax Regional Medical Center, a community hospital serving the I-95 corridor of northern North Carolina and southern Virginia

HIS integration: MEDITECH Client/Server

Pain point: Halifax needed a barcode medication administration system that would be affordable and easy to use for nurses

Cure: Implement IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA)

Benefits: After a four-week implementation, IntelliDOT BMA has made nurses more confident that they are delivering the best care possible to improve patient safety

Halifax Regional Medical Center is a 206-bed community hospital in Roanoke Rapids, North Carolina. Located along busy I-95 just a few miles south of the Virginia state line, the hospital serves patients across several counties in North Carolina and Virginia. Halifax offers a comprehensive array of medical and surgical services, including 24-hour emergency care, all dedicated to putting the patient first.

When the hospital’s Vice President of Nursing, Karen Daniels, attended a nursing conference in early 2007, she stopped at the IntelliDOT booth. Daniels was already familiar with barcode technology

for medication administration from her experience at a hospital where she had previously worked. But she and the nursing staff had found that system very complex to use. Daniels knew that Halifax could benefit from a barcode system from a patient safety perspective – but only if it was easy to use and cost effective to implement.

“I viewed a demonstration of the IntelliDOT System and saw that it was so much easier to use than the system I was used to,” Daniels says. “I really felt it would be a benefit to my hospital by bringing us into the 21st century and improving our patient safety. Because the

IntelliDOT device was lightweight and could be used with one hand, I felt that our nurses would embrace it.”

Just four weeks to improved patient safety

Daniels proposed IntelliDOT BMA to the nursing, financial, and IS leaders at Halifax. They agreed that, like in other hospitals, there were probably medication errors that were being made without the nurse’s knowledge. Daniels and Halifax’s other decision makers realized that IntelliDOT BMA could catch and completely eliminate serious errors.

Robert Gordon, Director of IS at Halifax, saw for himself that IntelliDOT was the right choice after making site visits to hospitals that were using IntelliDOT and MEDITECH systems together.

“We went to two different sites that were running IntelliDOT along with MEDITECH,” says Gordon. “They were both very happy and I was impressed with how easy it was to connect IntelliDOT with MEDITECH. As far as we were concerned, MEDITECH didn’t have a BPOC solution for us, but IntelliDOT met all of our requirements for patient safety and a fast implementation.”

Starting in late May 2008, Halifax went live with IntelliDOT BMA throughout the entire hospital in just four weeks. This quick implementation enabled Halifax to meet a tight June 30 deadline – an important goal to the hospital’s board of directors. The first units to go live were the Intensive Care Unit and the 3rd floor and 5th floor in-patient units, followed by the three remaining floors two weeks later.

“The IntelliDOT implementation was a wonderful success,” Daniels says. “The IntelliDOT staff and my own informatics staff were so well prepared and our pharmacy had everything loaded

and ready to go, so installation was very simple. We also had super users on every floor. By and large, our rollout of the IntelliDOT System was one of the best I’ve experienced in my career.”

Daniels didn’t even consider other BPOC vendors because she was already familiar with them and knew that they were too expensive because of added hardware costs.

“The problem with other vendors is the expense of the equipment you have to buy in addition to buying their program and services,” Daniels says. “IntelliDOT is an all-in-one inclusive system, so in the end it costs less, which is a very important factor for my hospital. I watch every penny that goes in and out very closely. So it was very important that I got a good system that worked well for the nurses and was inexpensive, too.”

“For hospitals with MEDITECH or any HIS, IntelliDOT is an excellent choice,” Gordon says. “I haven’t seen anything else on the market that has the ease of use and mobility of the IntelliDOT System. The implementation went very well. Also, IntelliDOT didn’t nickel and dime us with extras. Once you set your budget, you know that’s what you’re going to get charged. That was refreshing.”

Today, the IntelliDOT System communicates with the hospital’s MEDITECH HIS through a Quovadx Cloverleaf interface engine. Admissions, discharges, transfers (ADTs) and Pharmacy Orders (RDEs) are passed from MEDITECH via an HL7 interface and are sent wirelessly to the IntelliDOT handhelds carried by nurses. Medication administration is completed by nurses at bedside, which is then documented on the electronic medication administration record (eMAR). In addition, Halifax is currently using the IntelliDOT eMAR as part of its full patient documentation.

“Certainly the biggest benefit is patient safety and the safety features of the IntelliDOT System are more than we could ask for.”

**Karen Daniels
Vice President of Nursing
Halifax Regional Medical Center**

A one-hand solution for multi-tasking nurses

Cost aside, one of the best things Daniels likes about IntelliDOT BMA is that it is a lightweight, handheld device that nurses can easily take with them wherever they go.

“One of the strengths of the IntelliDOT System is that nurses can use it with just one hand,” Daniels says. *“That’s important for nurses because they’re multi-tasking all day. It’s wonderful to have a lightweight device that they can carry with them all the time.”*

The alternative, a computer on wheels (COW) with an extended barcode reader, would be much too large and cumbersome to fit in the small patient rooms at Halifax, Daniels notes. What’s more, COWs need to be docked between uses to maintain battery life and many nurses have to share one unit.

IntelliDOT BMA has a battery life of 12+ hours, enough to last an entire shift. In addition, each nurse has his or her own IntelliDOT wireless device. Around 150 nurses are using IntelliDOT BMA at Halifax and Daniels reports a 95 percent use rate among the staff, indicating that nurses are not “working around” the system – a common problem with barcode point-of-care systems. While some nurses were skeptical about the new system, their attitudes changed after using IntelliDOT BMA for about a week.

“I went up to one of the first units that went live with IntelliDOT and one of the nurses was at the desk and I asked her how it was going,” Daniels says. *“She said, ‘Last week when you brought this up here, I wanted to give it back to you. But today you can’t have it back, because I feel safe using this piece of equipment.’ That’s the best thing I could have heard.”*

“More than we could ask for” for patient safety

Nurses at Halifax have been using IntelliDOT BMA for only about a month, but Daniels is already starting to see some of the expected benefits in terms of patient safety and fewer returned medicines to the pharmacy as a result of better documentation.

“Not just the nurses, but the patients also like the IntelliDOT System,” Daniels says. *“We had done some pre-advertising and talking to the patients about introducing a barcode system so they would be comfortable with it. Now, the patients have a good feeling about it when the nurse comes in and scans their wristband.”*

IntelliDOT BMA also helps nurses comply with the hospital’s requirement to chart before they give an injection and then go back and also chart the site – or where the injection was given – afterwards. Before IntelliDOT, when nurses got busy, they might forget to go back and document the injection site. Today, the IntelliDOT BMA prompts them to do it and gives them the opportunity to immediately document it.

“Certainly the biggest benefit is patient safety and the safety features of the IntelliDOT System are more than we could ask for,” Daniels adds. *“Our nurses feel safer and more confident that they are doing the right things for their patients. Even just the size and weight of the IntelliDOT device is a benefit for us, too.”*

Most of all, IntelliDOT is a system that nurses actually use. They’ve already begun to see the benefits whenever the system warns them that they’re about to make a medication error. A busy Halifax nurse who had to give 13 different medications to a patient discovered the value of IntelliDOT BMA one day.





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“The nurse misread the MAR and didn’t realize that one of the medications was prescribed as a half tablet,” Daniels says. “So when she scanned the medication with the IntelliDOT device, it told her she had too much medicine. She was really impressed and grateful because she didn’t want to make that mistake. But it would have happened without the IntelliDOT System.”

“That I have such a good acceptance by my nursing staff for the IntelliDOT System, a relatively new product, is amazing to me,” Daniels adds. “I’m very, very pleased by that, and I’m not so sure any of the other systems would have generated such high acceptance.”





Harton Regional Medical Center improves patient I.D. accuracy and near-miss tracking with IntelliDOT® BMA™

“On the first day we went live with IntelliDOT, one nurse almost gave the wrong medication and the system prevented her from doing that, so she was sold on it immediately.”

Pam Goodwin
Chief Nursing Officer
Harton Regional Medical Center

- Customer:** Harton Regional Medical Center, a 137-bed acute care facility in Tullahoma, Tennessee and a member of the Health Management Associates (HMA)
- HIS integration:** McKesson
- Pain point:** HMA needed a BPOC solution for its hospital system to fulfill its mission of “zero medication errors”
- Cure:** IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA) met all requirements for ease of use, seamless integration, and outstanding hardware performance
- Benefits:** Harton Regional Medical Center now prevents virtually 100 percent of medication errors at the point of care, tracks near misses and medication use more accurately, while completely satisfying the hospital’s patient identification policy

Located in the heart of southern Tennessee, Harton Regional Medical Center (HRMC) provides safe, compassionate and efficient care to more than 4,925 inpatients and 76,365 outpatients each year. HRMC is a member of the Healthcare Management Associates, Inc. (HMA) system.

In 2005, HMA created a corporate task force inspired by the organization’s CEO to achieve “zero medication errors.” Chief Nursing Officer Pam Goodwin first heard of the initiative at a CNO conference sponsored by HMA.

“Our CEO basically said, I know you think medication errors are inevitable in a hospital but even one error that might take a life is one too many,” Goodwin says.

The HMA task force determined that a barcode point-of-care system would be the best way to prevent medication errors at the bedside. It required that the BPOC system would be easy for nurses to use, communicate seamlessly with the existing McKesson Healthcare Information System (HIS) and include reliable hardware with a long battery life.

“The IntelliDOT System met every requirement,” Goodwin says. “We received notification in October 2006 that Harton would be the second HMA hospital to go live with IntelliDOT.”

A countdown to zero medication errors

According to Goodwin, HRMC combined its corporate goal of zero medication errors with a goal of a smooth and efficient IntelliDOT implementation. With each milestone of the implementation, Goodwin and the HRMC task force from nursing, pharmacy, and IT counted down the days to achieving both.

First, HRMC had to install a wireless network. In the meantime, the pharmacy worked with the IntelliDOT implementation team to implement new processes to assure that all medications had barcodes. Overall, different facets of the task force readied the hospital for the IntelliDOT implementation.

“We had a lot of work to do in nursing, too,” Goodwin says. “We identified how many IntelliDOT handheld units we needed and learned how it works. HMA made a video of the IntelliDOT handheld in use to show to our nurses and physicians.”

“We cautioned our physicians not to think that this would be an instant cure-all,” Goodwin adds. “Our goal was to eliminate medication errors, but this would happen gradually. Also, I didn’t want the nurses to think this would necessarily save time, but IntelliDOT does save lives.”

“Live” hospital-wide in one month

The IntelliDOT System went live at HRMC in February 2007. The first unit to go live was the Medical/Surgical unit with 40 beds. After the first week with

IntelliDOT on that unit, HRMC continued to roll out one unit per week until the entire hospital was covered.

“Within a month we had the whole hospital up on the IntelliDOT System,” Goodwin says. “We had heard that other systems required waiting a month or more before they could move on to the next unit, but not IntelliDOT. The implementation continued to go very well as each unit was brought up.”

Goodwin says that IntelliDOT was on-site during the go-live events. IntelliDOT also trained super users on each unit to assist with training. *“Two of our super users really stood out,” Goodwin says. “So we had them assist on each unit’s go-live because they just got better and better at using the IntelliDOT System.”*

HRMC supported the nurses’ additional workload with food and snacks to help the shifts go smoothly during go-live. *“We just wanted to boost morale and help them adjust to the change of having a new system,” Goodwin says. “And it marked one step closer to reaching our goal of zero medication errors.”*

Interactive and hands-on training

HRMC took advantage of IntelliDOT’s interactive computer training modules. Goodwin says that the hospital held four or five short classes in just one day and trained as many as 8 people in each session.

“When other vendors talked about training, they said it required a whole day or more,” Goodwin says. “With IntelliDOT, we just had an hour or two of training for everyone. If someone needed to go back to review something, they didn’t have to wait for an instructor. They could do it on the computer on their own.”

“The IntelliDOT System has helped us improve accuracy in medication administration.”

**Pam Goodwin
Chief Nursing Officer
Harton Regional Medical Center**

Staff from other units could also get hands-on training from super users and their peers on other floors where the IntelliDOT System was already live. HRMC also gave the staff opportunities to post questions that were answered in a special newsletter issued every day. Daily meetings with IntelliDOT super users and IntelliDOT representatives were also scheduled to ensure a smooth transition to the system.

“Our staff didn’t find the IntelliDOT System difficult to learn, just something different and a change,” Goodwin says. *“The IntelliDOT training worked very well.”*

Better visibility of near misses and medication use

The IntelliDOT System has been live for one year at HRMC and from day one it has opened the nurses’ eyes to potential errors.

“On the first day we went live with IntelliDOT, one nurse almost gave the wrong medication and the system prevented her from doing that, so she was sold on it immediately,” Goodwin says. *“She saw firsthand that the IntelliDOT System really does prevent errors as it promises.”*

Goodwin routinely reviews reports of near misses and other medication administrative data that the IntelliDOT System provides her. She knows that there have been definite improvements in patient safety since HRMC adopted the IntelliDOT System. *“The IntelliDOT System has helped us improve accuracy in medication administration,”* Goodwin says. *“We know exactly when a medication has been given. This gives our doctors a more accurate picture of what their patients have received when they are following up on a medication.”*

The IntelliDOT System also works as a kind of security system. Goodwin says that the hospital can now accurately track medication use. *“We can compare what a nurse says was taken from the McKesson Accudose medication cabinet and what was actually administered to patients,”* Goodwin says. *“We can now see evidence of any missing medications.”*

Goodwin also notes that HRMC had customized the IntelliDOT System to include reminders to follow up on pain medication administration and that the nurses have made improvements in that area as well.

“We’ve also improved the accuracy of patient identification,” Goodwin says. *“Nurses cannot give a medication without scanning the patient’s wristband with the IntelliDOT System.”*

In the future, Goodwin would like to adopt the IntelliDOT modules for phlebotomy specimen collection and blood product administration. The hospital has started the planning for these modules.

“I’ve already put in a plug for HRMC that we would like to be a pilot for the other modules,” Goodwin says. *“The IntelliDOT System works well for us.”*





About IntelliDOT

IntelliDOT is a leading provider of wireless, handheld, bar-code point-of-care (BPOC) solutions that connect to any healthcare information system to improve patient safety and nurse workflow. When using the IntelliDOT System, nurses can easily manage all tasks associated with five rights medication administration safety checks and related documentation. Additional modules include specimen collection, blood product administration, mother-baby breast milk matching and vital signs collection. IntelliDOT was founded in 2002 and is headquartered in San Diego.

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Jefferson Community Health Center improves patient care from the pharmacy to the bedside with IntelliDOT® BMA™

“The IntelliDOT System makes us more effective in catching potential problems before they reach the patient.”

Gary Mitchell
Director of Pharmacy
Jefferson Community
Health Center

- Customer:** Jefferson Community Health Center, a critical access hospital in Nebraska offering a wide scope of services
- HIS integration:** Health Management Systems (core system) and McKesson pharmacy system
- Pain point:** The hospital wanted to do more to prevent medication errors and track data on near misses
- Cure:** Jefferson implemented IntelliDOT Bedside Medication Administration™ (IntelliDOT BMA) as its first barcode system
- Benefits:** IntelliDOT BMA has helped to extend patient safety benefits from the pharmacy to the patient’s bedside

Jefferson Community Health Center is a 25-bed critical access hospital in Fairbury, NE, which provides comprehensive medical services for residents of southeast Nebraska and northeast Kansas. In addition to 24-hour emergency services, Jefferson’s scope of care includes acute, obstetric, skilled, intermediate and long-term care, as well as on-site laboratory services, radiology services, cardiac rehabilitation, and more.

Despite its small size, Jefferson is much like larger hospitals in that its management has been actively involved in reducing medication administration errors. They had been tracking errors and near misses to the best of their ability and many

positive changes had been made in regard to medication documentation using manual Medex charting. However, decision makers in the pharmacy and nursing areas felt they could do an even better job of improving patient safety at the bedside with a barcode point-of-care (BPOC) system.

“We began looking for a barcode system that would interface well with our in-house pharmacy system from McKesson,” says Judy McGee, RN, Chief Nurse Executive, at Jefferson Community Health Center. “We definitely wanted something mobile versus a computer on a cart system. But the biggest criteria was that the system had to be user-friendly for the

nurses and would automate medication documentation.”

The best fit at the best cost

Gary Mitchell, Director of Pharmacy at Jefferson Community Health Center, first learned about the IntelliDOT System when he read about it in an industry journal in late 2006. He investigated further to see if the IntelliDOT System would be a potential solution. Mitchell also did an extensive review of McKesson’s medication administration module since Jefferson has a McKesson pharmacy system.

“McKesson had a viable system that could have worked for us, but the biggest issue was the cost,” Mitchell says. “Also, from the nursing perspective, we wanted a system with handheld readers instead of computers on carts, so the IntelliDOT System was the best fit for us, and it was more affordable, too.”

Jefferson Community Health Center implemented IntelliDOT BMA in January 2008. According to Mitchell, the planning started in the pharmacy several months before management even decided on an implementation date. Mitchell wanted to be sure that any changes made to pharmacy processes would not have an adverse affect on nursing, the lab, respiratory therapy, and other main service areas of the hospital. On the nursing side, McGee says that the hospital first made improvements to the nurses’ existing manual medication documentation process as a segue to barcoding.

Jefferson’s pharmacy staff enters orders in the McKesson pharmacy system. The orders are sent in HL7 protocol and they appear on the nurse’s IntelliDOT System wireless handheld device. When the nurse responds to the IntelliDOT System’s prompts and enters patient information, the data is sent to the IntelliDOT eMAR, which Jefferson uses

as its legal patient record, and then back to the hospital’s core Healthcare Information System (HIS), provided by Health Management Systems.

“The interface with the McKesson pharmacy system went smoothly from an IT perspective,” Mitchell says. “IT worked with us extensively, but since the IntelliDOT System went live it hasn’t been a lot of extra work for them.”

Better communication from the pharmacy to the bedside

Jefferson’s pharmacy issues approximately 200 orders per day on the acute side using the IntelliDOT System. Orders are issued only during the day since it is not a 24-hour pharmacy, but the IntelliDOT System delivers round-the-clock benefits to Jefferson’s pharmacists, nurses and patients.

“The level of communication between pharmacy and nursing has never been better,” Mitchell says. “The IntelliDOT System makes us more effective in catching potential problems before they reach the patient. As far as documentation, we’re doing in real time what we used to do retrospectively for years. That for me is one of the biggest changes we’ve seen as a result of adopting a barcode system.”

On the nursing side, McGee says that Jefferson’s nurses are enthusiastic about both the workflow and patient safety benefits of the IntelliDOT System. “Everything is legible on the screen,” she says. “The nurses also like that all of the orders have been already checked for allergies and drug reactions by the pharmacists. The other thing they really like is the automatic charting. After they administer a medication, they’re done.”

McGee also emphasizes the value of accurate patient identification at the bedside. “We’re no longer just taking for

“We’re no longer just taking for granted that a nurse is positively identifying the patient before giving a medication... Now we know for sure that our nurses are doing that every single time because the IntelliDOT System prompts them to scan the patient’s wristband.”

Judy McGee, RN
Chief Nursing Executive
Jefferson Community
Health Center

granted that a nurse is positively identifying the patient before giving a medication,” McGee says. “Now we know for sure that our nurses are doing that every single time because the IntelliDOT System prompts them to scan the patient’s wristband.”

Jefferson’s patients also have accepted the new barcode system, even if they have to be woken up during the night sometimes. *“Our patients get used to the IntelliDOT System right away,” McGee says. “They just stick out their arms and say ‘here’s my wristband.’ We had been concerned about bothering patients in some cases, such as when a nurse hangs a new IV in the middle of the night and has to wake a patient to scan the wristband. But our patients haven’t complained. They know we’re doing this for their benefit.”*

Raising the bar of patient safety

After using the IntelliDOT System for about eight months, Mitchell and McGee have begun to see a definite improvement in patient safety as a result of catching “near miss” medication errors, which are documented in IntelliDOT reports.

“Not every nurse will report an error message or near miss, but through the IntelliDOT reports we can tell a lot about the potential errors that were prevented,” McGee says. “We find it very easy to go into the system and follow up on omissions, for example, and see who was responsible. With our old manual system, that was a daunting task.”

In the pharmacy, Mitchell has noticed that the IntelliDOT System makes the staff more aware of how patient safety is improving by avoiding medication errors. *“We’ve had occasions where nurses come in for duplicates and we can see in the IntelliDOT System that we already*

dispensed that medication and that one of the other nurses already gave it to the patient,” he says. “The IntelliDOT System also catches timing errors, such as hanging a new IV too early or diffusing it too quickly. Overall, the evidence is there that Jefferson is achieving patient safety benefits with IntelliDOT.”

Among the most telling evidence that the IntelliDOT System is preventing errors is the reduction in the number of the Action Notices, which are generated by the pharmacy to find out what really happened when there is discrepancy between the orders and what was documented by the nurse. *“We used to generate Action Notices en masse,” Mitchell says. “But since we started using the IntelliDOT System, the number of notices have dropped to a very, very small number.”*

A cooperative effort

As a small critical access hospital, Jefferson is ahead of the curve in technology and the adoption of the IntelliDOT System for medication administration has further enhanced its reputation for excellence. Mitchell and McGee praise the cooperation of the IntelliDOT service teams as the key to a successful implementation.

“IntelliDOT has provided excellent follow-up, even when we didn’t initiate the questions,” McGee says. “They are proactive in asking what else they can do, what resources can they provide. They’re always wanting to help.”

“We appreciate the cooperative effort of IntelliDOT,” Mitchell says. “The system is as good as the people who work behind it. Excellent customer service is their forte and it’s one of the things that continues to attract us to IntelliDOT.”





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