DRIVING OPERATIONAL IMPROVEMENT IN HOSPITALS THROUGH AN ADVANCED INSTRUMENT MANAGEMENT SYSTEM
Driving Operational Improvement in Hospitals through an Advanced Instrument Management System

An In-Depth Case Study of the OhioHealth System’s Use of the IMPRESS® Instrument Management System

The average U.S. hospital has an inventory of surgical instrumentation worth approximately $2 to $4 million, but the vast majority of facilities have no effective means of managing that investment. A situation like this that would be considered unthinkable in other industries is accepted as the norm in healthcare where automation is often slow to be adopted. Instrument management software systems have been developed to address this specific need since they serve to identify and track instruments and instrument sets as they move through the different stages of a hospital’s sterile processing department’s (SPD) work cycle. The systems have been available since the early 1990s, but most hospitals are not using them; however, the number of hospitals who will be using the systems is expected to increase significantly in coming years due to a number of important reasons:

- Growing surgical volumes in hospitals but limited capital to invest in infrastructure, equipment and instrumentation means facilities are having to do more with what they currently have
- Increased efforts to improve patient safety and reduce flash sterilization forcing hospitals to be more efficient at managing their work cycles and instrument inventories
- Public benchmarking of hospital infection rates with 23 states now legally requiring hospitals to disclose their infection rates to the public. More recognition of the problem of surgical site infections (SSIs.)
- Hospitals increasingly squeezed on reimbursement encouraging them to seek new cost containment strategies by optimizing usage of their investment in surgical instrumentation and eliminating unnecessary servicing costs or purchases
- Staffing shortages across all areas of the hospital, including in the OR and SPD, encouraging facilities to seek technologies to help them make better use of staff
- More “wired” hospitals and new advances in information technology allowing hospitals to use instrument management systems on a Web-hosted platform and wireless scanners
- Interest in maintaining better records of instrumentation usage in an increasingly litigious healthcare environment with recall requirements increasingly stringent
- Many hospitals performing more complex surgeries than in the past with higher number of related instruments that must be managed
- Increasing regulatory scrutiny on patient and employee safety (OSHA, Joint Commission, IHI, state bodies, etc.)
According to the surgical instrumentation manufacturer Cardinal Health, V. Mueller® Products and Services, approximately 10 to 15 percent of U.S. acute care hospitals currently have instrument management systems, but an additional 30 percent are planning on investing in these systems in the coming years. Different hospitals have different needs, and the value a hospital sees in an instrument management system can be driven by many different factors: surgical volumes, complexity of the hospital’s cases, size of the surgical instrumentation inventory, financial considerations, the strategic vision of the institution, or the personal motivations of hospital managers and staff. To date, adoption of instrument management systems has been highest in larger hospitals, i.e. with 300 or more beds or at least eight ORs. Instrument management systems are set to become a standard part of most hospitals’ information technology infrastructure, but the systems do require a major change in how SPDs and ORs run their operations. So, how should hospitals implement these systems and what kind of real benefits can they expect from such an investment?

**Research Objectives of this Whitepaper**

Frost & Sullivan is a global growth consulting firm that has been tracking innovations in the healthcare marketplace for more than four decades. For this whitepaper, the company took a very hands-on approach to better understand where instrument management system technology at hospitals was headed in the future. Frost & Sullivan wished to better understand the benefits hospitals could derive from the effective implementation and management of a state-of-the-art instrument management system in terms of a number of specific metrics: patient safety, improved efficiency, cost reduction, clinician satisfaction and departmental management.

The OhioHealth system based in Columbus, Ohio proved to be a perfect case study for this project. The system is the leading healthcare provider in its market and has successfully implemented the V. Mueller® brand IMPRESS® system, the most cutting-edge instrument management system presently available. In 2005, the IMPRESS® system was successfully deployed across three hospitals over the course of less than a year. The hospitals each had their own challenges and ways they derived value from IMPRESS® allowing the system to be viewed as a microcosm for the larger hospital marketplace.

In May 2007, a Frost & Sullivan consultant visited each hospital and interviewed staff members from the SPD, OR, and process excellence teams to learn more about how they implemented the IMPRESS® system, the benefits they saw in the system and the advice they would give to other hospitals looking to put in place a similar program. Frost & Sullivan

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**Reasons Management Systems Not Adopted by More Hospitals**

Hospitals may be reluctant to adopt instrument management systems for many reasons, including:

- Perception systems are too complicated or expensive. A fear the system will not generate an ROI.
- Fear of time commitment to implementation, training and upkeep. Fear of disrupting current workflow.
- Perception systems are only for large hospitals with lots of ORs and instruments and high surgery volumes or complex cases.
- Perception current tracking methods are adequate. Complacency with status quo.
- Lack of insight into the true bottom line impact of current SPD and OR operational inefficiencies.
- No money to invest in upfront costs for a system.
- Lack of support staff to make an instrument management system work.
- Lack of internal leadership and vision to implement a system.
- Short-term perspective of hospitals that do not appreciate long-term cost savings.
- Past bad experiences with software not living up to claims, being underutilized or being poorly supported.
- Fear of internal political risks for implementing such a large program.
- Industry momentum: a lack of automation in hospitals in general.
also interviewed Cardinal Health, V. Mueller® representatives to learn more about the IMPRESS® system itself.

Overview of OhioHealth

OhioHealth is a nationally recognized, not-for-profit, charitable, healthcare organization serving and supported by the community. Based in Columbus, Ohio, it is a family of 15 hospitals, 20 health and surgery centers, home-health providers, medical equipment and health service suppliers throughout a 46-county area. OhioHealth hospitals in central Ohio are: Riverside Methodist Hospital, Grant Medical Center (Grant Main and The Bone & Joint Center at Grant Hospital), Doctors Hospital, Grady Memorial Hospital (not part of OhioHealth when IMPRESS® was implemented) and Dublin Methodist Hospital (due to open in January 2008.) OhioHealth adopted the V. Mueller® brand IMPRESS® instrument management system in 2005.

Profile of OhioHealth Hospitals Using the IMPRESS® Instrument Management System

<table>
<thead>
<tr>
<th>TYPE OF HOSPITAL</th>
<th>Grant Medical Center</th>
<th>The Bone &amp; Joint Center at Grant Hospital</th>
<th>Riverside Methodist Hospital</th>
<th>Doctors Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAFFED BEDS*</td>
<td>344</td>
<td>62</td>
<td>789</td>
<td>196</td>
</tr>
<tr>
<td>NUMBER OF ORS</td>
<td>26</td>
<td>10</td>
<td>30</td>
<td>9</td>
</tr>
<tr>
<td>NUMBER OF SURGERIES (2006)</td>
<td>21,413</td>
<td>7,641</td>
<td>23,332</td>
<td>5,537</td>
</tr>
<tr>
<td>INVENTORY</td>
<td>~2,100 instrument sets and ~120,500 peel pack instruments and loaner sets tracked</td>
<td>~1,250 instrument sets + ~360 peel pack instruments, loaner and consignment sets</td>
<td>~3,700 instrument sets + 2,700 peel pack instruments, loaners, etc.</td>
<td>~1,100 instrument sets tracked + ~1,200 peel pack instruments and consignment sets</td>
</tr>
<tr>
<td>IMPRESS® INFRASTRUCTURE</td>
<td>40 to 45 users, 7 workstations with 2 more budgeted</td>
<td>8 users, 6 workstations</td>
<td>273 users, 50 workstations, 27 rooms where they can scan to patients</td>
<td>40 users, 15 work stations</td>
</tr>
</tbody>
</table>

*Does not include nursery. Sources: 2006 AHR Annual Survey, hospital contacts
Challenges Facing OhioHealth

Faced with growing challenges in effectively tracking and identifying their surgical instrumentation due to growing surgical volumes at some hospitals and increasing case complexity, OhioHealth first seriously began investigating the adoption of an instrument management system late 2003. OhioHealth also saw an instrument management system as a tool to help make their SPDs more accountable and productive since there was no system in place at the time to track these metrics or to help support training. As with most hospitals, employee turnover was high in the SPD and management faced the constant task of training staff members on identification of a growing body of complex instrumentation. Surgeons and OR teams were concerned with instruments that were arriving late or inappropriately assembled. The hospitals also wished to develop and maintain more updated inventory lists of their surgical instruments in order to respond to requests from surgeons, rationalize instrument purchasing and support better servicing. OhioHealth also hoped that these lists would allow it to decrease expenses spent on missing instrumentation. Since 2002, OhioHealth had been investing in a system-wide initiative to improve its IT systems, reduce paper records, and to capture and use more real time data. By 2004 OhioHealth had recognized that the implementation of an instrument management system was going to be a necessary part of this larger initiative, according to Craig Seemann, director of supply chain services at Grant. Finally, OhioHealth, along with hospitals nationwide, had become increasingly committed to taking new steps to improve patient safety and reduce infection rates.

Prior to the adoption of the IMPRESS® system, Riverside was the only OhioHealth hospital that had experience with using an instrument management system, but the system was not real time and was limited in its ability to provide useful data for reports. Sandy Maupin, RN, SPD nurse manager at Riverside, stated that converting to a new tracking system would allow them to make changes, especially for collecting reporting data, which would more appropriately fit their needs. In addition to the tracking and identification features that other hospitals were looking for, Maupin sought very specific data reports along their 14 service lines and distinctions made between their owned and consigned sets.

When the instrument management system was implemented at Riverside, the process excellence team (PEX) initially used it to just track their instruments, but since then they have been exploring more applications for the data to improve efficiency and decrease costs. While Riverside’s surgical volumes have remained relatively steady in recent years, the PEX team witnessed an increase in the number of sets used at Riverside from an average of 6.5 to 8.5, meaning the cases were more complex and the SPD was responsible for processing more instruments.
As the director of perioperative services at Doctors Hospital, Mary Ann Cain, RN, needed an instrument management system to help her staff keep track of instrumentation, repairs and replacement costs. In addition, she saw the system as a means for justifying new capital acquisitions because of the ability to clearly show instrumentation usage patterns.

When Jenifer Dittmar took over the management of The Bone & Joint Center’s SPD she recognized a need to improve efficiency in the OR relative to the availability of instrumentation. At the time, the SPD struggled with managing their staff and keeping up with new technology, which impacted operational efficiencies. Susan Wilson, director of surgical services and business development at the center, notes that when she started at the center in 2002 they had no management system at all. The hospital did not have any inventory of their sets and did not know how many they even needed to have to meet their demands. Most importantly, Wilson states “We did not even have a vision that having [this information] was important in the first place.” Yet, since the adoption of the IMPRESS® system in 2005, she notes the SPD and OR have made significant and rapid improvements.

Why OhioHealth Chose the IMPRESS® System

OhioHealth ultimately selected IMPRESS® as its instrument management system for a number of reasons. First, the system was able to deliver all of the expected benefits necessary to address the challenges each hospital was facing in terms of instrument identification and tracking in an easy-to-use interface. The real-time tracking capabilities of the IMPRESS® system were especially attractive. Craig Seemann, the director of supply chain services at Grant, noted that the IMPRESS® system was more robust than competing systems that seemed “more homegrown, generic and less thoroughly tested out.” He states Cardinal Health was already a trusted supplier to OhioHealth and this established relationship was also a deciding factor. Since OhioHealth was already purchasing many of its surgical instruments from V. Mueller, it saw IMPRESS® as more of an evolution of an existing relationship rather than the start of a brand new one. This confidence was important to gathering the necessary motivation internally within OhioHealth to make the change to an instrument management system.

The responsive account service provided by OhioHealth’s V. Mueller® representative also gave the hospital the assurance that implementation of the system would go smoothly. Finally, since OhioHealth was able to acquire the IMPRESS® system without a significant capital outlay, it was a much easier sell to hospital administration. V. Mueller offers IMPRESS® to hospitals as a value added service with a surgical instrumentation purchase commitment. The company is therefore able to provide IMPRESS® at a significantly lower price compared to instrument management systems provided by competitors which might charge between $175,000 to $300,000 for their software and implementation. In addition, many of these same competitors charge service and support fees as well as software upgrade fees that make the costs even higher over the life of the system.
OhioHealth also saw significant value in IMPRESS® because it was the only instrument management system that was Web-hosted and real-time which removed a burden off the hospitals’ own IT departments. With the system Web-hosted, V. Mueller is able to ensure its customers greater stability and ongoing quarterly updates delivered instantaneously all in an environment that is entirely secure and HIPAA compliant. Since the IMPRESS® system is Web-hosted, users can access data anywhere, whether from the operating room or from home. The real-time data also helps with any possible instrument recalls, since IMPRESS® can tell users exactly what instruments are in which loads. The net effect is that hospitals have increased access to data and spend less time supporting the system itself.

When designing the IMPRESS® system, V. Mueller spent significant time making the system easier to use, since that has proven key to getting SPD staff members to optimize their use of instrument management systems. In order to make the system easier to use, IMPRESS® uses handheld scanners in order to capture data. The actual software interface minimizes the number of clicks required and is also highly intuitive and customizable with pictures of each instrument displayed. IMPRESS® also has a flexible design that gives users the ability to run many different types of reports and track individual instruments, peel packs or complete sets.

Implementation of the IMPRESS® System at OhioHealth

The IMPRESS® system was implemented at OhioHealth after the SPD manager at Grant worked with Craig Seemann, the director of supply chain services at that hospital, to evaluate the adoption of an instrument management system to address the many challenges the SPD and OR were facing. Together, the pair evaluated and selected a vendor and worked with OhioHealth’s corporate contracting team. The corporate contracting team then sold the idea to administration at both the hospital and system level, and worked with V. Mueller to roll out an implementation plan. Throughout the implementation, OhioHealth measured the success of the project by establishing dashboard metrics and by holding regular business review meetings between V. Mueller and the contracting team at OhioHealth, according to Caroline Jack, Director, Contract Services, Supply Chain Services at OhioHealth. IMPRESS® was first implemented in OhioHealth at Doctors in 2005, but within approximately three months the remaining hospitals in the system had adopted it. On average, most hospitals take approximately six months to implement IMPRESS® from start to finish.

The OhioHealth corporate contracting team served as the standardizing force across all three hospitals with each hospital having representatives and internal champions responsible for implementing the IMPRESS® system at their own facilities. This core team was critical to the success of IMPRESS® at OhioHealth. Also critical to the success of the project were the V. Mueller® sales representatives and implementation managers that gave the members of the core team the resources they needed and the
assurance that they were committed to the success of the program over the long term. V. Mueller provides all users of the IMPRESS® system with complete logistical support and on-site implementation from start to finish.

Members of the core teams at each hospital attended training on the IMPRESS® system at the Cardinal Health, V. Mueller offices in a northern suburb of Chicago. Team members also met with V. Mueller representatives and implementation managers on an ongoing basis as the V. Mueller team conducted instrument inventories, cross-referencing, data entry and training on IMPRESS®.

While the IMPRESS® system continues to be a critical backbone for how SPD is managed at OhioHealth hospitals, since the program was implemented in 2005 each hospital has adapted it to their own needs. In each hospital, SPD staff members have their own workstations in order to maintain efficiency, but also because it gives them personal authority and responsibility. Each workstation is configured with a PC and a scanner and they share various label and laser printers. Riverside and Grant both had very busy SPDs running 24/7, with Grant also operating its own orthopedics center with its own SPD. Riverside is the largest and busiest OhioHealth hospital. This team has been able to use the data drawn from IMPRESS® for a number of new initiatives aimed at improving efficiency and reducing costs. Riverside and Doctors Hospital were both able to add employees to their SPD teams specifically for administering IMPRESS® and educating staff.

“The installation of the workstations really drove the connection home with SPD [staff] on clinical outcomes and patients, and the importance of their job. We then invited surgeons to come down to the SPD to meet staff and understand their new system and they were very impressed with what they saw,” said Jenifer Dittmar, SPD coordinator at The Bone & Joint Center at Grant Hospital.

Often one of the major roadblocks to adopting instrument management systems is that hospital SPDs often lack the time and knowledge to conduct inventories to build the baseline data for the system. To overcome this problem, V. Mueller uses its own inventory management personnel to get baseline data for its customers. V. Mueller’s implementation team completely oversees this process from start to finish at new IMPRESS® accounts.

Beyond the initial implementation of the IMPRESS® system, OhioHealth has found that ongoing customer service from the implementation team, support center and sales representative have helped the system to continue to improve. OhioHealth SPD managers make frequent use of the 24/7 IMPRESS® call center with questions. These managers also participate in quarterly customer user groups facilitated by V. Mueller in.
order to discuss their own best practices and to provide feedback for improvements to the IMPRESS® system.

Since IMPRESS® was implemented in OhioHealth, it has become critical to the SPD function in the system. The system has evolved from simply a means of providing information on instruments to become the very means by which the SPD is managed in its entirety. “I can’t imagine SPD without IMPRESS®,” according to Paul Remonko, a process improvement specialist on the PEX team at Riverside Hospital. Once an instrument management system like IMPRESS® is adopted and becomes the central means for managing the SPD, its benefits become more fully realized.

“A lot of the information systems for materials management are not central to how the SPD or OR do their job. It’s a nice to have, not a need to have. IMPRESS® is designed to be a ‘need to have’ and central to how [SPD] manages their inventory,” according to Tom Kapfer, president of medical specialties at Cardinal Health.

Benefits Realized with the IMPRESS® System

Because of their different needs and existing resources available to devote to using the IMPRESS® system, each OhioHealth hospital had different benefits that they gained from the system; however, the most common benefits fell into a number of major categories. These same benefits are the ones that other IMPRESS® customers have been experiencing for years.

“I don’t care if you are a 100 bed hospital or a 1,200 bed Level III trauma center, IMPRESS® has a benefit for you. Avoiding one surgical site infection or one hospital-acquired infection more than pays for the system even if you are a small hospital,” according to Tom Kapfer, president of medical specialties, Cardinal Health.

Patient Focus

Instrument management systems themselves do not ensure patient safety, but they help give hospitals the essential data necessary to support an environment where the appropriate instrumentation can be delivered to the OR on-time, fully-sterilized and operational. “If patients would hear about instrument tracking and its importance, they would demand it at their hospitals,” according to Sandi Cordell, RN, the former SPD materials coordinator for Riverside.

In OhioHealth, Riverside and Doctors Hospital both use the IMPRESS® system to track instruments to the patient level, and Grant is planning to do the same in the future. “Hospitals often resist adopting instrument management systems because they are complacent with the status quo, but after one or two sentinel events, they would recognize the need for IMPRESS®, since the system would allow them to track back to the cause,” observes Cordell. The Joint Commission as well as the Association for the
Advancement of Medical Instrumentation (AAMI) have been advocating tracking surgical instruments to the patient level in recent years.

Normal steam sterilization cycles are 30 to 60 minutes with additional hours of instruments sitting in place. In contrast, hospitals sometimes run instruments through a 10 to 20-minute steam “flash sterilization” when they do not have enough instruments for their scheduled surgeries. Recently, organizations, such as the Association of periOperative Registered Nurses (AORN), the Joint Commission and major hospitals have called for reduced use of flash sterilization because of a possible association with an increased risk for infection. Anecdotal reports are that flash sterilization is often the rule and not the exception at many hospitals, and that it is becoming more commonplace due to surgical instrument inventories that are not properly stocked or managed.

“IMPRESS® has helped us reduce the use of flash [sterilization] because we are better prepared now,” said Mary Ann Cain, director of perioperative services at Doctors. Cain has also found the IMPRESS® system helpful for Joint Commission and Healthcare Facilities Accreditation Program (HFAP) surveys in order to demonstrate the facility’s commitment to safety as well as documentation of breakage and lost instruments.

Kathy Sackett, manager of sterile processing department/surgery inventory at Grant, points out that the IMPRESS® system itself cannot reduce flashing, but it can give an SPD the information on whether it has enough instruments and whether they are being used efficiently. If inefficiencies or inadequate instrument inventories are found to be contributing to flashing, then steps can be taken to address that problem.

Jenifer Dittmar, SPD coordinator, at The Bone & Joint Center at Grant Hospital reports that the IMPRESS® system allowed them to reduce their use of flash sterilization by 70 percent, down from 10 times per day to approximately three times per day, on average. “IMPRESS® is a vital patient safety tool. We’ve seen less anesthesia time because of fewer lost instruments and [that has], hopefully, improved clinical outcomes. And that contributes to more clinician satisfaction,” said Susan Wilson, RN, director of surgical services and business development, at the center.

Some IMPRESS® accounts believe that because the management system can ensure the correct instrumentation is delivered to the surgical team on time, there may be less risk for the use of inappropriate instrumentation as a back-up. V. Mueller reports that many of its IMPRESS® accounts have reported less use of flash sterilization due to better asset management.
**Better Efficiencies and Time Savings**

Once hospitals are able to identify and track their inventory of surgical instruments, the resulting data gives them the ability to begin to effect significant changes in how their work cycle is managed.

“Productivity in SPD at OhioHealth is based on items sterilized, but it’s hard to give feedback on productivity unless you have that data first. In a manufacturing industry, they would never think about starting work unless they knew they had their tools and materials available,” according to Jenifer Dittmar, SPD coordinator, at The Bone & Joint Center at Grant Hospital.

Dittmar states her center uses approximately 10.7 instrument sets per case that take an average of three hours to prepare. Prior to using the IMPRESS® system, they were not aware how long this process took and underestimated the amount of time necessary for preparation. She also notes staff members at the center also used to spend hours every day hunting down misplaced instrument sets, but by pulling transfer reports from their instrument management system they have been able to reduce this time significantly, which contributes to their focus on patient care. Dittmar states that the IMPRESS® system has allowed her SPD staff members to better divide up responsibilities and hold one another accountable because they now know who is supposed to do what. IMPRESS® has not only allowed SPD to function better as a team, but it has improved relations with the OR staff as well.

Mary Ann Cain, director of perioperative services at Doctors, has also found the IMPRESS® system invaluable for tracking down misplaced instrument sets. She estimates that before IMPRESS®, she and one staff member would each spend an average of one hour per day looking for misplaced instrument sets. She also noted how IMPRESS® had allowed her to determine that the specialized surgical draping clips that her OR teams were using, which cost $15 a piece, were not being reprocessed but instead thrown away. Cain states that while it may be hard to estimate how much total time IMPRESS® has saved her hospital, she feels the difference every morning since her staff is better prepared and spends less time looking for instruments. The result is that staff can focus their attention on patient preparation and checking safety protocols.

Cain states that surgeons had turned to her in the past requesting a complete inventory of all their surgical instruments in certain service lines, but that they were unable to provide it without IMPRESS®. She also notes that IMPRESS® has been able to reduce OR turnaround times which has helped increase surgeon satisfaction and better position themselves as an institution against competing surgery centers in the market.

Charlene Cross, SPD technician II at Doctors, estimates that the IMPRESS® system has been able to save her department approximately 10 to 15 minutes per sterilized load because they can more easily locate and assemble sets. At 6 to 10 loads per day, that equates to approximately 60 to 150 minutes per day that can total $2,000 to $5,000
per year in efficiency savings, assuming an $8 per hour staff member would otherwise have been doing the work.

OhioHealth has also used IMPRESS® labeling to drive the standardization of instrument definitions and identification by using the pictures of the sets that are in the system. Prior to IMPRESS®, Dittmar states that lack of standardization was a big problem because their OR and SPD would use different terms for their instruments and sets which resulted in confusion.

Riverside’s process excellence (PEX) team has pioneered new ways in using the IMPRESS® system to drive operational efficiencies and cost savings. The team estimated that it probably had 30 percent more instruments than it really needed, so it used IMPRESS® to develop a list of sets that had not been used at all over a six month period. The team was then able to successfully reduce this non-moving inventory by 25 percent after working with surgeons and OR staff. In addition to trimming off instrument sets with low utilization, the team sees significant potential in using IMPRESS® to encourage further instrument standardization among their surgeons and ultimately cost savings.

The PEX team has also combined IMPRESS® data with their own time tracking studies to identify areas of improvement in the SPD work cycle and to develop a plan of action. One opportunity they are exploring is to use IMPRESS® instrument utilization data combined with data about the weight of instrument cases to redesign a storage area that makes the processing of cases more efficient. The final plan would place higher volume cases nearer the elevator for faster pick time and heavier cases closer to the ground to decrease the risk of employee injury. The team has also used IMPRESS® along with the OR surgery tracking program to develop a more effective staffing model.

**Cost Savings and Planning Applications**

The goal of any instrument management system is to allow hospitals to get the most out of the millions of dollars of equipment that they have invested in as opposed to simply buying new instruments unnecessarily. The IMPRESS® system allows staff to capture the entire life history of an instrument, including all of its usage and service records. This data can be used to develop a preventive maintenance and repair schedule to ultimately lengthen the lifespan of the instruments. The system can also be used to ensure proper rotation of the instruments so they wear out evenly. As noted earlier, some OhioHealth facilities have also used IMPRESS® to reduce their use of flash sterilization that tends to shorten the life of an instrument. Mary Ann Cain, director of perioperative services at Doctors believes IMPRESS® has directly helped to reduce instrument repair and servicing costs.
Sandy Maupin, RN, SPD nurse manager at Riverside, believes IMPRESS® has saved the hospital money by helping plan for more consistent preventive maintenance. Maupin also worked directly with the V. Mueller® team on a custom data pull from IMPRESS® to determine their percentage of sets that were wrapped versus in containers. She used that data to show administration they were spending $11,000 per month on wraps. Armed with this information, her department made the decision to shift away from using wraps and to instead invest approximately $100,000 in containers, money she expects to recover in less than three years, generating a net cost savings.

OhioHealth hospitals have also been using the IMPRESS® system to develop stronger justifications for adding not only new instrumentation to their departments, but also additional staff members. The system provides data on instrument usage and productivity, and can also be used to develop models to show how the operations can improve under new conditions with added resources.

“Our administration is now more willing to back our capital requests because we can more clearly demonstrate our needs. IMPRESS® shows SPD and OR have done their due diligence in trying to make the most of the resources we have,” Cain said. This ability to better plan for growth by using the data gathered through an instrument management system is a benefit hospitals of every size can appreciate.

“A lot of small hospitals think they may not have a lot of need [for an instrument management system] because of their small surgery volumes, but IMPRESS® would be valuable to have in place now so that it will help them prepare for growth. It's a lot easier to implement when you are smaller,” according to Sandi Cordell, RN, the former SPD materials coordinator at Riverside.

Clinician Satisfaction

In addition to increasing efficiency and decreasing costs, OhioHealth hospitals remarked how the IMPRESS® system has been able to help increase satisfaction with surgeons, SPD and OR staff members and other hospital personnel.

Mary Ann Cain, RN, director of perioperative services at Doctors, often had to report to surgeons that their hospital could not meet their instrumentation needs in terms of availability, but she notes that since IMPRESS® that is no longer a problem. Cain states that prior to the system being put in place surgeons would request her to purchase more instruments to cover their needs, but IMPRESS® has allowed her to meet surgeons’ needs with the same inventory they had before.

Susan Wilson, RN, director of surgical services and business development at The Bone & Joint Center at Grant Hospital states their OR volume has grown by 12 percent since the IMPRESS® system implementation despite further encroachment from surgery
centers. Wilson notes that while it is difficult to directly correlate an increase in OR revenues to their adoption of IMPRESS®, the system has been able to ensure surgeons are receiving the instrumentation and support they need. This in turn keeps those surgeons working at her facility instead of working for the competition.

Jenifer Dittmar, SPD coordinator at the center, states that with the IMPRESS® system, there have been no more complaints from surgeons regarding the SPD and that the internal reputation of the department has improved significantly. “The employee opinion survey (EOS) satisfaction scores related to SPD went up, and non-SPD staff members actually wanted to give more credit to SPD than what the survey would allow,” according Dittmar.

IMPRESS® also showed that while the center has been able to function with their current eight full-time employees, they really needed 19 workers to meet their growing demands. Similarly, Sandy Maupin, RN, SPD nurse manager at Riverside, was able to use IMPRESS® to explain to administration how different types of surgeries required different amounts of time and preparation in the SPD and that normal staffing allocation models did not capture those nuances. The result was that she was able to increase her staff from 57 to 68 full-time employees to manage the increased workload.

Since The Bone & Joint Center at Grant Hospital team has been able to reduce the number of misplaced instrument sets and get an accurate count of their inventory, they have seen their surgeon satisfaction levels on those issues improve significantly. Managers at both Riverside and Doctors have also noticed improved communication between the OR and SPD in general, thanks to IMPRESS®, because of standardization of terms, more accountability and better efficiency leading to less stress and finger pointing. At The Bone & Joint Center at Grant Hospital, the SPD is part of the OR department, so IMPRESS® has helped to further deepen that partnership.

**Training and Management Tool**

When an effective instrument management system is in place, the OR and SPD can develop the confidence necessary to work more effectively as a team. OhioHealth has also been able to use the IMPRESS® system successfully as a tool for employee training, motivation and accountability. Since many new members of SPDs often lack a background in surgical instrumentation, the pictures and detailed descriptions of the instrumentation in IMPRESS® serve as an invaluable means for quickly adapting to the job.

Sandy Maupin, RN, SPD nurse manager at Riverside, is currently using IMPRESS® to reward her staff members that have met productivity targets and IMPRESS® compliance goals. Maupin is also considering expanding that program to adjust productivity targets based on job function within the department. She currently posts
publicly each staff member’s productivity ratings which has brought greater accountability and awareness to the department. The ratings are used for individual employee evaluations as well.

Jenifer Dittmar, SPD coordinator at The Bone & Joint Center at Grant Hospital, programs motivational messages into IMPRESS® so that they pop up on the screens of her staff members’ workstation PCs throughout the day.

Riverside’s process excellence team has already used IMPRESS® to develop an optimization model for staffing in the SPD and plans to continue to make improvements in that area. The team has already noticed that learning and training time with new SPD staff members has been much shorter with the addition of IMPRESS®.

What Sets the IMPRESS® Solution Apart?

OhioHealth chose the V. Mueller® brand IMPRESS® system from Cardinal Health for many of the same reasons that hundreds of other hospitals have chosen the system since the first version was launched in 1991. Along with the most advanced software system available for the task offered in a format affordable to any hospital, hospitals have turned to IMPRESS® for two other major reasons:

A Long-Term Commitment to Customers

OhioHealth managers responsible for the IMPRESS® system repeatedly praised their V. Mueller® account executive and customer support team for helping to make the program a success. In order to ensure that IMPRESS® is constantly adapting to customer needs, the V. Mueller® team hosts quarterly IMPRESS® user groups nationwide, where customers can provide the company feedback, discuss the development of new features, receive support and share ideas with their peers. In addition to this, local V. Mueller® representatives are constantly available for questions and support.

“Cardinal Health has always been very available and accessible, especially for a big company. Cardinal Health definitely has a face at OhioHealth,” notes Susan Wilson, RN, director of surgical services and business development, at The Bone & Joint Center at Grant Hospital. “IMPRESS® has exceeded my expectations, and the support from Cardinal Health has been great.”

Cardinal Health supports a direct salesforce for surgical instrumentation with highly-trained representatives averaging 12 years of experience with the company. In addition to representatives in each of the major specialty categories, the V. Mueller® team provides the implementation specialists hospitals need to get IMPRESS® started at their facility and the customer service teams to ensure the program flourishes.
In addition to strong account service, V. Mueller’s experience with surgical instrumentation allows it to understand a hospital’s instrument supply chain logistics in ways software companies often lack. The company’s own implementation team also ensures that data integrity is good when performing initial inventories and data entry when setting up the IMPRESS® system.

A Comprehensive Solution Beyond Just Software

In addition to offering the premier instrument management system, for more than a century, V. Mueller® Products and Services has been a recognized market leader in surgical instrumentation. V. Mueller now offers more than 34,000 instruments that can meet 95 percent of the needs of most operating rooms. The ability to meet a hospital’s needs for both high-quality surgical instrumentation and the leading software system to track those investments sets V. Mueller® Products and Services apart from all of its competitors. With such a broad instrumentation product line that is cataloged in every IMPRESS® system, hospitals can use IMPRESS® to improve instrument standardization. In addition, V. Mueller’s sister division at Cardinal Health, OnSite® Services, offers the trained technicians a hospital needs to provide maintenance, repairs and equipment management. This complete, streamlined solution is what defines V. Mueller’s Full Circle Instrumentation™ value proposition.

Since V. Mueller® Products and Services is part of Cardinal Health, IMPRESS® users also benefit from the experience, infrastructure and resources that the multibillion dollar parent company can put into the program. “Being part of Cardinal Health gives IMPRESS® the capital infrastructure to fund user groups and constant updates. Smaller software providers might not be able to fund that level of constant improvement. Over the past six months we have invested $600,000 to $700,000 into the system,” according to Jim Leitl, general manager of Cardinal Health, V. Mueller® Products and Services.

In addition to offering constant system improvements, investment from Cardinal Health has also allowed V. Mueller to add five new regional implementation managers to their customer support team with the specific task to help hospitals successfully implement IMPRESS® in their facilities.

Advice for Hospitals Looking to Implement Instrument Management Systems

Implementing and maintaining an instrument management program is a major initiative for any SPD and OR department. Members of the IMPRESS® implementation team at OhioHealth would pass on the following recommendations to any other hospital looking to adopt an instrument management system:

Assign an Internal Champion and Administrator to the System

Having internal champions in support of the adoption of IMPRESS® was critical to the success of the program at OhioHealth. In addition to having intimate knowledge of the hospital’s existing SPD and OR processes, this internal champion needs to see significant value in the instrument management system in order to provide the energy
to effect change both upwards to administration and downwards to the SPD staff members responsible for making the system work. Ideally, the champion should have both an OR and SPD background to bridge both departments. Finally, this champion needs to focus on the objectives the hospital wants to achieve with the system.

To get the most out of their systems, hospitals must have an internal staff member to manage it with respect to report generation, data entry and scrubbing, system modifications, training, vendor coordination, etc. Without this level of support, most hospitals have a difficult time keeping their data complete, current and useable.

If possible, hospitals should have their own educators train SPD staff on the new instrument management system upon initial implementation and to also provide ongoing support to existing and new staff members to ensure compliance and continuity. This is particularly important in the SPD department that often has high employee turnover rates.

**Stay Focused on Improving Scanning Compliance**

Even the best instrument management systems lose their effectiveness if a hospital’s SPD staff is not committed to scanning instrument sets correctly each time, every time. This lack of compliance may be due to resistance to change, forgetfulness, or a misunderstanding of scanning protocols. In order to get more scans into their systems, hospitals must spend significant time educating staff at the beginning of the program and also provide close monitoring and training to staff upon implementation. Senior management in the OR and SPD must be fully committed to this educational effort and to enforce compliance with scanning.

**Plan Ahead**

Since instrument management systems are designed to form the backbone of operations for a hospital’s SPD, it is critical that hospitals not only identify champion(s) and administrator(s) for the system, but also devote time to deciding what they want from a system, both on a strategic level and on a detailed level. Hospitals need to identify what specific instrument sets and what types of data will be tracked in the system. Implementation plans also need to factor in significant efforts targeted at staff education on not only changes in operational processes but also the implications the system will have on personal accountability. Effective planning to get buy-in on the system from both OR and SPD staff members is critical to the success of the program.

“With an instrument management system, the back end planning is more important than the front end work when you look at implementation. Hospitals need to have clearly defined goals and requirements at the outset and for the future. What is the real end game the hospital wants?” according to Jim Leitl, general manager of Cardinal Health, V. Mueller® Products and Services
The Future of Instrument Management Systems

Just as information technology has improved efficiency and reduced costs for countless other processes in different industries, we can expect that it will transform the delivery of healthcare in the same way. OhioHealth saw instrument management systems as part of its larger initiative to bring the benefits of IT to their operations. Likewise, the rest of the hospital industry can also be expected to follow their lead in the coming decade as it also looks to improve patient safety, control instrument inventories, reduce costs and become more efficient in an environment where reimbursement is increasingly restrained.

While the ability of instrument management systems to simply locate and identify instruments and sets throughout the work cycle is reason enough for their adoption, as hospitals gain more experience with the basics of their systems they have the potential to drive improvements in how surgeries are actually scheduled. Leading hospitals like OhioHealth are already working to interface their OR scheduling and operations systems, purchasing systems and instrument management systems to allow hospitals to proactively determine which instrumentation it will need for upcoming surgeries. Some OhioHealth hospitals are already using IMPRESS® to track instrument sets to the patient level with that data being securely stored as part of the patient’s permanent record in order to enhance patient care. This practice is expected to become much more commonplace and also much more specific with tracking of specific instrumentation to the patient level.

Once enough hospitals in a system or user group have operational instrument management systems, there exists significant potential to use the data in those systems to benchmark hospitals against each other to determine goals for SPD staff efficiency, productivity and cost metrics. Historically, hospital administrators have had a reputation of paying little attention to the operations in a hospital's SPD unless a problem occurs, but data derived from instrument management systems gives administrators new, actionable information to make important decisions about not only capital purchases and servicing, but how surgical services are managed in general. In effect, the systems enable the SPD to demonstrate significantly more value to the entire hospital.

In the two years since OhioHealth implemented its IMPRESS® instrument management system it has made significant strides and improvements in each of its SPDs. Managers at every facility report benefits ranging from improved efficiency, safety and clinician satisfaction to reduced costs and improved staff morale. In the end, the IMPRESS® system has become an integral part of OhioHealth that has helped to address some short-term challenges and also laid the foundation for strategic growth. Providing this broad process-oriented solution to hospitals is central to the mission of Cardinal Health.
About Frost & Sullivan

Frost & Sullivan (San Antonio, TX), a global growth consulting company, has been partnering with clients to support the development of innovative strategies for more than 40 years. The company’s industry expertise integrates growth consulting, growth partnership services, and corporate management training to identify and develop opportunities. Frost & Sullivan serves an extensive clientele that includes Global 1000 companies, emerging companies, and the investment community by providing comprehensive industry coverage that reflects a unique global perspective and combines ongoing analysis of markets, technologies, econometrics, and demographics. For more information, visit http://www.frost.com.

About Cardinal Health, V. Mueller® Products and Services

Cardinal Health (Dublin, OH) is an $80 billion, global company serving the healthcare industry with products and services that help hospitals, physician offices, and pharmacies reduce costs, improve safety, productivity, and profitability, and deliver better care to patients. Founded in 1890, the V. Mueller® Products and Services business of Cardinal Health is the leading developer, manufacturer, and provider of surgical instruments and services. The company has one of the broadest lines of surgical instrumentation in the world. The V. Mueller® brand IMPRESS® instrument management system is the leading system of its kind in the United States.