Patients over Paperwork

How DeRoyal's Continuum® inventory management system and RFID technology helps improve workflow and operations for Ambulatory Surgery Centers

CONTINUUM™
by DeRoyal

Current Healthcare Outlook

The current US healthcare industry presents significant opportunities for Ambulatory Surgery Centers (ASCs). Rising consumerism, advancements in technology, an aging population, and changing healthcare regulations contribute to procedures shifting from inpatient to outpatient. This shift expands the scope of procedures that an ASC can perform and as a result ASC's are seeing exponential growth in surgical volume. The healthcare industry expects ASC procedure volumes to grow significantly through 2026 at a rate of 16% per year.

Patients and their family members are increasingly involved in personal health decisions and are advocates in seeking high quality healthcare at the best value possible. Outpatient procedures performed in ASCs deliver quality care at a lower cost when compared to the same procedures performed in a hospital. This factor directly influences ASC growth through direct competition with the hospital. Technology advancements - such as robotic surgery, and implant systems – also contribute to growth by increasing the efficiency of surgeons and decreasing operating room time. The recovered time allows surgeons to perform more procedures, increasing case volume. With global average life expectancy increasing the fastest increase since the 1960s there is new demand for procedures designed to combat aging, such as total knee replacement, and vasculature procedures which create further growth opportunities for ASCs. As such, the Centers for Medicare and Medicaid (CMS) have boosted activity designed to increase patient access to care while lowering costs.

Healthcare regulation by CMS also contributes to ASC growth. In 2018, CMS removed six procedures from the inpatient-only procedures list. These changes enable ASCs to perform more procedures – spine, orthopedic, and prostate – increasing growth opportunities. CMS plans to remove additional procedures in subsequent years and will further increase ASC opportunities. The CMS value-based incentive programs and outpatient reimbursement models force hospitals to maximize quality of care while containing costs and improving operational efficiency. These regulatory objectives create administrative pressure on the hospital that increases overhead and decreases profit from outpatient procedures. The ability of an ASC to specialize and operate with less overhead enables reduced procedure costs, creating a competitive advantage. This advantage has led CMS and private insurers to encourage customers to seek care at an ASC.

The current growth of ASCs is also introducing operational challenges that require innovative solutions. These challenges include pay disparity, responding to increased demand, and the inability to implement cost-prohibitive administrative technology. Pay disparity between an ASC and a hospital creates an increased demand for services performed by an ASC. Both CMS and private insurers reimburse ASC at a significantly lower rate than a hospital performing the same procedure. This pay disparity places pressure on the ASC's profit margin with increasing case volume. As case volume increases, the ASC must consider how to control overhead to maintain a competitive advantage over hospitals. This process requires significant planning, resources, time, and money.

A key challenge for the ASC is the inability to implement sophisticated and cost-efficient Electronic Health Records (EHRs) and materials management systems. Typically, the ASC often resorts to manual processes that do not scale with increased demand. As case volumes continue to grow, ASCs must find solutions to increase efficiency and accuracy of operations. They are challenged to identify and implement a solution that can manage the inherent complexities of healthcare including scheduling, patient care, clinical workflow, billing, and inventory management. DeRoyal provides a solution by deploying a smart system that blends inventory management and point-of-use capture. DeRoyal's innovative solution automatically streamlines the complicated connections between these diverse but related processes through a smart, RFID-enabled system.

DeRoyal's Continuum® inventory management system platform provides a solution to the industry's most complicated problems helping ASCs and healthcare facilities increase efficiency and improve processes using a blend of inventory management and point-of-use solutions.

Continuum® Inventory Management System:

DeRoyal's proprietary hardware and software solution, deploys RFID technology for improved inventory control and charge capture. The Continuum® system accurately captures supply information throughout the supply chain and at the point of patient use. The Continuum® system encompasses a combination of inventory and point of use components that automate burdensome supply chain inefficiencies and non-value-added clinical activities resulting in streamlined processes.

Continuum AIR™, a portable RFID scanning device, works in tandem with Continuum's mobile app to simplify inventory management in any inventory area or location. The Continuum AIR™ system automates manual inventory activities such as counts, expiration checks, and locating items affected by a recall. Continuum AIR™ system quickly counts and reports RFID-tagged items as they are stored in the ASC inventory. Continuum's web app allows visibility into inventory status by alerting to impending expiration dates of products and by signaling for opportunities to reduce on-hand quantities. The Continuum AIR™ platform's ability to provide visibility and traceability into the supply chain also enables detailed analytics for improved operations.

Continuum's OSCAR® smart trash receptacle, automates the capture of supplies at the point-of-use. It minimizes manual input, thereby easing documentation accuracy. The goal is for clinicians to simply **Pick It. Use It. Throw it Away.**™ The OSCAR® receptacle automatically recognizes RFID-tagged supplies after wrappings and/or packagings are disposed in the receptacle and it reports critical details on screen for review by the nurse. Critical details include the product number and description, expiration date, serial number, lot number, and cost which allows for accurate tracking. In addition to RFID technology, the OSCAR® receptacle also can capture consumption with barcode scanning technology, generally deployed for inexpensive high-volume items that an account does not tag, such as gloves and surgical gauze. While not as efficient as RFID, bar code scanning also minimizes the need for manual entry. The nurse can interact with the OSCAR® receptacle's consumption screen to document wasting a product, review consumption for accuracy, and close a case to finalize consumption. The OSCAR® receptacle provides detailed analytics including supply usage levels and case costing data for improved Doctor Preference Cards and case cost adjustments.

DeRoyal's Continuum® system provides ease of use, accuracy, and visibility to all aspects of the supply chain so health systems can increase revenue, make informed business decisions, and allow clinicians to focus exclusively on patient care.

Peachtree Orthopedic Clinic:

Physician-owned Peachtree Orthopedics (Peachtree) has served greater Atlanta for more than 65 years. Thirty-four doctors provide care at eight clinic locations and two ASCs.

Before this case study, the ASCs deployed a manual workflow for disposable supply consumption documentation during procedures. Peachtree's EHR at the time did not have electronic capability for the clinician to enter this information electronically during the case. Peachtree's process required the circulating nurse to manually document supply consumption on a paper picklist during the case. This manual documentation was burdensome, time-consuming, error-prone, and competed with nurse-patient time. To improve accuracy while allowing the nurse to focus on the patient, Peachtree tasked supply chain to audit case consumption. For this revised process, the nurse transferred the paper picklist to a supply chain manager who reviewed and entered consumption data into the EHR. On average, the process required 20 minutes per case.

At the time, the facility performed an average of 149 cases per month, requiring approximately 50 hours of the supply chain manager's monthly time to audit consumption documentation. During these 50 hours, the supply chain manager could not complete supply chain tasks which ultimately affected ancillary workflows.

Unsurprisingly, the process forced the priority of supply chain activities over consumption auditing, creating a multi-month backlog that led to inaccuracies in inventory and billing delays.

Before implementation of the Continuum® system, Peachtree's EHR and electronic inventory management systems did not communicate, preventing the flow of automated data between them. This lack of automated data flow created an electronic reporting void that prevented automated reorders, rate-of-use calculations, and created blind-spots into proper inventory maintenance levels. The void forced manual, tedious, and labor-intensive inventory management processes, such as evaluating product usage, counting inventory, and determining product reorder quantities. It also forced manual quarterly inventory audits, consuming more than three days' time, and requiring participation from ten staff members, including nurses, scrub technicians, the facility manager, and supply chain manager.

Further, the lack of automation forced the ASC to maintain doctor preference cards on handwritten notecards. Over time, the manually prepared preference cards became inaccurate as surgeons adjusted personal technique to deliver optimal care. Peachtree realized that these manual processes hindered their ability to adequately respond to increased demand for orthopedic surgery.

Peachtree responded to these challenges by seeking technology to automate the entire supply chain process while helping to contain costs, increase staff efficiencies, and gain more operational visibility. The organization specifically aimed to recover nursing time for direct patient care, improve clinical documentation accuracy, and reduce manual tasks for supply chain to improve efficiency. DeRoyal's Continuum® solution helped to address each goal.

The OSCAR® receptacle automates supply consumption at point of use, recovering clinician time and improving documentation accuracy. The Continuum AIR™ system automates inventory tasks minimizing the need to manually count items and check for expired product. DeRoyal's Continuum® system allows for interfacing between other software systems, eliminating the electronic reporting void and reducing reliance on manual data entry. This feature permits the Continuum® system to update EHR and inventory systems and to automate many processes that required manual data input. Based on these benefits, Peachtree implemented the Continuum® system as a solution.

Implementation:

In 2017, Peachtree Orthopedics implemented DeRoyal's Continuum® system at the Perimeter ASC to improve clinical operations. The installation included one OSCAR® smart trash receptacle in each surgical suite for case documentation. The goals of the project were to reduce clinical time spent on manual supply documentation, improve clinical documentation accuracy, improve clinical staff satisfaction, and increase visibility of procedure case costs. Peachtree expanded the Continuum® system footprint by implementing an additional OSCAR® receptacle in a procedure room and introducing the Continuum AIR™ system to streamline inventory activities.

A working team of key stakeholders and end-users was required to coordinate workflow and integration planning, installation, and go-live. Peachtree and DeRoyal worked closely together throughout the implementation period. The teams scheduled weekly project status calls and in-person planning sessions to ensure readiness of all hardware and process improvements at go-live. DeRoyal's Installation Team installed the Continuum® devices, and the Implementation Team trained and prepared end-users for the improved workflow.

 Peachtree's new workflow required integration with third-party vendors – EHR and inventory management systems – to allow information sharing. This process required immense coordination from all parties, especially Peachtree. DeRoyal and the other two vendors put the customer at the forefront and worked together to streamline supply chain and consumption processes. The collaboration between the three

vendors allowed Peachtree to automate supply consumption documentation, seamlessly transfer data for supply depletion from inventory, and ensure timely transfer to billing.

"DeRoyal has been fantastic to work with and has always been flexible with us whether it be during contracting, throughout integration activities, and throughout post go-live support. Their flexibility makes them easy to work with and makes us want to work with them."

- Merri Rivers, President, Strategic Healthcare Alliances and Director, POC Managed Care Contracting

Installation of the Continuum® system required Peachtree to adopt a process to RFID-tag items used in surgeries. The RFID-tagging process involves planning and on-boarding to ensure the success of the system. The planning process required Peachtree to identify products for RFID tagging and establish procedures for specific disposable commodity items and consigned trunk stock items. The installation team installed the Continuum® system Print Utility technology that allows Peachtree to tag products at their facility. The Print Utility allows maximum flexibility in managing inventory used in surgery. For items not tagged, the bar code scanner attached to the OSCAR® receptacle allows capture for the lower cost items that Peachtree chose not to tag. This solution maximized accuracy of consumption while minimizing time circulating nurses spent completing the task.

The Continuum® System's Improvements Results:

With the Continuum® system, clinical documentation time takes less than two minutes for disposable supplies compared to the previous 10 minutes required for manual documentation of an average case, an 80% reduction. An interface between the Continuum® system and the EHR allows case consumption to be automatically transferred to the patient's record minimizing post-case data entry for items not tracked by the OSCAR® receptacle (i.e., consigned implants) and reduces time to complete case audits. In a survey, all nurses responded that they would recommend the Continuum® system to another ASC or hospital, and they indicated that the OSCAR® receptacle made the process for supply documentation easy and fast. The survey results demonstrate that the OSCAR® receptacle simplifies the process to document supplies allowing the bedside nurse to commit additional time to patient care.

The use of Continuum's AIR™ technology optimizes quarterly inventory activities. Continuum AIR™ system automatically captures inventory quantity on hand and other pertinent inventory details, such as lot numbers, serial numbers, and expiration dates when scanned. The Continuum AIR™ system automatically generates reports for easier entry of inventory information into Peachtree's materials system. The Continuum AIR™ system allows Peachtree to reduce time to perform quarterly inventory from three days and ten staff members to one hour and one staff member for RFID-tagged items.

"Using Continuum AIR™ simplifies complex and burdensome inventory activities. I use the AIR to automate inventory counts and expiration checks for RFID-tagged inventory. For a physical inventory count I can minimize the staff members involved in this activity. I recently did a quarterly inventory of over 3,000 items in just seconds…. That's 3,000 items I didn't have to search for or manually count which is a huge improvement from prior methods."

- Parker Hodge, Peachtree Supply Coordinator

The Continuum® system solution also helps with vendor negotiations and Doctor Preference Card (DPC) management. Continuum's reporting provides the necessary product usage details to initiate discussions with surgeons and vendors to negotiate product changes or price reductions. On one contract alone, the

Continuum® system identified the surgeons using a specific product so that the Materials Analyst could contact the physician to initiate savings opportunities of more than $10,000.

"The Continuum® system is very user friendly. I like that it is web-based because I can very easily view and export reports from the Continuum® Web App making my job more efficient. I find their usage reports to be particularly helpful because I can see all of the supply details right there and then can pick and choose how I analyze the data."

- Danielle Lorek, Peachtree Materials Analyst

The increase in consumption accuracy captured by the Continuum® system simplifies processes for updating and managing Doctor's Preference Cards. The system provides physician-specific and procedure-specific reports detailing the specific items and the quantity used across different procedures by physicians that clinicians can update DPCs accordingly. Increasing accuracy of DPCs ensures the presence of required items in the room before the start of surgery. Exact items and quantities readied before start of procedure prevents exit-and-enter activity by the circulating nurse and reduces potential risk of infection from opening the door during surgery.

Finally, the Continuum® system ensures the simple and accurate capture and reporting of case costing data which can aid in capturing the maximum revenue for procedures performed.

The success realized at Peachtree's Perimeter ASC led to the expansion of the Continuum® solution to Perimeter's third operating room. Additionally, Peachtree implemented the Continuum® system in their Piedmont ASC. The implementation includes an OSCAR® smart trash receptacle in each of their four operating rooms and implementing the Continuum AIR™ to facilitate inventory management tasks.

Summary:

- *80% reduction in nursing time spent on clinical documentation.*

- *8+ minutes of nursing time saved per case equating to more than 1,000 hours of nursing time redirected to direct patient care annually.*

- *+$10,000 savings on vendor negotiations due to usage visibility.*

- *Increased visibility of case cost for more than 8,000 cases and 33 physicians   .*

- *"Wasted" supply documentation accuracy – 100% of clinicians state it has made it easier to document wasted supplies.*

- *Reduced time to complete physical inventory for RFID-tagged items by 95%.*

- *Proactive expiration management for an average of 21% of supplies prevents supply loss.*

- *Minimized clinical supply documentation training to 30 minutes or less.*

References:

i.   https://www.reliasmedia.com/articles/143809-asc-market-growth-on-track-for-2019-and-beyond

ii.   https://www.reliasmedia.com/articles/143809-asc-market-growth-on-track-for-2019-and-beyond

iii. https://www.reliasmedia.com/articles/143809-asc-market-growth-on-track-for-2019-and-beyond

iv.   https://www.reliasmedia.com/articles/143809-asc-market-growth-on-track-for-2019-and-beyond

v.   https://www.reliasmedia.com/articles/143809-asc-market-growth-on-track-for-2019-and-beyond

vi.   https://www.healthstream.com/resources/blog/blog/2019/02/07/common-ambulatory-surgery-center-(asc)-challenges-in-2019

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