Central Sterile Management

Setting a New Benchmark
The Ultimate Sterile Processing Solution for Four Virginia Hospitals
by Dan Johnson and Jim Barton

Today’s Healthcare Environment

American healthcare facilities are in the throes of some
essential changes as hospitals and ambulatory surgery centers
nationwide are experiencing rapid growth. Increasing numbers
of surgical cases are driving the need for additional space,
capital equipment, surgical instrumentation and other resources.

The growth in surgical procedures has a direct impact on
the sterile processing department (SPD) or central services,
which must continually provide more output in the form of
sterile instruments to fulfill the needs of the operating rooms
(ORs), in a space that is too small for growing needs. Space
within the hospital is most often allocated to the ORs, which
generate additional revenue, rather than to cost centers like
central services.

At the same time, concerns over the high incidence of
hospital-acquired infections and inconsistent cleaning, decontam-
ination and sterile processing practices are leading to increasing
media coverage and public awareness of process quality
breakdowns. This, in turn, is prompting possible government or
watchdog oversight and the publication of facility infection
rates\(^1\) and certification of central services technicians\(^2\).

It is not uncommon to find widely varying practices
among hospital staff, even within the same healthcare network.
For example, there are often different ways of reporting and
tracking quality incidents. Within a single network of hospitals,
consultants recently found that some of the hospitals required
formal documentation and reporting of specific quality
incidents with the trends closely monitored and corrective
action steps taken, while other hospitals had only a verbal
reporting structure with little or no formal method of follow-up
and corrective action.

In the face of ever-increasing surgical procedure case
loads, unrelenting pressure to control patient care costs and the
need to dramatically improve processes and quality, many
hospitals today are seeking serious and effective solutions.

The Challenge

Bon Secours Surgical Services was that the SPD operation at
two of the area’s premier hospitals had not kept pace with the
growing number of surgical cases each year. Kathy Santini,
vice president of Surgical Services at Bon Secours Richmond
Health System, comments, “Surgical Services was landlocked.
The only way to expand our ORs was to take valuable Central
Sterile and storage space to create additional operating rooms.
Also, we were building a new hospital with limited square
footage opportunities.”

One of the toughest decisions was determining
which sets would be reprocessed and stored
at the reprocessing center.

At one hospital, the SPD seemed relentlessly stacked to
the ceiling with instruments in various stages of reprocessing as
the 30-year-old decontamination and sterilization equipment
was approaching the end of its useful life and inefficiencies had
crept into the processes. In addition, technicians were not
always readily available to assemble instruments and sets as
they became available, exacerbating the constraints and
resulting in a large, ever-present backlog of work at instrument
set assembly and sterilization stations.

SPD capacity had not grown to effectively support the
surgery center. The lack of adequate space and equipment had
resulted in reprocessing inefficiencies and unreliable delivery
from the SPD, and had become a major source of frustration for
the SPD managers and personnel within the sterile processing
and surgical departments.

A number of other issues coincided with the SPD
challenges. Facing the need to invest in additional surgical
instrumentation, Santini also recognized the opportunity to
share common surgical instrumentation between the hospitals.
Instituting a successful instrument sharing procedure would free
up funds for new instruments or other needed equipment.

In addition, there was a clear opportunity to improve and standardize SPD processes, process quality, delivery and the SPD’s responsiveness to the needs of the surgery centers. As part of the quality improvement process, instrument management technology was also under consideration.

The Analysis

Bon Secours, in partnership with the Central Virginia Health Network (CVHN), enlisted the help of SterilTek Inc., a wholly owned subsidiary of STERIS Corporation, to study these challenges and help develop a creative solution. Jean McGraw, vice president of Finance and Operations for CVHN, oversaw the project for Bon Secours Hospitals. Jim Barton, senior professional consultant for SterilTek Inc. was the project facilitator, and was responsible for bringing together the vast resources required to design and build the ORC. Barton also managed the development and implementation of the overall process flow. Materials management consulting was provided by representatives of Owens-Minor Solutions™, a unit of Owens & Minor Inc.

A team of multilevel representatives from the OR, SPD, IT and Materials departments of each hospital was assembled and began the analysis by conducting a capability study of each of the network hospitals. This study looked not only at the current resource capacities, but more importantly, at the projected requirements for the next 10 years. This capacity planning process clearly demonstrated the advantages of a consolidated reprocessing center that could serve all of the area hospitals.

The team also engaged in an exhaustive exercise to map the processes for using a consolidated center. The exercise began with detailed discussion and mapping of the current processes and was then integrated into a single process map of the future instrument reprocessing workflow from all area hospitals and ORs, through the reprocessing center, and back to the ORs.

Coinciding with the capacity planning and process mapping efforts, an analysis of instrument inventory levels and usage was conducted at each Bon Secours hospital. This information was needed to determine the healthcare system’s ability to share instruments among hospitals, develop a system for instrument marking and set bar-coding requirements, make onsite and offsite reprocessing and storage decisions, and determine instrument inventory requirements based on usage. An initiative was undertaken by the OR staffs to standardize preference lists and instrument sets for all hospitals in the system, which opened the door to sharing instruments by coordinating them through the new reprocessing center.

One of the toughest decisions was determining which sets would be reprocessed and stored at the reprocessing center. OR personnel were strongly opposed to losing direct control over their instruments. It was important for them to recognize which instrument sets were critical to store at the hospital. It was decided that unique instruments, instruments maintained only for emergency use, and some very fragile instruments would remain onsite. Any multiple sets in the inventory were directed to the reprocessing center. In addition, an “Instrument Missing” list was developed to identify and manage any needs not fulfilled when the case cart was assembled.

The Solution

The results of the capacity study and initial process flow planning demonstrated that the Richmond area Bon Secours hospitals could be best served by a single consolidated instrument reprocessing center. Work was started on the architectural design and layout for such a facility. The Bon Secours, CVHN and SterilTek teams worked together to concurrently design the facility, its technology and its processes, which ensured the most effective, reliable and responsive instrument reprocessing capability available.

As the project progressed the team recognized the advantage of building and delivering complete case carts to each hospital with both the surgical instrumentation and the disposable supplies and other materials required for the scheduled surgeries.
Details were worked into the plans to provide the storage and distribution capabilities needed for this coordination process. Working closely with materials vendors and materials management consultants from Owens & Minor, the team analyzed the surgical procedure and general hospital supply requirements. This resulted in the delivery of procedure-based supply packs from the vendor to the reprocessing center where they are matched with the surgical instrument sets in transportable case carts. Case-specific transportation carts were designed and manufactured that allow all instruments and surgical supplies to be picked, packed, fully enclosed and transported by truck to and from the hospitals.

The ORC was also designed to include the technology to track instrument location using a two-dimensional coding matrix that is applied to each surgical instrument. Censis Technologies Inc. installed a newly developed version of their CensisTrak® instrument management system that provides the ability for Bon Secours to track the instrument use for each patient, identify an instrument’s location throughout the reprocessing cycle, and to plan and manage preventative maintenance and repair for its entire instrument inventory. The data captured by this system will provide valuable information to Bon Secours as it continues to look at its surgical instrument usage and future needs.

Late in the project, the team decided to provide material support for the floor level hospital operations, so plans were modified to provide material storage and retrieval for general supplies. The material logistics planning allows for a consolidation of supplies for all areas of the hospital and will, over a short time, result in improved inventory turns and costs.

As the consolidated reprocessing center processes and workflows were developed, each hospital also maintained some capability to reprocess onsite. This allows the hospitals to provide rapid-turnaround capability and provides the capacity to decontaminate, assemble and sterilize instrument sets too delicate for over-the-road transport and sets for unique or emergency use.

The team’s concerted efforts resulted in the design, building and implementation of a state-of-the-art instrument reprocessing center that will service all of Bon Secours’ area hospitals. The doors opened at the reprocessing center on July 25, 2005 and the hospitals were phased in over a few months. The facility houses highly efficient processes to track, clean, disinfect, pack and sterilize surgical instruments, and to combine them with disposable supplies in a case cart.

The Benefits

CVHN and Bon Secours have developed a plan that provides for the future of the entire healthcare network. They’ve implemented technology solutions that greatly enhance service capability and improve instrument reprocessing for their OR customers.

The ORC offers highly efficient outsourcing of surgical instrument reprocessing, materials management,
The facility combines the latest technology and equipment with detailed quality control processes and practices to make this ORC the first complete OR support system of its kind.

storage and distribution, and hospital operating room procedure-based case cart preparation, as well as instrument maintenance and repair for participating hospitals. The facility combines the latest technology and equipment with detailed quality control processes and practices to make this ORC the first complete OR support system of its kind. Even more, the reprocessing capacity, efficiency and quality control processes of this ORC will satisfy the growth needs for Bon Secours and possibly other Virginia healthcare facilities for years to come.

The ORC also has a tremendous impact on the associated hospitals’ financial burden. Hospitals face significant capital investment if they want to update their sterile processing departments, since investment capital is needed for both equipment and additional space. The ORC provides a solution for both these concerns. By combining the reprocessing functions of several area hospitals into a single, centralized facility, the ORC provides greater combined capacity at a lower overall cost, freeing up much-needed funds to the hospitals and providing a degree of flexibility and responsiveness not available from the individual hospital reprocessing centers. The centralization reduces overall space requirements and relieves the hospitals of this growth constraint altogether. As Santini states, “Moving to a central location allowed us to build larger ORs.”

Process control and continuous improvement efforts also will have an extended benefit as the best practices that were developed for the ORC are shared across the healthcare network. The result will be optimal sterile processing effectiveness, standardized practices and the industry’s highest levels of quality.

The implementation of the ORC has not been without its cultural challenges. As Jean McGraw of CVHN put it, “Communication is the key with all of the stakeholders, especially the nurses.” Bon Secours and CVHN continue to face new challenges and growing pains as they transfer additional CS workload to the ORC, and healthcare managers nationwide are waiting and watching to see the degree of success and difficulty facing the Bon Secours/CVHN partnership. As the work that’s gone into the launching of the ORC begins to pay off, many of these managers will look to the consolidated CS model to answer the challenges of their own space, equipment, instrumentation and human resource constraints. At the writing of this article, SteriITek is involved in the assessment and planning of a number of similar facilities in the United States, Canada and Europe, and CVHN has contracted them to assess other non-Bon Secours hospitals for inclusion at the ORC. According to McGraw, “We and the other hospitals are excited about the opportunity to have SteriITek involved again. SteriITek brings to the table a totally dedicated, objective point of view, as well as the knowledge and expertise to guide us through all phases of this project.” Certainly, sterile processing consolidation and offsite facilities are not the answer to every health system’s problems, but as this ORC begins to perform and hit its stride, the option will become a more viable solution for others. 

References
1. Rhonda L. Rundle, Germ Reports, Some Push to Make Hospitals Disclose, Rates of Infection; February 1, 2005.

Dan Johnson is a senior professional services consultant for SteriITek Inc., a wholly owned professional services subsidiary of STERIS Corporation. SteriITek provides sterile processing workflow and growth solutions to healthcare providers. He works with hospitals nationwide to improve their CS operations and support OR growth. Johnson has more than 11 years of consulting experience in healthcare and other industries. His skills include areas such as Lean Process facilitation, process design, capacity planning, management training and organizational development. He is certified in Production and Inventory Control by the American Production and Inventory Control Society (APICS) and holds a masters degree in Operation Management from the University of Arkansas.

Jim Barton is a senior professional consultant for SteriITek Inc. Jim has 35 years of healthcare experience in equipment sales and the design and development of surgical and central services departments. He has successfully designed and supported the building of a number of offsite surgical instrument reprocessing facilities. He has been recognized by the American Institute of Architecture (AIA/ AHA) for work done with graduate fellowships and student design charrettes, a teaching and learning program for future healthcare architects. He has served on the AIA, Academy of Healthcare Architecture Graduate Fellowship Student Charrette and Vendor Advisory committees.