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- **Improve Patient Outcomes** - Exergen has MORE THAN 60 PUBLISHED STUDIES SUPPORTING ACCURACY FROM PREEMIES TO GERIATRICS IN ALL AREAS OF CARE. Unlike other thermometers, the Exergen TemporalScanner does not come into contact with mucous membranes, thus greatly reducing the risk of cross contamination. Additionally, full instrument sheaths, protecting the entire thermometer, can be utilized for all levels of cross-contamination protection.

- **Improve Patient Safety** - Exergen has no probe covers that can break, as often occurs with oral thermometers. With a lifetime warranty, your thermometers can be replaced whenever necessary at no charge. Exergen also has less environmental issues than other thermometer methods, increasing reliability of readings.

- **Reduce Costs** - Exergen doesn’t require expensive probe covers, and with a LIFETIME WARRANTY, COST SAVINGS OF UP TO 90% OVER OTHER THERMOMETRY METHODS can be achieved. Other thermometers can cost hundreds of dollars per year for probe covers and repairs. Exergen TA thermometers cost $0 per year.

- **Increase Efficiencies** - Exergen’s non-invasive temperature collection can be utilized on virtually any patient situation, therefore ONE THERMOMETER CAN BE UTILIZED THROUGHOUT THE FACILITY. Also, Exergen upgraded the thermometer casing to reduce or eliminate stress micro cracks that can allow harsh chemical cleaners to penetrate the material and cause fractures.

- **Attractive Payback** - Elimination of probe covers and repair costs, and easily affordable acquisition costs results in LESS THAN ONE YEAR PAYBACK for standardizing with Exergen TA thermometers.

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Renewing the oldest vital sign
Temporal Artery Thermometer validated by more than 60 published clinical studies

BY FRANCESCO POMPEI, PH.D.

Ever was known as a vital sign to ancient Egyptians at least 5,000 years ago, using the hand as measuring instrument. Galileo invented the first thermometer 500 years ago. Carl Wunderlich, ‘Father of Clinical Thermometry,’ proposed 98.6°F (37°C) as the mean normal temperature 150 years ago. Until very recently we have been taking patients’ temperatures more or less the same way for more than 100 years, circa 30 billion measurements per year worldwide (approximately half in the US). Can we improve on what we have been doing for thousands of years and countless billions of times? Emphatically yes.

Today’s patient expectations
Importantly, today there is a much higher patient expectation of non-invasiveness. After all, the 30 billion temperatures mean a similar number of probe insertions into a body cavity, causing discomfort and unnecessary indignity, as well as some risk of harm. Patients undergoing cancer treatment are grateful for a reprieve from things that hurt, when their temperature is taken with the latest non-invasive methods. It is not uncommon today for a parent to refuse to permit a rectal thermometer to be used on their child.

Non-invasiveness is unachievable if the vital sign lacks the necessary clinical accuracy. The scientific and engineering challenge is to accurately measure the temperature inside, from the outside. From medical science we have learned that certain external locations have useful properties for ascertaining internal temperature. The ear, for example, has a 50-year history of investigation for thermometry, and in the last 20 years devices developed on this principle have been widely used. Although perhaps less invasive than older methods, inserting a probe into an ear is not what patients consider non-invasive. Further, there are accuracy problems, particularly with small children.

Back to the future
As inventor of much of the ear thermometer technology in use, Exergen was asked by physicians to reconsider non-invasive thermometry, since ear thermometers were not an acceptable solution to the patients’ requirement for non-invasiveness and the clinicians’ requirement for accuracy. Within this context we re-examined the medical science of fever assessment, going back not 50 years, but 5,000 years, to the hand on the forehead.

Although never precise enough for clinical accuracy, laying a hand on the forehead provided useful fever indications under certain conditions, and was safe, gentle and a reassuring caress for the patient. Preserving these desirable attributes while making the measurement robust and reliably accurate for clinical use for all ages was the challenge. Our mathematical models indicated we needed to find an easily accessible external skin surface with high and consistent perfusion. We found this property at the superficial temporal artery, where it traverses the forehead. A measurement modality was developed based on scanning the temperature of the skin over the temporal artery, and with proprietary algorithms we could then accurately compute the internal core temperature, for all ages, under essentially all clinical conditions, as validated by more than 60 published clinical studies.

In the past ten years Temporal Artery Thermometry has become widely accepted and is responsible for about 2 billion temperatures per year by medical professionals in the US, a very good start in reducing the number of probe insertions into body cavities and improving the clinical experience for both patients and clinicians. Nearly ten million consumers have home versions for their personal use.

Future with zero cost and zero waste
An unexpected benefit of Temporal Artery Thermometry is that without insertion into a body cavity there is no requirement for disposable probe covers, and simple wiping is adequate. Thus, future operating budgets for thermometry in institutions using only Temporal Artery Thermometers are zero. Furthermore, with disposable waste eliminated, the institution contributes significantly to ‘green’ operations, while reducing storage space and handling costs. In the past ten years, US institutions have saved approximately $500 million in disposable costs, and nearly 50,000 tons in disposable waste. With Temporal Artery Thermometry initial cost is about the same as other thermometry devices available and acquisition cost is typically less than one year of disposables cost, thereby not requiring capital budgeting.

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- RECEIVE A FREE GIFT
SPECIAL FOCUS
6 Newswire/Fast Stats
10 MASTERS OF DISASTER PLANNING APPROACH CRISES AS NEVER EVENTS
Supply Chain must be prepped and poised to ensure business continuity.

OPERATING ROOM
18 TOOLS OF THE TRADE
Surgical instruments evolve in pursuit of efficiency, efficacy and safety
Surgical instruments vendors..................26
AORN product Spotlights ....................29

INFECTION PREVENTION
32 STOPPING SEPSIS IN ITS TRACKS
Sepsis affects 27,000,000 people annually but there are products and strategies that can help hospitals tackle the problem.
32 Prevention Update

CS CONNECTION
38 VALIDATED? IT’S COMPLICATED
Manufacturer’s IFUs are as diverse and complex as the instruments they cover.
38 Instrumental News
48 CS Solutions
Selecting suitable storage and shelving; long sleeves in the SPD
by Ray Taurasi
50 IAHCSMM Viewpoint
Good repair vendor relations improve safety, cut costs
by Julie E. Williamson
52 Self-Study Series
Wet sets: Assessing the issues
by Mark Duro

PRODUCTS & SERVICES
56 What works
Streamlining the receiving and delivery system
58 THWARTING THE CACHE AND CARRY BUSINESS
Secret supply stashes symptoms of deeper problems in inventory tracking.
58 New Technology

EXPERT EXCLUSIVES
4 SKU’d
64 People & Opinions
Before you plunge into CSC operations, ownership… Find out how deep the water is
by Fred W. Crans
64 Worth Repeating
66 Standard Practices
Reducing medical errors: How Supply Chain can help
by Karen Conway
68 Periscope
Value analysis training is a missing link to achieving VA potential, success
by Robert T. Yokl
67 Advertiser Index/Classified
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FAKE NEWS FOR APRIL FOOLS

There’s a fine line between alternative facts and real ones. As we pass through April 1, read these headline blurbs and decide.

1. Sprunging from the trendy “The Internet of Things,” one Supply Chain manager starts a basement cult centered on “The Purchasing of Things.” Suppliers around the country rejoice and fill the offering plate at each weekly worship service.

2. Clever purchasing director discovers that the CFO’s golf clubs can effectively work the kinks out of contract price matching with the GPO database if he whacks his own MMIS hard enough with a nine iron.

3. One hospital increases Supply Chain staff efficiency by making employees wear Foley catheters and leg bags in lieu of bathroom breaks. Savings generated from the workflow (and waste flow) improvements more than offset the costs of Foleys and bags purchased. Infection preventionists launch immediate protest.

4. After a cost-conscious hospital bans purchasing of EpiPens, an industrious infection preventionist develops a new way to deliver epinephrine through Nerf blasters you can buy in the dollar bins at your local pharmacy outlet.

5. Hospital value analysis manager is praised for improving clinical and purchasing process collaboration based on recommendations learned from the Dr. Oz television show.

6. In a new twist on the “wearables” fad, one company develops a special skin-tight “A.I.” suit that allows staffers to work 24 hours a day. Sterile Processing leaders express concern that the suits must be certified to function properly during that overnight 3rd shift.

7. In the latest effort to boost interest in supply data standards for healthcare products, GS1 Healthcare decides to incorporate the use of emojis in GTINs. Guess what the smiling turd represents?

8. To improve communications with Supply Chain, critical care nurses are flocking to the “Materials Management Magic Wand.” This insanely popular product is nothing more than a multicolored squeaky clown hammer that comes with easy-to-read instructions: An arrow pointing to a silhouetted forehead with the words, “ Aim here.”

9. Sterile Processing tech finds a creative use for older model sterilization containers as effective storage bins for staff sack lunches and for freezing frozen dinners.

10. New Louisiana university study finds that the best time for a New Orleans hospital to run low on supplies is between 3 a.m. on Fat Tuesday and 3 a.m. on Ash Wednesday.

11. Feeling threatened by growing interest in two-bin Kanban systems, the makers of automated supply cabinets up the ante by equipping each of their models with a built-in Keurig machine.

12. Automated Press Ganey sensors for immediate-access patient satisfaction scores represent the latest premium option for bar-code scanners, RFID scanners, and RTLS.

13. Cronuts become the newest incentive of choice given to doctors by the savviest and most hipsterish Supply Chain pros.

14. Repless “advisory” team caught watching Netflix and Hulu on their iPads during virtual client meetings.

15. A band of Luddite logisticians are developing Meaningful Use guidelines for clipboards, pens and sticky notes.

16. To promote adoption and implementation of electronic health records, former band members of ELO reunite and go on a national tour as EMR. They re-release “Don’t Bring Me Down,” with an emphasis on paper-based patient records and paper reimbursement.

17. Disappointed Supply Chain pros regret learning that 340B is not part of their compensation package. Nor are employee discounts for private-label products.

18. To boost interest and participation in UDI implementation, the FDA borrows from the Lean Community, developing a new way to deliver epinephrine through Nerf blasters you can buy in the dollar bins at your local pharmacy outlet.


20. What did Supply Chain pros give up for Lent? Top five sacrifices include stockouts, user-defined fields, Report Writer, patient charges and HPN. Wait, what? Sorry. Typos. They mean HPN’S SKU’d column.
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NEWswire

New sentinel event alert on establishing and improving safety culture in healthcare

In healthcare, leadership’s failure to create an effective safety culture is a contributing factor to many types of adverse events such as wrong-site surgery and delays in treatment, according to a new Sentinel Event Alert issued by The Joint Commission.

Safety culture is the product of individual and group beliefs, values, attitudes, perceptions, competencies and patterns of behavior that determine an organization’s commitment to quality and patient safety. Insufficient support for reporting patient safety events, intimidation of staff who report events, and refusal to consistently prioritize and implement safety recommendations are some of the factors that contribute to poor safety culture, according to the Joint Commission Center for Transforming Healthcare.

The Sentinel Event Alert outlines 11 tenets for healthcare leaders to address safety culture, including:
• Transparent, non-punitive approaches to reporting and learning from adverse events, close calls and unsafe conditions.
• Clear, risk-based processes for recognizing and separating human error and error arising from poorly designed systems from unsafe or reckless actions.
• Adoption of appropriate behaviors and championing efforts to eradicate intimidating behaviors.
• Establishment, enforcement and communication of all policies that support safety culture and the reporting of adverse events, close calls and unsafe conditions.
• Recognition of care team members who report adverse events, close calls and unsafe conditions or who have suggestions for safety improvements.
• Establishment of an organizational baseline measure on safety culture performance.
• Assessment of safety culture survey results from across the organization to find opportunities for improvement.
• Development and implementation of unit-based quality and safety improvement initiatives in response to information gained from safety assessments and/or surveys.
• Implementation of safety culture training into quality improvement projects.
• Proactive assessment of system (such as medication management and electronic health records) strengths and vulnerabilities, and prioritizing them for enhancement or improvement.
• Organizational reassessment of safety culture every 18 to 24 months to review progress and sustain improvement.

IHI and NPSF agree to merger

Recognizing that patient safety is a public health issue in need of fresh, robust approaches and constant focus for healthcare systems, the Institute for Healthcare Improvement (IHI) and the National Patient Safety Foundation (NPSF) announced plans for a merger, effective May 1.

IHI President and CEO, Derek Feeley, who will lead the combined organization, says now is the perfect time for the two organizations to join forces to help reset and reenergize the patient safety agenda, building on a mutual history of helping healthcare systems gain the knowledge and skills to implement harm reduction across the entire continuum of care.

By joining forces, IHI and NPSF will be more effective in helping leaders and frontline clinicians meet all of today’s challenges while ensuring that patient safety remains a priority along the way.”

Tejal K. Gandhi, MD, MPH, CPPS, NPSF President and CEO, says she and NPSF staff are equally excited about the merger. She sees it as a game-changing opportunity for the patient safety field.

“NPSF and IHI each have a history of raising awareness around patient safety issues and educating the healthcare workforce about best practices,” Gandhi said. “Our programs are distinct but highly compatible, and we share experience, expertise, and a common goal of accelerating patient safety improvement. NPSF has provided critical thought leadership with the aim of establishing safety as a core value in healthcare, and IHI has demonstrated an ability to influence large-scale, global change. This merger promises to strengthen our ability to advance progress in patient safety in the coming years.”

The merger involves significant new investment from IHI in patient safety. The merged patient safety teams, to be led by Gandhi, will combine existing NPSF and IHI patient safety programs and reflect an enhanced commitment to achieve patient safety around the world. All NPSF programs, including the NPSF Lucian Leape Institute and the Certified Professional in Patient Safety credentialing program, will continue.

Coupled with news of the merger, and with endorsement of IHI, NPSF is releasing Call to Action: Preventable Health Care Harm Is a Public Health Crisis and Patient Safety Requires a Coordinated Public Health Response. This document outlines how a public health framework can bring about widespread advances in patient safety and provides specific recommendations for how it can be used to reduce harm to patients and the workforce.

Page 8

FAST STATS

53%
of people surveyed think antibiotics are an effective way to treat infections caused by viruses, with people between the ages of 18 and 39 more likely to feel this way compared to older adults.

48%
of people surveyed think antibiotics are somewhat or very effective at treating the flu and 40% feel the same way about treating colds with antibiotics.

20%
say they know nothing about antibiotic resistant superbugs and 49% say they have a little knowledge about superbugs.

65%
of people who know at least a little about superbugs say the problem stems from doctors prescribing antibiotics for colds, flu, or other viral infections for which antibiotics are not effective.

29%
of people who know at least a little about superbugs think the problem is related to doctors, nurses and hospital staff not washing or sterilizing their hands often enough, while 44% believe increasing use of antibacterial soaps and hand sanitizers is also a problem.

94%
of people surveyed with at least a little knowledge of the superbug issue think hospitals should share in some or a lot of the responsibility for solving/reducing the problem; 95% feel that way about doctors; and 90% feel patients are also responsible.

81%
of people who know at least a little about superbugs believe development of new antibiotics would be somewhat/very effective in reducing or eliminating superbug resistance.


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ENDO-362501-AA January 2016
Many hand sanitizers contain up to 60%–95% ethanol or isopropyl alcohol by volume, and are often combined with scents that might be appealing to young children.

Recent reports have identified serious consequences, including apnea, acidosis, and coma in young children who swallowed alcohol-based (alcohol) hand sanitizer. Poison control centers collect data on intentional and unintentional exposures to hand sanitizer solutions resulting from various routes of exposure, including ingestion, inhalation, and dermal and ocular exposures.

Alcohol hand sanitizer exposures were associated with worse outcomes than nonalcohol hand sanitizer exposures. Caregivers and healthcare providers should be aware of the potential dangers associated with hand sanitizer ingestion. Children using alcohol hand sanitizers should be supervised and these products should be kept out of reach from children when not in use.

During 2011–2014, a total of 70,669 hand sanitizer exposures in children aged ≤12 years were reported to NPDS, including 65,293 (92%) alcohol exposures, and 5,376 (8%) nonalcohol exposures.

Overall, 64,488 (91%) exposures occurred in children aged ≤5 years, and 6,181 (9%) occurred in children aged 6–12 years. There was no association between sanitizer type and year.

Among all children, ingestion accounted for approximately 95% of reported exposures, including 97% of exposures among children aged ≤5 years and 74% among children aged 6–12 years. A higher percentage of older children (aged 6–12 years) had intentional exposures to alcohol hand sanitizers (866; 15.0%) than to nonalcohol hand sanitizers (40; 8.0%).

**Health IT safe practices: Toolkit for the safe use of health IT for patient identification**

Improving the accuracy of patient identification remains a challenge across all healthcare settings. Missidentifications occur during every aspect of care from registration to discharge and beyond, based on evidence analyzed by ECRI Institute PSO in its recently completed Deep Dive analysis of over 7,600 safety events related to patient identification.

These errors impact patient care, treatment, and billing. Moreover, once a mistaken identity gets embedded into a record, it may be extremely difficult to eradicate.

Recognizing the need for best practices to reduce patient misidentification, the Partnership for Health IT Patient Safety, a multi-stakeholder collaborative convened and operated by ECRI Institute, announces their second set of Safe Practice Recommendations. The Partnership’s evidence-based recommendations for the use of health IT in patient identification are designed to improve health IT safety and build upon other work in patient identification.

In the toolkit, *Health IT Safe Practices: Toolkit for the Safe Use of Health IT for Patient Identification*, the Partnership presents eight safe practice recommendations, along with actionable resources to facilitate the implementation of these recommended safe practices.

The patient identification workgroup, chaired by Hardeep Singh, MD, MPH, from the Michael E. DeBakey Veterans Affairs Medical Center and the Baylor College of Medicine, was comprised of nearly 40 leaders from various participating organizations and provider facilities.

“Patient identification is a complex topic and our recommendations were derived using a three-pronged approach—that of catching, matching, and display,” explains Singh. “Any focus for improving patient identification methods must include (1) accurate information gathering, or catching; (2) facilitation of accurate information matching; and (3) display of information to enhance patient identification.”

Following extensive review and discussion of the information, the group identified the following Safe Practice Recommendations. The resulting mnemonic encourages stakeholders to IDENTIFY:

- **INCLUDE**: Electronic fields containing patient identification data should consistently use standard identifier conventions
- **DETECT**: Use a confirmation process to help match the patient and the documentation
- **EVALUATE**: Use standard attributes and attribute formats in all transactions to improve matching
- **NORMALIZE**: Use a standard display of patient attributes across the various systems
- **TAILOR**: Include distinguishing information enhancing identification on screens, printouts, and those areas that require interventions
- **INNOVATE**: Integrate new technologies to facilitate and enhance identification
- **FOLLOW-UP**: Implement monitoring systems to readily detect identification errors
- **YIELD**: Include high-specificity active alerts and notifications to facilitate proper identification

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SPECIAL FOCUS

Masters of disaster planning approach crises as never events

Supply Chain must be prepped and poised to ensure business continuity

by Rick Dana Barlow

During the last decade, Healthcare Purchasing News explored the topic of crisis and disaster planning initiatives from a number of perspectives as they pertained to hospitals, integrated delivery networks, group purchasing organizations, manufacturers and distributors.

Specifically, viewpoints included functions and roles played with features spanning a global supply traffic control room deep within the bowels of a leading supplier to how several hospitals and hospital systems dealt with the aftershocks of natural disasters, such as hurricanes, superstorms and tornados, as well as highly contagious disease/pandemic outbreaks.

Last year, HPN highlighted some deep-seeded issues to consider when dealing with crises and disasters — prepping for immediate active response to long-term ongoing operations.

This year, HPN decided to pull back the camera for more of a panoramic perspective. As part of its 40th anniversary, we strove to profile at least 40 different crises a healthcare organization might experience or face, along with some salient considerations as they pertained to hospitals, integrated initiatives from a number of perspectives.

Interestingly, one source suffered a crisis of her own during the interview process when her hard drive crashed.

Anything can happen

Yet it doesn’t take even a creative mind to conceive a potential crisis or disaster in the making. To wit, ponder these: Sterile Processing’s sterilizers break down first thing in the morning with a full day of surgical procedures looming, but there’s still a backlog of dirty instruments from yesterday’s heavy surgical load that the night shift didn’t finish. The Operating Room has a full surgical schedule for the day after three Ebola-infected patients entered the hospital and required immediate trauma care. Your hospital was scheduled to receive a new batch of loaner instruments today, but the county dam broke and flooded all roads leading to your facility. An SPD tech running sterilizer loads is discovered to be an asymptomatic carrier of Zika. Due to the stress of meeting ever-increasing OR demands and experiencing some personal issues, one SPD tech decides that the best way to catch up is to just wipe the instruments down and send them along.

The possibilities that can interrupt business continuity and interfere with patient care seem endless. They can span hurricanes, tornados, dam breaks, swollen rivers, superstorms, earthquakes and mudslides, power outages, computer hiccups, cyber security lapses and information technology data loss, stock-outs due to international trade incidents and product recalls, pandemic disease-infected patients from overseas, active shooters wielding firearms, and even a scarcity of clean air or water.

Even one of the latest pieces of technology making its way into healthcare, a simple 3-D printer, can ignite a crisis or disaster. (Visit http://www.hpnonline.com/a-3-d-printer-can-do-what/ for the sidebar “A 3-D printer can do what?”)

Mayo Clinic delineates disaster planning and preparedness from business continuity, according to Jim Francis, Chair, Supply Chain Management and Chief Supply Chain Officer. In fact, Mayo’s Director of Business Integrity and Continuity and his team had to implement their disaster plans when Hurricane Matthew marched up the eastern seaboard of Florida last October. “It was given a real test,” Francis noted.

“We have been working for about a year on business continuity, which we define as any interruption that could interfere with patient care, postponement or cancellation,” Francis continued. “This could be as simple as a stock-out or backorder. Not many healthcare organizations are even looking at these possibilities.”

Stephen Kovach, Director of Education, Healthmark Industries, highlighted some of his impressions in the Sterile Processing field where crises can be disastrous.

“It is my view that all hospitals have standard disaster planning [measures],” he said. “They do the drills at least once a year for major fire, accidents, hurricanes, tornados. They have the disaster carts with back-up supplies. Departments also should have policies for what they should do when they do not have any means for sterilization.”

Yet Kovach stressed that Supply Chain and Sterile Processing may play important roles in crisis and disaster response, but it’s their response “to the unexpected crisis, the one not in the ‘playbook,’ that’s important. A crisis could also be that 90 percent of your staff doesn’t show up for work, so how do you get the work done and not stop surgery?”

Kovach recalled that when the Ebola crisis emerged several years ago that his company, which supplies long-sleeve gloves, was suddenly “swamped” with demand. “We could not keep them on the shelf because they protected past the wrist line or cuff and that is what people wanted,” he said. “And the thickness of our glove was what many hospitals were looking for.”

Some disasters may have little or nothing to do with Supply Chain, he acknowledged. If SPD’s sterilizers all break down, the department should have a plan and a system in place to maintain productivity, he noted. “You can have sister hospitals do your sterilization for you, but now you have transport issues, but you can get it done,” he said. “If the washer breaks down, you must now hand-wash items and have more staff available.”

HPN tapped more than a dozen provider and supplier executives to share ideas about crisis or disaster scenarios a healthcare organization might experience and how they might impact the supply chain as
well as their responses, presuming that the organization already activated its business continuity and integrity protocols.

Each source highlights and explains the crisis, followed by how the organization responded or should respond.

Infectious disease outbreak/pandemic

Jake Crampton, Founder and CEO, MedSpeed Inc.

A national outbreak of infectious diseases can cause healthcare organizations around the country to go on high alert. The 2014 Ebola outbreak in the U.S. is an example. As patients who tested positive for the illness began to enter hospitals, those systems had to quickly quarantine and treat them and transport the positive tests to the CDC. However, the stigma of delivering infectious disease specimens, and the stringent requirements for moving Category A substances, made it difficult to find an appropriate party to transport the specimens. As a result, some of the tests had to be transported by the doctors and nurses themselves, taking time away from patient care, increasing risk to the staff and those close to them and increasing general liability. Some crises are not as widespread or planned for but can have still have dramatic impact.

I am sure all healthcare organizations have processes in place for infectious disease outbreaks but not all of them have processes to cover the movement of potentially infected materials outside of the system. More today than ever, the supply chain reaches outside of the four walls of the hospital, and teams need to be prepared to extend its processes as needed. One of the first steps for a Supply Chain team during an infectious disease outbreak should be to work closely with logistics teams or partners to make sure that sensitive protocols are followed to protect the entire community.

Christopher O’Connor, President, GNYHA Services Inc. and Nexera Inc.

A communicable disease outbreak, such as Ebola, requires Supply Chain to be properly informed about the supplies required to protect staff and care for patients effectively. Supply Chain must be in constant communication with Infection Control, clinical, and administrative stakeholders during this situation.

In this scenario, Supply Chain should carefully monitor the growing outbreak in order to anticipate and make early decisions about clinical supplies and personal protective equipment for staff. These decisions have to be made based on the science and guidance available at the moment, recognizing that this will likely change.

In the case of the 2014 Ebola outbreak, healthcare organizations experienced major issues finding and stocking supplies. Supply Chain teams were under enormous pressure to evaluate the quantities of supplies that were necessary (based on the probability of an outbreak) and to source and stock extremely hard-to-find protective clothing. GPOs can serve as a valuable resource. In response to the Ebola outbreak, GNYHA Services kept in contact with the supplier community to monitor the availability of the supplies listed on the Centers for Disease Control and Prevention list, and informed the supply chain community about which vendors manufactured these items and the specific stock-keeping units (SKUs) for each. In many cases the supplies that the hospitals required during this outbreak were not available from traditional medical/surgical suppliers. GNYHA Services helped our members locate alternative suppliers and provided training and subject matter expertise for these and other required items.

Staff often require education on how to properly use the supplies required in this type of crisis. For example, education was a major factor in the Ebola outbreak because if staff did not don and doff the protective attire properly when treating a patient, they too could become infected. Supply Chain must work with clinical teams to ensure that proper use recommendations for each supply are available and communicated.

Russ Conroy RRT, Director, Safety and Emergency Preparedness, Mercy Hospital Springfield

Based on the level of protection needed, begin the process of moving appropriate supplies in response to the specific pathogen, hopefully from the pre-staged locations. Also, at this time begin to use the Personal Protective Inventory Calculator (Developed by Mercy Hospital Springfield). This calculator gives you the ability to change parameters and you can see the supply needs in the future. This calculator is extremely flexible and gives you the advantage of running several different scenarios. The calculator will supply information on how long the present supplies will last based on the usage parameters that are entered into it.

AI Webb, Director, Integrated Services, ROI

Immediately establish a Supply Chain Command Center led by pre-determined Supply Chain Leaders who will implement the pre-established supply chain disaster plan and coordinate supply needs, with the senior leaders and disaster preparedness leaders at the care site.

Facilitate access to the pre-staged inventories and coordinate delivery of the product to the care site. Immediately communicate with vendor/distributor partners for replenishment of pre-staged supplies and the acquisition of additional supplies as required depending on the length and breadth of the crisis.

Establish routine multiple daily update calls with Supply Chain leaders to keep everyone on the same page regarding the changing situation and related needs.

Mary Beth Lang, R.Ph., MPM, DSc, CMRP, Executive Vice President, Cognitive Analytics, Pensiamo Inc. and HC Pharmacy Central Inc.

A few years back, a non-patient walked through the lobby of one of the UPMC Cancer Centers. Upon notification from the Pennsylvania Public Health Department, we learned that the person was confirmed to have an active case of measles. UPMC launched a week-long effort to identify all visitors, staff and patients that may have come in contact with this person in the brief time this person was in the lobby of our facility.

We were notified by the Allegheny County Health Department that there was a possible measles exposure in a non-patient care area at one UPMC facility on a Friday and a second facility on the following Monday. Although the likelihood of exposure is very small, as a precaution we identified employees who were in the vicinity on one of those days and therefore may have been exposed. We worked with Employee Health to see if potentially exposed employees have a titer test on file from their employment physical. (A titer...
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diagnostic test is a blood test that will identify if a person’s antibodies are immune to certain disease agents; in this case, measles.)

Health authorities also said the exposed individual rode Port Authority bus leaving Fifth Avenue and South Highland Avenue going toward Shadyside and Lawrenceville at 9:12 a.m. on Friday, February 14. Anyone who rode this bus between 9 a.m. and 11 a.m. on that day may have been exposed. We knew patients and families may ask questions if they have heard this on the news so we prepared talking points:

1. We have identified patients who may have been exposed and we have reached out to them for testing and treatment.
2. If you are susceptible to measles and become ill with symptoms of measles between now and 14 days, please contact your primary care physician immediately.
3. Measles are caused by a virus and is highly contagious. Most people are vaccinated against the disease as children and exposures are very rare.
4. Symptoms of the disease can develop about 10 days after exposure and include a high fever, cough, pink eye and a rash.
5. We had a multidisciplinary team develop a Measles Exposure Plan and then held calls several times a day for multiple days to work the plan.
6. ED update – keeping track of all of the exposure patients and still providing ED care important. Triage was added to address the exposure patients separately from normal triage. Staffing was increased during peak times.
7. ED update – keeping track of all of the exposure patients and still providing ED care was important. Triage was added to address the exposure patients separately from normal triage. Staffing was increased during peak times.
8. Pharmacy update – immune globulin was required. We normally stocked the IV formulation. This formulation is infused over six hours. With so many patients presenting to the ED, H.C. Pharmacy had the IM formulation of immune globulin air shipped so that we could reduce the administration time.
9. Registration/charging – Since this was a public health issue, patients were not charged for the service or medication. We had a family with a 9-month old infant that would not come to the hospital because they could not afford to pay. After a few days or calls, the city police assisted in getting the infant to the ED for treatment.

Shutdowns, shortages

Erich Henke, Director, Business Integrity & Continuity, Supply Chain Management, Mayo Clinic

On Monday, February 20, the FDA shuts down the production line of a vendor producing a significant commodity item to the organization. This vendor is a sole supplier to our organization, and the FDA maneuver creates a large hiccup/disruption in the entire market. The products are critical to patient care and timeframe for availability of the items is unknown/uncertain.

Response should include: 1. Readily available list of substitute vendors/items for business critical items. 2. Pre-established internal escalation system to respond to shortage, both proposed practice changes as well as procedures to locate alternative items.

Terri Nelson, RN, Director, Supply Chain Operations, CQVA, Mayo Clinic

On March 3, the Chinese government announces all manufacturing will halt on April 1 to allow for air quality to improve prior to the start of the Summer Olympic Games. This shutdown will affect products manufactured only in China. Mayo will need a list of affected products and suppliers and determine what alternatives are available.

Mayo Clinic will need to scope out the storage facility is located and what plans they had in place to maintain inventory. Since this event, we have standard questions to ask manufacturers during requests for information (RFI) specific to where products are manufactured, how much inventory is kept in the U.S., where the storage facility is located and what are their contingency plans for any interruption in product availability.

Jake Crampton, MedSpeed Inc.

About a year ago, a Mid-Atlantic health system with busy patient volume experienced an IV solution shortage over a weekend. Its manufacturer notified the system that it was unexpectedly unable to deliver IV solution to several of its facilities, due to production shortages. Without the IV solution, the affected hospitals would not have been able to provide care to patients. This could have translated into poor patient outcomes, negative patient experiences, lost revenue and negative brand reputation within the community.

Any pharmaceutical shortage can come with great risk. Supply Chain’s first response should be to assess current supply throughout its entire system and implement a sharing process that can move the pharmaceutical in question around quickly to meet demand. At the Mid-Atlantic organization, the system had a logistical framework in place that allowed for this seamless redistribution and supply sharing.

Courtney Winstead, Marketing Manager, Instrument Management Services (IMS), STERIS Inc.

A local hospital system recently had three of its facilities shut down due to repeated compliance issues. As the only other system in the immediate area, your facility sees an immediate increase for surgery requests. While you do have the OR space and doctors available to meet the needs, your Sterile Processing department cannot reprocess quickly enough to satisfy the increased case load.

STERIS Instrument Management Services (IMS) has fully trained Sterile Processing technicians that can be deployed to the facility to offer support and alleviate the demands of the increase case load. These additional technicians have a heightened
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sense of awareness of industry best practices allowing them to help staff identify concerns and improve approaches of areas that might be brought up by a Joint Commission audit.

**FDA product recalls**

[Image]

**Jean Sargent, President, Sargent Healthcare Strategies**

Recalls affect all healthcare provider facilities and their many patients. There is little to no traceability to the actual patients who received product. Although we may not think of this as a disaster, it is. Recall notifications have increased over the past few years. To complete a recall within each facility is time consuming, anywhere from a few minutes to days. I received a recall sent out by a manufacturer for implantable products used in OR and Cath Lab. The recall was 30 pages long with 25 lines per page. The administrative assistant spent 8 hours looking up each item to determine if it was a product ordered by the facility. For those items purchased, she added the stock location to the page. The inventory tech then spent 2 hours looking for each product/serial number in each location. We had no way of knowing what had been purchased and used on a patient. With any recall, much effort is put into locating the recalled supply, most often, we don’t know what of the recalled product has been used on a patient.

The first response is to ensure all recalls are processed in a timely manner. The next response is to develop a robust item master which includes the unique device identifier (UDI) and work with clinical areas to capture that information in their systems. This is the first step in tracing the product use to the patient which will allow for the tracking of recalled products. Information for orthopedic and cardiac devices is being captured in registries to- day. Is Supply Chain aware and involved? If not, get involved. Meaningful Use Stage 3 takes effect January 2018. The require- ments are for information in the Common Clinical Data Set (CCDS), which includes the UDI for implantables, to be included in the patient’s electronic health record. This is one of the first steps in bringing the organizations together to endure all of this data is captured. This is a patient safety issue and a disaster to continue to work in the manner we have for many years. It is time to become proactive rather than reactive.

**Weather — hurricanes, tornados**

[Image]

**Mark St. George, Director, Supply Chain Operations, Mayo Clinic Florida**

A Hurricane Warning was in effect for most of North- east Florida on Oct. 7, 2016. Hurricane Matthew was a Category 4 hurricane with maximum sustained winds of 140 m.p.h. The anticipated track of Matthew was projected to impact Jack- sonville during the evening of October 7.

Mayo Clinic Florida enacted the Healthcare Incident Command System (HICS) and the Planned Emergency Response Team (PERT). PERT is a dedicated group of employees that agree in advance to staff the hospital in the event of a hurricane or other multiple-day disaster. The Mayo Supply Chain PERT Team consisted of 13 individuals that were part of nearly 600 individuals campus-wide deployed to execute the various phases of the Hurricane plan. The Hurricane Plan consists of four distinct phases that become enacted during a Hurricane Watch (Phase 1), which occurs from 48 hours to 2 hours to landfall, to Phase 4, which is initiated when severe weather conditions have diminished. Supply Chain executed our plan in Phase 1 by activating our PERT Team and the initial components of our Hurricane plan that largely consists of coordinating with our team members, suppliers and internal customers prepa- rations for an anticipated Category 4 hurricane. In addition, downtime procedures are reviewed.

In subsequent phases (2 and 3) Sup- ply Chain coordinated the procurement and delivery of all supplies that are part of our Hurricane formulary. These supplies are predetermined through interactions with staff and based on antici- pated patient populations that would be encountered in a disaster of this type. Supply Chain updates our formulary every spring and works with our dis- tributors and suppliers on the needed disaster supplies as well as accessibility of these supplies based on the various phases of our plan. Unique formularies exist at Mayo Clinic for other disasters, depending on their nature, such as mass casualty, chemical burns, pandemics, etc.

Supply Chain is an integral part of the HICS Command Center and also supports Vertical Relocation plans that would relocate ground floor operations to higher locations in the event of flood- ing. Finally, in Phase 4 when operations for Mayo Clinic Florida returned to normal (October 9th) Supply Chain also coordinated normal operations and con- tinuity of supplies for our patients. All of these preceding activities occurred in a 72-hour time frame.

Mayo Clinic Florida was fortunate that Matthew diverted from our coast at the last minute sparing a direct impact. As a Supply Chain leader you never want to be in a situation where you must execute on a disaster plan. However, we were fortunate in that we were able to execute and determine that our plan worked without major impact from the storm.

**Christopher O’Connor, GNYHA Services Inc. and Nexera Inc.**

Hurricane Sandy is an example of an event where procuring supplies was a leading request coming out of emergency response efforts. GPOs, such as GNYHA Services, worked closely with Supply Chain departments at area hospitals and long-term care facilities to procure the supplies essential to remaining open and continuing to serve patients and residents as well as meeting staff needs during and after the storm.

A major issue experienced during weather-related events is large-scale patient evacuation and relocation. There are two organizations and Supply Chain teams involved in this scenario: The sending facility and the receiving facility.

In preparation, Supply Chain should evaluate evacuation aid supplies and clearly document their location. If in a position to receive patients from other facilities, the hospital should estimate what their patient census might be and the maximum number of evacuating patients they would be able to accept. With this number in mind, Supply Chain must ensure that they think beyond a 72-hour supply during preparedness efforts in order to estimate what would be needed for surge patients and staff, such as bedding (for staff as well as patients) and food (including meals for those with a restricted diet). Supply
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Chain should also develop a process for tracking supplies that would need to go with the patient to the receiving facility (e.g., wheelchairs, IV poles, etc.). In these cases, it is important to track all expenses for reimbursement and submit them to federal and state governments after the crisis.

Patient transfer was a huge challenge during Hurricane Sandy. One hundred and fifty staff members from GNYHA Services, Nexera, and our parent organization, the Greater New York Hospital Association, helped area hospitals and long-term care facilities source a number of essential supplies, including generators and fuel to prevent avoidable additional patient evacuations; critical air gas to support patient transfers; and cots, mattresses, wheelchairs and food for the receiving facilities.

In these scenarios, Supply Chain teams must also consider how these last-minute supplies will be paid for should vendors request immediate payment. GPOs are an excellent resource for Supply Chain during these crises. Our relationships, on-staff expertise, and sourcing experience make us particularly well-suited to orchestrate essential connections and coordinate a successful response.

Al Webb, ROI

It’s important to already have a well-documented and practiced disaster plan in place so that leaders and co-workers are already familiar with the next steps. The plan must remain fresh and active in leader and co-worker minds and should be routinely reviewed, practiced and updated as resources and needs change. Pre-plan in phases: How to meet needs during the first 72 hours, the next two weeks, the months ahead.

Establish pre-selected alternative locations, with a couple of backup location options in place, to immediately establish a Supply Chain Command Center. Have a plan in place to help quickly secure alternative space for supply chain operations and storage for the varied phases of the disaster. Proactively negotiate agreements with critical suppliers/distributors on how and what level of support they can and will provide in the event of such a crisis. Proactively identify and activate predetermined supply lists that would be needed in this type of disaster. Consider establishing and coordinating a predetermined order at primary vendors/distributors that they can quickly ship to the care site in case communications and ERP systems are hindered.

Pre-plan and establish alternative communication plans if phones and computers are unavailable. The Supply Chain Command Center Leader(s) should lead in and direct the communication and coordination with senior leaders and local emergency preparedness leaders at the impacted site, Supply Chain co-workers, local community disaster coalition partners, county, state and federal agencies, vendor partners, people and organizations for assistance with immediate supply needs.

Many well-meaning people and organizations are anxious to help out, but without a plan and direction for what supplies are actually needed, how much is needed, when they’re needed and where they should be delivered and stored, local resources can easily become overwhelmed. They can quickly lose visibility to available undocumented supplies which then may go unused, result in wasted time and resources to replenish supply needs that have unknowingly already been met. And it can create a storage challenge for local limited resources. (Visit http://www.hponline.com/competition-crisis-disasters/ for the sidebar “What about competition during crises, disasters?”)

Once phone communication is available establish routine check-in conference calls with the Supply Chain Command Center and supply chain leaders at the care site to keep current on the situation and to coordinate supply needs at the site.

Gerry Romanelli, Executive Vice President of Business Development, TRIOSE Inc.

In October 2012, the impact from Hurricane Sandy devastated the New York metropolitan area. All transportation infrastructure — except the Lincoln Tunnel — leading to Manhattan was closed. Power outages impacted over 2.2 million people. A major research and acute-care health system located in Manhattan experienced heavy flooding and failure of a backup generator. The hospital was forced to divert patients to surrounding hospitals and evacuate its medical buildings.

With limited access to communication, the hospital had difficulty contacting suppliers to divert all orders to a temporary warehouse in New Jersey. As the health system’s supply chain partner, TRIOSE stepped in and engaged all suppliers and carriers with updated shipping instructions and served as the proxy between hospital and vendors. Ultimately, TRIOSE was able to help the hospital keep its supplies in the New York metro area so patients could have access to much-needed healthcare resources.

Supply chain should immediately notify carriers and suppliers about contingency plans that may impact procurement and delivery. In the case of the major healthcare organization in the New York City metro area, being unable to divert shipments to the temporary warehouse in New Jersey would’ve resulted in products returning to the supplier. This would have directly impacted the ability to provide patient care in a time of crisis or disaster.

Construction/utility breach

Dave Gossett, Product Manager, Mobile Solutions, STERIS Inc.

A sewer line leak was identified and needed to be addressed immediately. Repairs to this line involve jackhammering through the floor of the SPD and making the area inaccessible during the month-long planned downtime for this and other repairs to the area. The hospital wants to maintain case load during this time while continuing to provide on-site sterile processing to maintain a high level of productivity and profitability.

STERIS Mobile Solutions offers a fully integrated, mobile SPD that allows support for the Operating Room without disruptions while protecting the integrity of the healthcare process through unexpected construction. These mobile units allow the staff to continue reprocessing instruments leaving no gaps in a compliant process – from decontamination through sterilization. When deployed, STERIS support staff work with the facility’s planners to ensure optimal placement of the mobile unit and that all necessary facility requirements were met. Mobile does not mean drop-off, set up and leave. STERIS Sales, Service and Clinical Specialists provide support throughout the entire process.
Power outages

Russ Conroy, Mercy Hospital Springfield

What if you experience catastrophic loss of utilities to the supply chain location? Every Supply Chain location should have two plans. First: How are you going to support your facilities? Second: How are you going to support yourself if your location experiences a catastrophic event? With this second thought each location initiates their Continuity of Operation Plan (COOP) or some individuals refer to as a Business Continuity Plan (BCP). This lays out the response to any significant event that interrupts the day-to-day operation of supply chain location.

Al Webb, ROI

It’s important to already have a well-documented and practiced COOP/BCP in place so that leaders and co-workers are already familiar with the next steps. The plan must remain fresh and active in leader and co-worker minds and should be routinely reviewed, practiced and updated as resources and needs change.

Make sure to pre-plan alternative communication options and immediately communicate the situation to customer facilities, with ongoing follow up communications as the situation continues and/or changes. Local Supply Chain leaders can then implement their local COOP/BCP plans for Supply Chain.

Immediately communicate with co-workers and have pre-selected alternative locations, with a couple of backup location options in place, to immediately establish a Supply Chain Command Center and supply chain operations. This includes pre-established plans with IT and Telecom for equipment and system needs. Implement pre-established supply plan with vendor/distribution partners as needed.

Ed Spears, Product Marketing Manager, Eaton

The hospital data center is where information comes together — integrating patient data information, the latest clinical protocols and departmental systems into actionable information along with backup, network activity, communications and security systems. Because these systems are so vital, even extremely short power outages of a few seconds can compromise massive amounts of data — not to mention the health of individual patients via electronic health records — and cause costly damage to sensitive medical equipment and IT systems.

Assure data and system integrity by utilizing a power management system that has the capabilities to mitigate any damage to IT and medical equipment. To avoid any possibility of unplanned downtime, hospitals need a reliable uninterruptible power system (UPS) solution to protect and monitoring support systems against a full range of problems from spikes and sags to full power interruptions.

Power distribution units (PDU) also provide reliable data center power distribution for healthcare IT environments. To deliver effective power management and monitoring, a PDU will optimize both utilization and availability down to the branch circuit level, while providing proactive warning if any circuits are approaching overload. Virtualization software can integrate with the datacenter UPS system to initiate the automatic transfer of data and computing functions to another facility, or to a disaster recovery backup datacenter.

Terrorist attack

Christopher O’Connor, GNYHA Services Inc. and Nexera Inc.

A terrorist attack, with the potential for mass casualties, such as the Pulse nightclub shooting in Orlando or the World Trade Center attacks, are fast-moving events that call for a high level of preparation and an immediate Supply Chain response. It is critical that the necessary supplies are on hand to treat the wounded. This is especially critical for rural and community emergency departments as they do not always have immediate access to the additional supplies, drugs, or staff needed to care for a sudden spike in patients. A contingency plan must be in place.

Supply Chain should create and maintain a list of high-demand supplies and drugs, their locations, and how to receive additional inventory in the event of a terrorist attack. The emergency preparedness plan should include an analysis of previous mass casualty incidents experienced locally or in other areas of the country. This analysis provides the Supply Chain department with an idea of the type and quantity of supplies needed to take care of a single critical patient. They can then estimate how many critical patients would deplete the inventory they keep on hand. If the facility is part of a larger health system, it should plan resource coordination.

At the onset of the event, immediate considerations must be made for the transfer of patients and staff, and the necessary supplies and drugs needed at the new location. These details should be considered in advance through emergency preparedness planning. This process can change depending on access to the location of the receiving facility.

The Supply Chain response can include communicating with their group purchasing organization and related vendors and distributors for support. As we are based in New York City, GNYHA Services and our parent organization, the Greater New York Hospital Association, were heavily involved in the 9/11 response. Providers were dealing with the expectation of mass trauma, a massive power outage, and a city under lockdown at the onset of the attack. In coordination with government agencies, we helped transfer necessary supplies from the city’s hospitals to Ground Zero, triage locations, and the medical examiner’s office. Even though they had lost power, the hospitals within the vicinity of the attacks needed to keep running and caring for first responders. This was achieved through the unique coordination of police, city officials and hospitals that held contracted relationships with fuel companies, medical/surgical distributors, protective equipment suppliers, and many others to get the necessary items where they were needed in order to remain in operation.

The reaction to 9/11 was also an example of how good intentions can create unexpected and unintended supply chain issues during a crisis. Hospitals often receive huge donations during a crisis. In the case of the World Trade Center attacks, Supply Chain departments were struggling to keep up with the supplies that appeared unexpectedly as they had no way to catalog, inventory or store them. Hospital Supply Chain departments would be well-served to include a plan for dealing with this issue as part of their crisis planning. HPN

Editor’s Note: To read about more crisis disaster scenarios and appropriate responses, including chemical/nerve agent exposure and access to drinking water, visit http://www.hponline.com/masters-disaster-planning-approach-crisis-never-events/.

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OPERATING ROOM

Tools of the trade

Surgical instruments evolve in pursuit of efficiency, efficacy and safety

by Valerie J. Dimond

Innovation and progress continues in the surgical instrument market as manufacturers improve on earlier generations or disrupt with novel ways of making surgical procedures and pre-op prep safer and more efficient. Here’s a snapshot of what some surgeons and perioperative professionals are using to improve procedural outcomes, efficiencies and reduce surgical infections. Also, be sure to check out HPN’s listing of surgical instruments and services suppliers at the end of this feature. There’s everything from powered devices to trocars, rongeurs, staplers and scalpels, instrument repair services, tracking and storage technologies and more.

Assistive technology

Olympus America Inc. recently received FDA 510(k) clearance of claims that the ENDOCUFF endoscopic device, the previous iteration of its recently launched ENDOCUFF VISION, improves adenoma detection rates (ADR) during colonoscopy over standard colonoscopy. When using the instrument to assist during a colonoscopy procedure, precancerous polyps are more likely to be found reducing risk of interval cancer. “The ENDOCUFF is the first colonoscopy technology to be cleared by the FDA to claim improved adenoma detection rates,” said Kurt Heine, Group Vice President of the Endoscopy Division at Olympus America Inc. A meta-analysis has determined that the ENDOCUFF results in a statistically significant and clinically relevant improvement in ADR, as compared with unassisted colonoscopy, due to its unique design which enables manipulation of bowel folds for maximized visualization of mucosa. The ENDOCUFF and ENDOCUFF VISION are distal attachments that incorporate multiple flexible arms that fold within the product during intubation so that forward movement is not hindered and then extend when the instrument is drawn backward. The devices also allow for controlled withdrawal of the colonoscope, and minimize difficulties associated with looping of the scope, and minimize risk of mucosal trauma. Olympus said peer-reviewed studies are still required to show clinical equivalency of the ENDOCUFF VISION but noted also that the material, proprietary hinge design and moment of force are identical among the two products.

For endoscopic-based urological procedures requiring a wire guide, Cook Medical’s Motion Hybrid Wire Guide is a useful alternative that does the job of two separate devices. For example, typically, when a surgeon needs to gain access to the urethra, skin or other area to place equipment, such as an endoscope, two devices — one to establish access (fixed core wire guide) and another (working wire guide/Amplatz) to facilitate placement of the instruments — are needed.

The Cook Motion Hybrid Wire Guide streamlines the entire process. “The introduction of hybrid wires may remove multiple steps from urological procedures,” explained Jean-Marc Creissel, Vice President, Urology, Cook Medical. “Hybrid wires combine the slick, kink-resistance of nitinol wires with the rigidity and control of an Amplatz-type wire. A physician can use the hybrid wire to gain access, and then continue dilating the tract and place additional devices using the same hybrid wire, which may remove the need for an additional catheter or dilator, and a second wire guide. Using a hybrid wire guide can potentially reduce the number and variety of wire guides that a facility has to stock since one wire can be used for the entire procedure.”

The Cook Hybrid Wire Guide features include a Nitinol core for kink resistance, a slick, hydrophilic-coated nitinol tip for smooth access, tungsten-filled radiopaque tip to aid in visualization during fluoroscopy, a rigid, Amplatz-like body to make device placement easier, Teflon coating for good tactile control and maneuverability, and a tapered proximal end to help accommodate scope placement.

Cutting edge solutions

Earlier this year, Ecomed Solutions launched the Sureglide cesarean scalpel, an instrument designed to reduce the risk of fetal injury caused by nicks, cuts and lacerations. These injuries occur most often to the face, cheek and ear of the fetus which are often in the line of the hysterotomy incision. In addition, the Sureglide scalpel has safety features to help protect surgeons and other staff from sharps injuries. “The most stressful aspect of a delivery for every doctor is getting the baby out safely,” explained Sureglide Medical Consultant Dr. Andrea Wolfe, an ob-gyn practitioner based in Grand Rapids, MI, in a press release. Sureglide’s design and movement eliminates fetal exposure to the blade during a hysterotomy, regardless of uterine wall thickness or number of passes. The protected blade cuts up and away from the fetus, eliminating blade exposure to surgical staff while the ergonomically designed handle provides greater control, familiar feel and line of sight to incision, as well as raised ribs for better grip.

For surgeons who perform cataract surgery, which accounts for nearly 4 million cases in the U.S., Diamond knives by Accutome, a Halma Company, allows for consistent reproducible incisions, said Accutome Sales Manager Colin Jenkins. “Diamond knives allow for consistent reproducible incisions which have excellent wound characteristics when done by a properly trained surgeon,” Jenkins said. “This is important in having the wound seal properly to reduce the risk of an infection. The retractable safety blades can also be re-honed for smaller-size incisions. “The fact that the same blade is reused throughout a surgery day means the cutting characteristics will remain consistent versus the variability of using multiple disposable blades.”

Jenkins added that the investment — Diamond knives run between $1,000 and $3,000 — is well worth the cost, as long as the instruments are handled and maintained properly. “Though the initial price of a diamond knife is expensive, the knife can be used thousands
Lowering total cost of ownership together.

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of times, thus Diamond knives can save a facility tens of thousands of dollars over disposable blades."

The ELAN 4 universal high speed power system from Aesculap is used for Neuro and Spine procedures as well as Oral and Maxillofacial, ears, nose and throat, and hand and foot trauma procedures.

Craig Shepherd, Senior Product Manager, Power Systems, says some of the problems that surgeons encounter when using similar drilling equipment include over-heating and lost power, change and reload complications, surgeon hand fatigue, sharps safety, and risk of contamination and infection during reprocessing. He says the ELAN 4 direct drive approach delivers smooth running properties to reduce heat and noise and can deliver ample power and torque for cutting and removing the skull bone flap during a craniotome. ELAN 4 also has an ideal motor location for improved ergonomics, even weight distribution, reduced size, and improved balance. Passive safety features automatically lock the drill when surgeons turn on the handpiece.

Shepherd described a few more features. “Having the ability to quickly change and reload the correct cutting instrument into the power handpiece is critical,” he said. “ELAN 4 simplifies these tasks by delivering on design changes requested by the customer. The uncomplicated handling and simple Intuitive Plug-N-Play assembly for all tools and attachments enables the OR team to deliver surgeon requested cutting tool changes, quickly and easily without the need for assembly tools. Universal burr length — one-tool-fits-all drill lengths — reduces the requirement for the OR team to manage multiple tools in different lengths, further simplifying the OR while reducing inventory carrying cost and shelf space offering savings potential.”

To help reduce contamination, risk for infection and readmissions, the ELAN 4 can withstand flushing and total submersion in enzymatic and disinfectant solutions, unlike other power drills. “ELAN 4 meets the highest reprocessing requirements for not only external, but internal disinfection and can be re-processed either manually, or via mechanical washer/disinfector systems,” Shepherd asserted.

The gSource Easy2Clean Kerrison Punch is another innovative tool that is also used during spinal surgery to grasp or excise tissue, degenerated disc material and bone, says Liz Ostrow, Marketing Manager, gSource. She says a common challenge that surgeons face during spinal procedures, when using a standard spinal punch, has to deal with tissue and debris that can get trapped between the instrument’s main body and sliding parts. Scraping and striking the punch against another surface to try and dislodge the material can cause damage to the instrument. There’s also a great concern about the thoroughness of cleaning and sterilizing such instruments. “The buildup and debris...
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OPERATING ROOM

that is not completely cleaned and removed prior to disinfection and sterilization is not only unsanitary, it can cause infection,” said Ostrow. “The bioburden, or number of microorganisms on a contaminated item, that collects in between the main body and slider can form a hard shell which protects the microorganisms from sterilization.

“The Easy2Clean Kerrison Punch is designed to open and close easily for complete cleaning in between the main body and slider, helping to reduce the risk of infection,” Ostrow continued. “The instrument remains in one piece for easy and quick reassembly. Central Sterile personnel do not need to worry about losing or mixing up parts as all parts remain together, helping to save valuable time and ensuring instrument will function properly during surgery. Delays in OR set-up and surgery caused by damaged or unclean instruments are reduced. Also, instruments with a smooth and precise function help a surgeon perform at his/her best.

“The per-use, long-term costs of disposable instruments are very high over the course of hundreds, thousands of procedures,” Belluche asserted. “The situation is reversed for fully reusable devices, which are intended for multiple uses. They are typically high in quality at the start and have a low per-procedure cost, but also have higher up-front costs and their quality declines with each use as the tip wears down. Reusable instrumentation, on the other hand, can help materials managers provide surgeons with high quality devices for every procedure coupled with low per-use and long-term costs while minimizing waste. Some materials managers are opting to reprocess higher cost devices but implement reusable instruments such as scissors or graspers to trim costs on already low-cost basic endomechanical instrumentation.”

In March, Ethicon released its ENSEAL X1 Large Jaw Tissue Sealer, the next generation in advanced bipolar devices. The instrument is the first in a new generation of ENSEAL devices and, the company says studies show that it provides better sealing than LigaSure Impact device through less bleeding, less thermal spread and better ergonomics. The ENSEAL X1 Large Jaw is compatible with the existing Ethicon GENI1 Generator and can replace other products or provide an alternative to existing Ethicon advanced bipolar devices.

For brain radiosurgery, Elekta’s Leksell Gamma Knife Icon received 510(k) clearance from the U.S. Food and Drug Administration in August 2015 and approval from Health Canada in February 2017. Susan Springer, MD, Medical Affairs Manager for Elekta says more than 1,000,000 patients have been treated with the Leksell Gamma Knife and that it has been featured in more than 2,800 published peer-reviewed journal articles. “There are several different systems used to provide radiosurgery, but Gamma Knife is the only system developed and dedicated specifically for brain radiosurgery, where precise dose targeting is especially important for preserving function and minimizing damage to healthy tissue,” Dr. Springer said. “This high level of precision makes Gamma Knife an increasingly used treatment option for patients with primary or metastatic brain tumors and other neurologic disorders such as severe facial pain (trigeminal neuralgia) and vascular malformations.

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InstruSafe® Instrument Protection Trays provide 360 degrees of protection for your instruments during sterilization, transportation and storage. Our trays are validated for steam and low temperature sterilization cycles for both sterile wrap and popular rigid containers.* Each tray is organized so that every instrument has its own position within. If one of our 100 preconfigured designs isn’t the perfect fit for your instrument set, no problem! One of our product specialists will work with you to create a custom solution.

*A full list of validations and intended use can be found at www.instrusafe.com

Your trusted leader for instrument longevity — contact us to start reducing your instrument repair and replacement costs today!
“Gamma Knife can be used as a standalone treatment for a variety of brain indications or in combination with surgery. The option of the mask and the accuracy of the Leksell Gamma Knife Icon over multi-session treatments means that larger tumors and tumors close to critical structures which may not be suitable for a single session treatment, can also be successfully treated over several sessions (known as fractionated treatment) with Leksell Gamma Knife Icon. The system’s integrated stereotactic cone beam computed tomography scanning and treatment planning software enables dosage and targeting to be automatically corrected and viewed prior to the patient’s treatment session and can be re-evaluated before each session for patients undergoing multiple treatments over time.”

Leksell Gamma Knife Icon’s frame-based immobilization option stabilizes the patient’s head during treatment. The frameless model works using Icon’s Online Adaptive DoseControl in which treatment planning software automatically adapts for patient translations and rotation shot by shot. At the operating console, it compares the planned dose to the dose about to be delivered to ensure accuracy and, if not, correct it in real time. Personalized mask fixation provides immobilization to help plan and guide treatment, and a motion management system uses infrared light to detect patient movement outside of the treatment limit to ensure that radiation is delivered to targeted areas only, not healthy tissue.

Preventing infection, increasing efficiencies

Many surgical procedures will also require some amount of hair removal from the patient first. But any hair clippings left behind can also potentially increase risk of infection. Stephen Placeway, Senior Manager, Product Marketing, Infection Prevention, BD, explains. “Hair clippings, which contain the same pathogenic bacteria as skin, can be left behind on patients, linens and the OR floor. Hospital-acquired infection outbreaks have been traced to organisms isolated from hair or scalp.”

To try and reduce the risk, clinicians have used tape, adhesives and mitts to try pick up the hair left behind on skin and linens. However, those methods may not be the best way to accomplish the task. “There is evidence associated with the risk of bacterial cross-contamination with adhesive tape,” asserted Placeway. “Adhesive products have also been shown to strip skin and cause micro-abrasions, increasing the risk of infection. There is also a population of patients who will exhibit an allergic response to the adhesives from tape.”

The ClipVac hair removal system, a vacuum-assisted surgical clipping device,

Has your facility been cited for improperly handling soiled instruments?

- Walking non-containerized instruments to the soiled utility room.
- Transporting clean instruments in a red container.
- Transporting instruments in bowls/trays without lids or covered with a towel.
- Using trays without a biohazard label.

Instead, safely transport soiled and clean instruments:

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## 2017 Surgical Instrument & Accessory Vendors

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- Electrosurgical Accessories
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- Instrument Maintenance/Repair/Cleaning Services
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- Laser Instruments/Cavities
- Needle Holders
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- Staplers/Staple Guns
- Stents, Drug-Eluting
- Sterilization/Stainless Steel Products
- Surgical Power Tools
- Surgical Robots & Accessories
- Surgical Site Markers
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New MICRO-TOUCH Nitrile Exam Gloves feature textured fingertips and offer exceptional comfort by providing great fit, feel, and sensitivity. The gloves boast an industry leading AQL (1.5), are FDA approved for handling certain chemotherapy drugs, and offer an XX-Large size available to better fit your needs.

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Compression Socks are comfortable, stylish and unisex. Manufactured with moisture wicking, and anti-odor micro nylon fabric, they are designed to help battle muscle fatigue and increase circulation in the lower legs and feet. Compression Socks reduce swelling and recovery time for the active individual. Wide hand-stitched bands supply superior calf and shin support without leaving marks. The flat stitched toe cage keeps socks in place and provides ultimate compression control and comfort.

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METRO
Case Carts
Enclosed case carts from Metro are designed to be quieter and easier to roll to raise staff and patient satisfaction levels. They are engineered to store more in less space and reduce reprocessing time, driving efficiency in your case management process.

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CS MEDICAL
TPorter, TEE Ultrasound Probe Transportation and Procedure Case, was designed to effectively and securely move high-level disinfected TEE ultrasound probes to the procedure area and then return the biologically soiled TEE ultrasound probe for reprocessing. TPorter will help minimize the risk of probe damage and reduce staff exposure to potentially hazardous biological material.

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DALE MEDICAL
Hold-N-Place Adhesive Patches — Simply Secure
Secure, yet skin-friendly, these patches fit all Foley catheters and allow for easy catheter repositioning. Reduce risk of urethral erosion, catheter-associated UTIs, pistoning and accidental dislodgement. For samples call 800-343-3980 or visit dalemed.com/hold.

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STERIS IMS
Instrument Management Services
STERIS is a global leader of infection prevention, surgical products and service solutions which includes STERIS IMS, a leading provider of surgical instrument, endoscopy repair, consulting services and education. Our integrated approach to healthcare connects the products, solutions and people to help you achieve the highest healthcare standards.

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INNOVATIVE STERILIZATION TECHNOLOGIES
ONE TRAY — One Standard of Care — the ONE TRAY system is a STERIS cleared, filtered vent sterilization container that utilizes a 4-minute pre-vac cycle with no dry or cool times required. Efficient. Durable. Storable. Secure. Safe. Invest in the Best!

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GETINGE
The R-D Rapid Disinfector is a free-standing, mobile disinfection system that uses state-of-the-art UVC light technology to kill pathogens on environmental surfaces, including shadowed areas. Patented, wireless remote sensors definitively measure actual UVC light to determine if the published UVC kill dose was delivered to the target areas of the environment.

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VENDOR SPOTLIGHTS

DALE MEDICAL
IV-ARMOR — Intravenous Line Protection
These flexible protective overlays minimize downstream occlusions (and alarms) while enabling patient movement. Reduce introduction of infection associated with IV reinsertions and catheter kinking with this skin-friendly way of improving patient comfort and security. For samples call 800-343-3980 or visit dalemmed.com.

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MOBILE INSTRUMENT
Mobile Instrument is the exclusive distributor for Scope-Control the first and only endoscope testing system in the world. ScopeControl is a fully automated rigid endoscope testing system that guarantees your scopes are an exact match to manufacturer designs and ready for OR use. ScopeControl gives you 100% quality validation in 3 minutes or less! www.mobileinstrument.com. 1-800-722-3675.

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Aesculap, Inc., a B. Braun company, is part of a 175-year-old global organization focused on meeting the needs of the changing healthcare environment. Through close collaboration with its customers, Aesculap provides advanced technologies for general surgery, neurosurgery and closure technologies. Aesculap strives to deliver products and services that improve the quality of patients’ lives. For more information, call 800-282-9000 or visit aesculapusa.com.

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KNIGHT LLC
Unlock the cleaning potential of your presoak chemistry. Get better coverage and longer product contact time for your soiled instruments. The Knight HC Fast Foam is a point-of-use presoak foam spray system that produces 10X more foam product compared to a trigger spray bottle with the same volume of chemistry.

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CYGNUS MEDICAL
SingleCycle Disposable Instrument Trays
Your facility could be cited for improperly handling soiled instruments. Don’t take that risk. Transport safely with SingleCycle Disposable Instrument Trays:
• SingleCycle Trays provide secure tamper-proof containment of soiled surgical instruments. Compatible biohazard and clean labels available.
• They protect delicate instruments and peel pouches from damage.
• SingleCycle products are steam sterilization compatible.
• SingleCycle is biodegradable, made from a 100% renewable resource.

See Cygnus Medical at AORN booth #2429
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RUHOF
ScopeValet Endo SafeStack
A tray, cover, and cart system for safe scope storage and transfer between the cleaning room and procedure room. It consists of a molded tray designed to help protect the endoscope, potentially reducing expensive scope repairs. The tray will fit all makes and models of GI and surgical endoscopes and has been designed to be stacked one on top of the other to allow easy, space saving transport. Endo SafeStack Cart is washer-friendly, features holes in the shelves to hold the trays securely.

See Ruhof at AORN booth #2405
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KEY SURGICAL
Disassembly is an important step in proper reprocessing for all complex instrumentation and keeping small parts and accessories together can be challenging without the proper containment device. Key Surgical Mesh Bag helps keep small parts, such as endoscope valves, together during reprocessing. Designed to withstand steam, gas plasma, EtO and high-level disinfectant.

See Key Surgical at AORN booth #1415
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RUHOF
Prepzyme Forever Wet with Bio-Clean Technology
A neutral pH, multi-tiered enzymatic humectant spray which promotes the long lasting retention of moisture on soiled instruments and scopes thus helping to prevent the adhesion of bio-burden. Gently coats instruments to maintain moisture making it an ideal pre-cleaner for soiled instruments during transport or when left for an extended period of time. Perfect for use in Operating Rooms, Endoscopy Suites, Outpatient Surgery, Dental and other departments where instruments are transported to decontamination.

See Ruhof at AORN booth #2405
Visit www.ksrleads.com/?704hp-048

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INFECTION PREVENTION

Stopping sepsis in its tracks

by Susan Cantrell, ELS

Sepsis, a serious condition that arises from the body’s response to infection, can cause tissue damage, organ failure, and death. According to the Agency for Healthcare Research and Quality’s Healthcare Cost and Utilization Project, sepsis is the leading cause of deaths in U.S. hospitals, at a cost of $23,663,000.1 The Sepsis Alliance website notes that 1.6 million people are diagnosed with sepsis every year, one every 20 seconds. Some 258,000 sepsis patients die every year, one every 2 minutes, which is more than prostate cancer, breast cancer, and AIDS deaths combined.2 Sepsis also accounts for the highest number of hospital readmissions, 12 percent, with each readmission costing approximately $10,070.3

The disconnect

Despite these staggering figures, only 55 percent of adults have ever heard of sepsis.4 Clearly, there is a disconnect. However, upon closer examination, the disconnect is understandable.

Sepsis can be elusive, because its symptoms may be mistaken for other ailments. Pat Parks, MD, PhD, Medical Director, 3M Critical and Chronic Care Solutions Division, commented, “Unlike other more common conditions or diseases, sepsis is caused by the bacteria circulating in the blood. What is missing is attributing the serious complications of these infections to the systemic spread of the organisms. If the medical community would document this (e.g., death due to meningitis complicated by sepsis) then the level of awareness of this problem would increase.”

Another interesting observation came from Greg McKelvey, MD, MPH, Head of Clinical Insights, KenSci, who noted that, while necessary, care from multiple clinicians who are responsible for different aspects of the patient’s health may contribute to the oversight of a developing sepsis infection. “Ironically, I think the fact that sepsis is so common contributes to its relative invisibility.”

WHO publishes list of bacteria for which new antibiotics are urgently needed

The World Health Organization (WHO), published its first ever list of antibiotic-resistant “priority pathogens” — a catalogue of 12 families of bacteria that pose the greatest threat to human health.

The list was drawn up in a bid to guide and promote research and development (R&D) of new antibiotics, as part of WHO’s efforts to address growing global resistance to antimicrobial medicines.

The list highlights in particular the threat of gram-negative bacteria that are resistant to multiple antibiotics. These bacteria have built-in abilities to find new ways to resist treatment and can pass along genetic material that allows other bacteria to become drug-resistant as well.

The WHO list is divided into three categories according to the urgency of need for new antibiotics: critical, high and medium priority.

The most critical group of all includes multi-drug resistant bacteria that pose a particular threat in hospitals, nursing homes, and among patients whose care requires devices such as ventilators and blood catheters. They include Acinetobacter, Pseudomonas and various Enterobacteriaceae (including Klebsiella, E. coli, Serratia, and Proteus). They can cause severe and often deadly infections such as bloodstream infections and pneumonia.

These bacteria have become resistant to a large number of antibiotics, including carbapenems and third generation cephalosporins – the best available antibiotics for treating multi-drug resistant bacteria.

The second and third tiers in the list — the high and medium priority categories — contain other increasingly drug-resistant bacteria that cause more common diseases such as gonorrhea and food poisoning caused by salmonella.

WHO priority pathogens list for R&D of new antibiotics:

Priority 1: CRITICAL
• Acinetobacter baumannii, carbapenem-resistant
• Pseudomonas aeruginosa, carbapenem-resistant
• Enterobacteriaceae, carbapenem-resistant, ESBL-producing

Priority 2: HIGH
• Enterococcus faecium, vancomycin-resistant
• Staphylococcus aureus, methicillin-resistant, vancomycin-intermediate and resistant
• Helicobacter pylori, clarithromycin-resistant
• Campylobacter spp., fluoroquinolone-resistant
• Salmoneaeae, fluoroquinolone-resistant
• Neisseria gonorrhoeae, cephalosporin-resistant, fluoroquinolone-resistant

Priority 3: MEDIUM
• Streptococcus pneumoniae, penicillin-non-susceptible
• Haemophilus influenzae, ampicillin-resistant
• Shigella spp., fluoroquinolone-resistant

The list, which has been endorsed by the World Health Assembly, includes a broad range of bacteria that cause serious diseases such as meningitis, pneumonia, urinary tract infections, or skin infections caused by flesh-eating bacteria, but they don’t know that the serious complication of these infections is caused by the bacteria circulating in the blood. What is missing is attributing the serious complications of these infections to the systemic spread of the organisms. If the medical community would document this (e.g., death due to meningitis complicated by sepsis) then the level of awareness of this problem would increase.”

Although mortalities from infectious illnesses usually originate from sepsis, it’s rarely listed as the primary cause of death,” noted Claypool. He said that the lwashyna study found that “physicians document sepsis less than 10 percent of the time, which severely limits accurate communication to patients and families,” and that is yet another reason why sepsis does not get the recognition it merits.

Similar comments from BD’s Patrick Murray, PhD, Senior Director of Worldwide Scientific Affairs, Medical Affairs, drove home the fact that sepsis needs to be documented on patient records and death certificates. “The public knows about people who have infections such as meningitis, pneumonia, urinary tract infections, or skin infections caused by ‘flesh-eating’ bacteria, but they don’t know that the serious complication of these infections is caused by the bacteria circulating in the blood. What is missing is attributing the serious complications of these infections to the systemic spread of the organisms. If the medical community would document this (e.g., death due to meningitis complicated by sepsis) then the level of awareness of this problem would increase.”

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Claypool concluded, “Lastly, unlike other serious conditions, there are no major quality health-improvement initiatives and few public campaigns to increase sepsis awareness. Without adequate physician recognition, physician agreement, and public campaigns, the public doesn’t learn about sepsis.”

Sepsis and readmissions
Sepsis is not one of the four medical conditions currently tracked by the Centers for Medicare and Medicaid Services for readmissions, but perhaps it should be added. Since pneumonia, heart failure, heart attack, and chronic obstructive pulmonary disease (COPD) have been tracked, with subsequent penalties levied on medical facilities, their numbers have dropped.

Sepsis is more prevalent and more costly than any of these four conditions.

The Mayr study, published in JAMA, showed that “sepsis accounts for 12.2 percent of readmissions, followed by 6.7 percent for heart failure, 5 percent for pneumonia, 4.6 percent for COPD and 1.3 percent for heart attack.” Sepsis also costs more. The estimated average cost per readmission for sepsis was $10,070, compared to $9,533 for pneumonia, $9,424 for heart attack, $9,051 for heart failure and $8,417 for COPD.

These numbers call for better understanding of the relation between hospital-acquired infections (HAIs), sepsis, and readmissions. Murray, BD, explained the connection: “It is well-known that a medical stay in the hospital can be complicated by an HAI. This is logical, because there is increased exposure of debilitated patients to organisms circulating in the hospital environment. In many cases, these infections lead to longer periods of hospitalization and associated increased costs. In other cases, the infections may not be identified until after the patient leaves the hospital, resulting in readmissions. If these hospital-acquired infections are serious, leading to sepsis, then the medical complications, as well as associated costs, can rapidly increase.”

Parks, 3M, cited the importance of being alert to the possibility of sepsis arising, so that treatment can be started quickly. He also talked about the patient’s health status as a contributing factor to the risk of developing sepsis. “Hospital-acquired infections (HAIs) occur in nearly 20 percent of patients,” said Parks. “Infections become especially dangerous and can lead to sepsis when they aren’t diagnosed and treated immediately. This is more likely to happen during treatments, such as chemotherapy, that suppress the immune system, reducing the patient’s ability to respond to infection.”

Claypool, Wolters Kluwer, added that patients who have survived sepsis are left with lingering complications, making readmission more likely. “Hospitalized, seriously ill patients often undergo surgeries and procedures, have catheters and needles inserted, and are prescribed medicines that increase susceptibility to HAIs, which can lead to sepsis,” said Claypool. “Additionally, discharged sepsis patients leave more deconditioned, more susceptible, and more prone to thirty-day readmissions than any other condition.”

McKelvey, KenSci, described the relation between HAIs, sepsis, and readmissions as a vicious cycle. “While the most common path would be HAI leading to sepsis, leading to readmission, each outcome can be the cause or consequence of the other two. Each can be a marker of both patient complexity and quality lapse. The connection is not so much ‘line between dots’ as it is a vicious cyclic blur.”

Fighting back
The best-case scenario for sepsis is not to let it get a toehold in the first place. Prevention is always better than a cure. Best practices, coupled with the appropriate product or technology, is a good place to start.

Parks’ policy is to be proactive rather than reactive. “The key to preventing sepsis is to start as far upstream as you can. To be successful at reducing infection risks, health systems need to use a three-pronged approach that relies on highly trained and committed people, implementing policies that incorporate industry standards, and using evidence-based technology.”

Parks described a few best practices and products useful in preventing sepsis. “3M offers a range of products to help support facilities’ efforts to make prevention a priority from the beginning, noted Parks. “This begins with proper surgical hand antisepsis, including the use of 3M Avagard (chlorhexidine gluconate 1% solution and ethyl alcohol 61%, w/w) Surgical and Healthcare Personnel Hand Antisepic, followed by sterile gloves, as part of the recommended sterile barrier precautions.

“After eliminating the risk of transferring bacteria from the clinician’s hands to the patient, it is critical to protect vascular-access catheters at all points of entry,” said Parks. “3M Tegaderm CHG Dressings provide protection at the insertion site, helping to keep bacteria out while still providing a clear window for easy monitoring of the site. Parks also recommends 3M Curos Disinfecting Port Protectors, which ‘easily twist onto needleless connectors and male-Luer devices to help disinfect and protect ports on the catheter line from contamination.”

Fortunately, best practices and the right products benefit not only patients but the facilities to which they are admitted. “Reducing risk of infection early in the course of a treatment can help to avoid sepsis in many patients, which translates to thousands of dollars saved,” emphasized Parks. “According to a 2016 JAMA Internal Medicine study review, putting $100,000 toward infection prevention can translate to $351,000 in savings.”

According to Murray, “BD is committed to assisting the global healthcare community address the healthcare and financial burden associated with sepsis by promoting best practices in blood culturing and offering proven performance in the diagnosis of sepsis through use of BD BACTEC FX Series Automated Blood Culture Instrument and BD BACTEC Blood Culture Media.

“Fundamental for the diagnosis of sepsis is detection of the bacteria circulating in the blood through the use of blood cultures; that is, growth of the organisms in nutrient culture media,” stated Murray. “BD has a long history of blood-culture technology, with one of the first automated instruments to allow detection of bacteria and fungi in blood. Over the years, BD has continued to refine the instruments and culture media to allow highly sensitive, automated detection of these pathogens. This work...
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is complemented by the development of identification of organisms by mass spectrometry and use of automated platforms for antimicrobial-susceptibility tests. Ultimately, these technologies—blood culture, microbial identification, and antimicrobial-susceptibility tests—will allow us to guide the physicians’ selection of the most appropriate antibiotic for treating a septic patient.”

Selection of the appropriate antibiotic affects the patient’s health and the facility’s bottom line, explained Murray. “In the absence of blood cultures, the physician will treat the patient suspected to be septic with potent, broad-spectrum antibiotics. Although this is appropriate because an untreated septic patient may rapidly deteriorate, the use of empiric antibiotic therapy is frequently ineffective and exposes the patient to unnecessary antibiotic toxicities. The timely isolation and identification of the pathogen and ability to select the most appropriate antibiotic therapy has been documented to improve outcomes and decrease the need for extended hospitalizations and associated costs. It is to achieve these goals that our predominant development efforts aspire.”

KenSci focuses on prevention of sepsis by means of information technology. McKelvey described how it works. “Our technology, KenSci platform, is a software platform that integrates huge amounts of diverse healthcare data using machine learning, to uncover the signals hidden within that are too subtle or complex for a human acting alone to detect. By uncovering these patterns in sources such as demographics, vital signs, care history, laboratory tests, etc, the algorithms are able to predict outcomes, such as impending sepsis, that we, as care providers, often struggle to anticipate. So, rather than waiting for a condition to announce itself as an emergency, the trend toward a risky outcome is identified with enough time to act proactively instead of reactively.”

This ability to react proactively and quickly can save costs. “Sepsis is the single most expensive primary diagnosis in U.S. hospitals,” said McKelvey. “The annual inpatient costs alone for sepsis are over 20 billion dollars. By predicting sepsis risk with high accuracy and timeliness, health systems can target the right care for the right patients at the right time.”

Wolters Kluwer’s POC Advisor also relies on information technology. Claypool described its advantages. “POC Advisor is a clinical surveillance system that uses real-time prescriptive analytics to identify sepsis in its earliest stages, which is crucial to a patient’s survival. Once sepsis is identified, the system sends evidence-based alerts and patient-specific treatment advice to providers at the point of care. By improving sepsis identification and early treatment, POC Advisor not only improves patient outcomes, but also sepsis documentation,” said Claypool.

Claypool referred to a study he coauthored with Manaktala, published last year, demonstrating how POC Advisor reduced one hospital’s sepsis mortality by 53 percent and 30-day readmissions by 30 percent. “Most importantly,” added Claypool, “the alerts achieved unparalleled sensitivity and specificity rates of 95 percent and 82 percent, respectively, meaning clinicians can trust the advice they receive and won’t experience alert fatigue.”

Claypool also talked about financial advantages of using POC Advisor. He said the data from the Manaktala and Claypool study showed that changes in sepsis documentation may increase revenue by $434,775 per 1,000 cases. “Early treatment of sepsis also has a positive effect on length of stay (LOS), which can significantly reduce costs, especially given that septic patients are most often treated in intensive care, where an extended LOS is most expensive.”

On the horizon

Healthcare Purchasing News asked the experts for their opinions on what we can expect to see in sepsis solutions in the future. Murray, BD, believes “The most immediate need is the ability to predict which hospitalized patient is at increased risk of developing sepsis. Although non-specific biomarkers, such as procalcitonin, C-reactive protein, or leukocyte counts, have been used, more specific markers of the host response to infections could be introduced. An additional need is timely detection and identification of the most common organisms responsible for sepsis. Here again, there have been technologies introduced over the past 10 years that do this, but they have proven to be slow, expensive, and inaccurate. However, a new generation of molecular tests is on the forefront and have been introduced by other in vitro diagnostics manufacturers over the last few years. It should be appreciated that these tests complement and do not replace the current gold standard of blood cultures.”

Parks, 3M, also looks toward advances in technology, as well as increased education on sepsis. “Preventing sepsis will rely on integrating more advanced technology upstream, in an effort to diminish the occurrence of sepsis at the source. This includes protecting all points of vascular-access catheter entry. Beyond that, broader education on symptoms of sepsis can enable a quicker process to diagnosis and treatment. Methods to provide earlier diagnosis of sepsis are under development and will represent a major advancement when they become available clinically.”

“Technology can support process measures, like sepsis surveillance, with point-of-care alerting,” stated Claypool, Wolters Kluwer. “However, most electronic surveillance systems fail to improve outcomes due to poor specificity, which leads to alert fatigue and ignorance of alerts. In fact, 49 percent to 86 percent of physicians and patient safety alerts are overridden because of alert fatigue.” Advanced decision-support systems that alleviate alert fatigue are challenging for healthcare systems to develop in-house. Thus, these facilities will need to turn to third-party vendors with appropriate resources to build more complex, accurate solutions.”

McKelvey, KenSci, responded, “We are only at the beginning of the application of machine learning to problems like sepsis. I think in the next few years we will see the sophistication and utility of healthcare artificial intelligence increase dramatically, not just in terms of predictive accuracy but also in how it supports the process of care. The analogy I like to make is that medicine doesn’t need the equivalent of self-driving cars, it needs Google Maps.”

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Study reports multidrug resistant bacteria found in hospital sinks

Many recent reports have found multidrug resistant bacteria living in hospital sink drain pipes, putting them in close proximity to vulnerable patients. But how the bacteria find their way out of the drains, and into patients has been unclear. Now a team from the University of Virginia, Charlottesville, has charted their pathways.

The research was published in Applied and Environmental Microbiology.

“Our study demonstrates that bacterial spread from drainpipes to patients occurs via a staged mode of transmission,” said principal investigator Amy Mathers, MD, Associate Professor of Medicine and Pathology, Division of Infectious Diseases and International Health.

Initially, the bacteria colonize the elbows of the drain pipes. The investigators showed that from there, the colonies grow slowly towards the sink strainers — at the rate of roughly one inch per day, said Mathers. Given the distance in typical hospital sinks of elbows below the sink bowls, it frequently takes a week for the colonies to reach the sink strainers. From there, bacteria quickly get splattered around the sink, and even onto the counters surrounding the sinks, where they can be picked up by the patients.

The project grew out of the knowledge that patients are dying from infections with multidrug resistant bacteria that they acquire while hospitalized. In a review Mathers’ team conducted with Alice Kizny Gordon, MBBS (a degree that is common in UK and is like MD) and colleagues of the University of Oxford, UK, they found more than 32 papers describing the spread of bacteria resistant to carbapenem—a very important antibiotic — via sinks, and other reservoirs of water within hospitals. Half of those papers have appeared since 2010.

In many parts of the world, hospitals are ill-equipped to cope with these superbugs, as in many cases there are few treatment options, said Mathers. “We wanted to better understand how transmission occurs, so that the numbers of these infections could be reduced,” she said.

The work entailed building what Mathers said “the only sink lab we are aware of in the U.S.” The lab contains five identical sinks, modeled of Virginia’s hospital in Charlottesville. The experimental bacteria are Escherichia coli, which commonly harmlessly inhabit the human intestinal tract. They can acquire both pathogenic and antibiotic resistance genes, and become superbugs.

Mathers et al. are now using the sink lab to conduct a follow-up study, in collaboration with the Centers for Disease Control and Prevention. The goal is to determine precisely how the pathogens reach the patients, said Mathers.

“This type of foundational research is needed to understand how these bacteria are transmitted so that we can develop and test potential intervention strategies that can be used to prevent further spread.”


CS Connection Validated? It’s complicated

Manufacturer’s IFUs are as diverse and complex as the instruments they cover

by Kara Nadeau

The question of whether an instrument manufacturer’s instructions for use (IFU) for sterile processing have been “validated” is one of hot debate. The U.S. Food and Drug Administration (FDA) requires manufacturers to provide customers with IFUs that describe in detail “instructions for a reprocessing method that reflects the physical design of the device, its intended use, and the soiling and contamination to which the device will be subject during clinical use.”

But do the IFUs take into account real-world conditions? Or do they simply demonstrate that a device “should” be sterile because an indicator confirmed that sterilization conditions were present? What about residual bioburden and biofilm remaining on devices? Does a central sterile/sterile processing department (CS/SPD) technician really have all of the information and tools he/she needs to truly rid an instrument of bioburden/biofilm prior to sterilization — soils that are invisible to the human eye? Especially with complex, laparoscopic instruments that must be disassembled, cleaned and reassembled prior to sterilization?

In this article we explore this issue and present insights from the FDA, industry thought leaders, CS/SPD professionals and manufacturers.

The FDA Takes Action

In March 2015, following the highly publicized superbug outbreaks linked to contaminated duodenoscopes, the FDA issued its guidance entitled: Reprocessing Medical Devices in Health Care Settings: Validation Methods and Labeling, Guidance for Industry and Food and Drug Administration Staff.

The document is intended to provide guidance to medical device manufacturers in their development of reprocessing instructions that “ensure that the device can be used safely and for the purpose for which it is intended.”

“Residual soil, like blood and tissue, and bioburden deposited on a device after patient use may not be visible, so the FDA recommends that device manufacturer’s labeling instructions be based on rigorous testing of their cleaning and high-level disinfection or sterilization processes,” said Steven Turtil, a biologist in the FDA’s Center for Devices and Radiological Health. “The 2015 Guidance recommends that manufacturers design their validation testing to assess device cleanliness after simulating worst-case scenarios of real-world soiling, followed by worst-case implementation of the cleaning instructions (such as using too little detergent).”

“Similarly, FDA guidance recommends validating sterilization steps by testing in worst-case, real-world scenarios,” he added. “For example, a worst-case scenario includes testing a large population of microbes that are highly resistant to the sterilant to determine the effectiveness of the sterilization or high-level disinfection process. The guidance recommends that test designs include multiple cycle testing to address potential soil accumulation that might result from multiple uses.”

Turtil explained how the guidance also recommends that manufacturers design their devices to be disassembled in order to gain access to components that may trap soil and contaminated tissue, stating: “Manufacturers should consider validation testing for such complex and difficult to clean devices, and such testing and reprocessing instructions should be accurately reflected in the labeling.”

“If you go back even six years ago there was a lack of recognition of IFU importance but recent outbreaks linked to unclean surgical devices have put an intense focus on this issue,” said Cynthia Spry, MA, MS, RN, CNOR(E), CSPDT, Consultant. “The healthcare industry has begun to recognize IFU importance and how problematic they are. The FDA is now trying to make sure manufacturers provide sterile
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But what does IFU validation mean?
“"When it comes to sterile reprocessing the most misused and misunderstood word in our industry right now is the word ‘validated,’” said James Schneiter, Founder, America’s MedSource. “I say that because a majority of reusable instrument manufacturers state that their IFUs have been ‘validated.’ But when you read their IFUs all they actually say is that their instruments were ‘sterilized’ at a given temperature, time and pressure. When the instruments emerged from the sterilizer the sterilization indicator showed that sterilization ‘conditions’ were present. What this means is that when they ran a load of their instruments, the conditions were right for sterilization. They never addressed whether or not the instruments were free of bioburden, and more importantly biofilm.”

While the FDA’s March 2015 guidance is a step in the right direction, it is important to note that it only applies to manufacturers seeking 510(k) approval for new reusable medical devices and that it does not apply to products already on the market. The guidance states:

“For 510(k)s, FDA expects manufacturers of a subset of devices listed in Appendix E to include data in 510(k) submissions to validate their reprocessing instructions. Validation data may be also requested as needed for substantial equivalence for other devices. For IDEs, a summary of the validation reprocessing instructions and methodology should be provided.”

“The FDA finally did come out and say that from that date forward if a manufacturer wants 510(k) approval on a new reusable medical device, it must include a validated IFU with its submission,” said Schneiter. “That validation must follow all of the FDA required validation steps including how to decontaminate, clean and sterilize the device, and then go back post reprocessing and calculate the amount of residual bioburden on the instrument. That’s a great requirement for new products, but what about the tens of thousands of different surgical instruments that have not been validated and are being used on patients everyday?”

“I still see instruments in use that have no IFUs,” said Spry. “It really is a sticky issue because what do we do about the devices that are necessary for surgery but have no instructions for processing?”

Challenges to clean
There is clear evidence that some devices harbor dangerous bioburden and biofilm even when CS/SPD professionals follow a manufacturer’s IFUs for reprocessing. Most of us have seen photos of contaminated devices in the media and during presentations at industry conferences. The vast majority of CS/SPD professionals have likely experienced this challenge first hand. Inadequate cleaning of complex reusable instruments is such a major concern in healthcare that it made the No. 2 spot on the ECRI Institute’s Top 10 Health Technology Hazards for 2017.

“Over the last decade in the U.S. we have quadrupled the use of antibiotics prophylactically both pre and post surgery,” said Schneiter. “Additionally, hospitals have spent billions of dollars improving OR sterility through new air handling systems, improved sterile drapes, gowns and other products. When it comes to laparoscopic procedures, almost every hospital in the country has done away with reusable trocars and only use single-use, disposable trocars. Accordingly, it would appear that the primary method of depositing bioburden into the deep organ cavity dur-
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ing a laparoscopic procedure is through the reusable laparoscopic instruments.”

“When you dive into the CDC data, you see that the rate of deep organ surgical infections in the U.S. has remained pretty much constant over the last decade,” Schneiter added. “I don’t think you need a PhD in microbiology to understand that non-validated, reusable laparoscopic instruments are a major part of the problem. Take-apart instruments were introduced to help solve the problem of deep organ surgical infections over a decade ago. If they really helped, we should have seen a reduction in the CDC deep organ surgical infection numbers. Just because an instrument has been validated to be sterile when it comes out of the sterilizer doesn’t mean that it is free of bioburden and is safe for use, unless its cleaning IFU has been validated as well.”

Whenever there is a highly publicized outbreak resulting from contaminated devices there follows a barrage of finger-pointing in an attempt to assign blame. Did the outbreak occur because CS/SPD staff didn’t properly reprocess the instrument according to the manufacturer’s IFU? Is the manufacturer to blame because its IFUs were impossible to follow in a real-world setting, were too vague or confusing, or were inadequate for instructing CS/SPD professionals on reprocessing the device? Or perhaps the manufacturer is marketing a product that is far too complex to safely reprocess?

“This issue affects me on a regular basis,” said Casey Czarnowski, SPD Educator, Essentia Health Hospital, Fargo, ND. “In my small (31 FTE) SPD, each member of the management team of the SPD has to wear multiple hats. At the same time, we attempt always to follow best practices, and securing IFUs is a big part of that.”

Device complexity

Devices have become far more complex in recent years with the proliferation of minimally invasive surgical procedures — and therefore have become more challenging to clean — even when the manufacturers have developed their IFUs in accordance with the FDA’s latest guidance. Many have questioned whether some complex instruments are simply impossible to clean in the sterile processing environment.

According to Gene Ricupito, Partner, C&R Healthcare, the vast majority of surgical instruments in a typical hospital’s inventory don’t have complex componentry and can be effectively reprocessed through steam sterilization. He says the real problem is the “outlier instruments” that can’t be reprocessed in this way. Ricupito adds that he sees this challenge more often in academic medical centers that are conducting research versus community hospitals, stating:

“In some cases, medical device manufacturers working with clinical stakeholders in academic healthcare to develop new technologies may not have as much experience with presenting instructions for use that match the real-world processing environment. This is particularly true for start-ups.”

You can’t clean what you can’t see

Schneiter points out that a major limitation to many manufacturers’ IFUs is that they require a CS/SPD professional to visually inspect an instrument after cleaning for...
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bioburden and/or biofilm prior to sterilization. For some complex instruments that means disassembling them to both clean and inspect. But the dirty little secret is that this residue is invisible to the naked eye — making the task physically impossible.

“Let’s assume you have a very highly educated and motivated CS/SPD technician and he/she is manually disassembling every take apart instrument to remove bioburden and biofilm,” said Schneiter. “Then according to the IFU he/she is supposed to visually inspect to ensure all bioburden and biofilm have been removed. That is physically impossible to do with the human eye. It’s the dirty little wink wink, nod nod in our industry. It’s the sad reality of what people in CS/SPD face — they are held accountable and inspect. But the dirty little secret is that they are doing it illegally an extended exposure time rather than a difference in expressing a parameter, it would be greater than five minutes.”

Lost in translation
Ricupito says another challenge comes with complex devices that are developed outside of the U.S. where the standards of reprocessing can be different, or simply articulated differently.

“For example, a device manufacturer in Germany one in the U.S. might describe steam sterilization parameters that mean the same thing but because they articulate them in different ways it causes confusion for the CS/SPD,” said Ricupito. “The U.S. manufacturer might state a four-minute steam sterilization exposure time, while the German manufacturer states five minutes.

“But it turns out the U.S. manufacturer is referring to the end user variable exposure time, whereas the German manufacturer is referring to the total exposure time,” he adds. “Steam sterilizers by design have a built-in ‘overkill’ safety margin which can’t be changed by the user, and isn’t counted as part of the end user variable sterilization exposure time — so in reality both manufacturers are recommending the same duration of exposure, just expressed differently. If this slight variation were truly an extended exposure time rather than a difference in expressing a parameter, it would be greater than five minutes.”

Loaner trays
Czarnowski explains how loaner trays cause the greatest problems for his department when it comes to IFU access and use, stating:

“Our regular vendors are now accustomed to providing us with IFUs for new trays, but when a new rep walks through the door, it takes some effort to secure the instructions we need to perform our job with patient safety in mind. We do not have the time to validate all of the instruments that are brought in by vendor reps, and there are times when I do feel concern that the paper I am reading does not reference the product number of the instrument in my hand.”

So what should we do?
“The real problem is that millions of instruments are being sterilized every day and with the vast majority of them, no one really knows if they are clean,” said Schneiter.

Standardize
Ralph J. Basile, Vice President, Healthmark, is a member of three industry workgroups and committees related to the validation of manufacturer IFUs. One is an ISO workgroup that is currently working to update ISO 17664, Sterilization of medical devices – Information to be provided by the manufac-

turer for the processing of resterilizable medical devices. Another is the Association for the Advancement of Medical Instrumentation (AAMI) Sterilization Workgroup 12, which has been tasked with updating AAMI TIR12, a support document to ISO 17664.

Basile notes how there is real change happening in the industry, stating:

“On average, the IFUs that have come out in the past three or four years are far more detailed than those that came out 10 years ago. I personally know of a number of very large, very significant device manufacturers that are going back and updating their IFUs, and in many cases revalidating their instructions.”

Basile explains how AAMI Sterilization Workgroup 12 has been tasked with developing a series of standardized cleaning programs for manufacturers that would serve as a common basis for IFUs. So a manufacturer would select the standard program that would be most effective in getting its device clean and build its IFU around that.

“The big issue today is each device manufacturer is going out and validating their own IFUs so healthcare facilities with thousands of devices have thousands of different instructions for processing them,” said Basile. “There are devices that are very similar to each other in the marketplace but with very different IFUs — and the CS/SPD can’t realistically process those devices two different ways because they have thousands of other devices to reprocess. We are trying to narrow the funnel so that the range of reprocessing instructions and variability are reduced, making it easier for healthcare facilities to comply.”

Visualize
With regards to visualization of bioburden and biofilm, CS/SPD professionals need technologies to see what is hidden from the human eye. AAMI ST 79 states:

“The use of methods that are able to measure organic residues that are not detectable using visual inspection should be considered in facility cleaning policy and procedures.”

“Every single workstation should have a lighted magnifying glass — that’s where to start,” said Spry. “Next the CS/SPD should invest in a boroscope or flexible cameras that can be used to look down lumens. When the FDA raised issues around retained bioburden in arthroscopic shavers a few years back, the agency recommended that facilities consider using a boroscope
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but I really wish they had mandated it. I’ll go to seminars and ask who uses an endoscopic camera and only a few people will raise their hands.”

But as the International Association of Healthcare Central Service Materiel Management (IAHCSMM) points out in its CRCST Self-Study Lesson Plan, *Understanding Biofilm*, “Even with the use of most visual enhancing tools, microorganisms will still not be seen.” Therefore, “other tests have been developed to help verify that cleaning quality standards have been attained.” These include protein tests and adenosine triphosphate (ATP) bioluminescence tests, both of which test for residual soils and which might also be suggestive of biofilm formation.

“There are products that test beyond what you can see visually and are particularly helpful for lumens and other devices that are difficult or impossible to visually inspect,” said Basile. “For example, we have reagent tests that test for protein and hemoglobin, and another 3-in-1 test for lumen devices that tests for blood, protein and carbohydrate all at the same time.”

Collaborate

The effective cleaning of complex reusable devices is an industry wide challenge that requires an industry wide solution. CS/SPD professionals need to collaborate with all parties who contribute to and are impacted by this issue, including manufacturers, clinicians, purchasing, infection control and risk management.

Schneiter urges those responsible for CS/SPDs in healthcare facilities to “do their homework” when it comes to the devices they are reprocessing, stating:

“If you are the person responsible for the SPD then you have to start asking every reusable device manufacturer for a copy of their cleaning IFUs,” said Schneiter. “Then, determine whether or not they did in fact ‘validate’ the cleaning side, as opposed to providing non-validated cleaning IFUs. When you have two different suppliers of the same instrument — one that has validated its cleaning IFUs and one that hasn’t — you have a moral, legal and ethical obligation to go with the one that has been validated.

To gain support from the C-Suite, the SPD has to point out that while it is not a revenue generator, it is a risk minimization department. Truly SPD has as much impact on sterility in the OR as does the surgical team. Without validated cleaning IFUs from their instrument suppliers, they don’t have the ability to ensure that everything they send back to the OR is clean, sterile and moisture free.”

If a CS/SPD professional experiences a challenge when cleaning a device based on a manufacturer’s IFU, Spry urges them to first contact the manufacturer and if that doesn’t solve the issue then report it to the FDA through the agency’s MedWatch gateway.

“Recent incidents have made users much more aware of the importance of IFUs and the need to speak up and talk to their manufacturers to tell them what they need,” said Spry. “It might be as simple as having the right brush that is the right size for cleaning a lumen.”

Basile notes the importance of CS/SPD and operating room (OR) collaboration when it comes to effective device cleaning, explaining how when organic soil is left to dry on a device it makes it much more difficult to clean.

“One of the things facilities can do is make sure devices are pretreated and handled in such a way that drying is delayed and the sooner they can begin reprocessing the better — that’s something everybody can do to improve reprocessing and make it easier to get the device clean but it still doesn’t happen in many places.”

Czarnowski and his team have worked hard to establish a good relationship with their hospital’s OR staff. Through mutual respect and open collaboration, they are able to effectively address concerns related to cleaning of complex or older devices.

“When a doctor wants to use an older device with an inadequate IFU, we track down the manufacturer and request clarification on the company’s letterhead,” said Czarnowski. “At times, we will suggest to our OR Resource team that an alternative instrument should be found, one with a specific IFU to aid us in reprocessing the instrument. There has been some friction but generally our larger establishment will support us in talking to a doctor and asking them to find an alternative device with a good IFU.”

When the OR wants to introduce a new surgical instrument that might be challenging to reprocess, Ricupito says the healthcare organization should conduct a detailed risk assessment to uncover the total cost of ownership for this device. He recently completed development of a protocol for risk assessment of IFUs where the recommended process steps present significant challenges for compliance.

“The first step in risk assessment is to go to the vendor and gather as much valid scientific information as possible — not from the sales rep or marketing contact but from the scientific and engineering developers of the device,” said Ricupito. “If the IFU represents a challenge there could be unforeseen and costly expectations, such as additional staff or technology resources required to effectively reprocess it. Then bring that information to a quorum of stakeholders within your organization that includes risk management so you can collaboratively decide the best approach and then move in that direction.”

References:


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CS QUESTIONS • CS ANSWERS

Selecting suitable storage and shelving; long sleeves in the SPD

by Ray Taurasi

Q I have been the nurse educator for surgical services for the past eight years and recently I was asked to assume the role of director of surgical support services. The sterile processing department has been placed under surgical support services. The manager’s position is vacant and I have had to take on the responsibility of managing sterile processing. Each day I realize more and more how complex this department is and how very little I know about the intricacies of managing this area. We are in the process of renovating the sterile storage area for reprocessed sterile supplies, surgical instruments, and equipment. There is much debate and differing of opinions amongst members of the planning committee regarding the type of storage carts and shelving required. Some feel everything must be covered or enclosed and others believe open systems are perfectly acceptable because the supplies and sets are in wraps or containers. We have to come to an agreement and get the shelving ordered. I would appreciate any advice or information you could provide to help us decide.

A Most packaging does not provide an absolute microbial barrier. Therefore, it is important that environmental contamination be minimized to avoid compromising the sterility of devices during storage. Choosing the appropriate type of shelving and cart will depend upon the environment in which the sterile goods will be stored and/or transported. The goal is to maintain sterility of the goods until the point of final use. Proper materials handling is an essential criteria to sterility maintenance. It is essential to assess the flow of sterile goods and the environments they are exposed to following sterilization, during storage and distribution, and at the point of use. This will help identify and determine the depth and type of protection required to maintain sterility. It is likely that some areas in the storage and distribution chain will have different requirements.

Closed or covered cabinets are preferable for high traffic areas (see Figure 1). When transporting sterile items through non-restricted areas, or between facility locations, special attention should be given to ensuring that sterile items are securely covered and/or contained to protect them from less desirable and uncontrolled environments. There are specially designed transporting carts available to fulfill this need (see Figure 2). Open or wire shelving is suitable for confined storage areas if proper attention is given to traffic control, area ventilation, and housekeeping. Sterile storage areas should be designed specifically to protect all stored sterile supplies from damage and potential contamination. The ventilation system should be designed so that air flows out of the sterile storage area (via positive pressure). Other aspects of ventilation should comply with the guidelines set forth in American Institute of Architects (AIA), 2006, for OR environments. When using wire-rack shelving be sure that the bottom shelf is of a solid material or that the wire shelf is covered by a durable liner. Tote boxes and bins may also be used to protect sterile packages stored in open design shelving.

In the December 2016 CS Solutions column the need to wear long sleeves in the sterile processing department was discussed. AORN recommendations were referenced. We follow AAMI standards and was unable to find anything regarding long-sleeve scrubs in their documents. Could you tell me where I might find that recommendation in AAMI? We are expecting The Joint Commission (TJC) next month and I don’t want to be cited for not following AAMI standards by doing something that AAMI doesn’t say should be done.

A AAMI does not specify or describe scrub attire or mention long-sleeve jackets. They do however address the need to wear clean, freshly laundered attire every day in sterile processing and to change that attire as necessary throughout the day if the attire becomes soiled. Current AAMI standards do mention the need for proper attire in the sterile prep area, but the standard does not provide any specifics other than to state “take necessary precautions relative to attire – as established by hospital policy.” AAMI documents do make reference to various AORN recommendations. As was stated in the December CS solutions column (http://www.hponline.com/loathing-long-sleeves-sorting-soiled-linens-the-purpose-of-enzyme-spray-handling-heavy-sets/), AORN documents and guidelines do address the need to wear long sleeves and states the rationale for this recommendation. You can find the AORN guidelines at https://www.aorn.org/guidelines/clinical-resources/clinical-faqs/attire.

CS professionals need to keep current and stay abreast on issues by reviewing the most recent professional journals, literature, studies and new technology. The healthcare environment is dynamic, new discoveries and changes occur frequently. Managers must keep current on issues and adapt policies and procedures accordingly. To maintain best practices for patient and worker safety, decisions need to be based on sound data and good judgement. AAMI documents do not say not to wear long sleeves or warmup jackets but it is also essential to consider the most current information. AORN’s response and recommendations are more recent than the current (published) AAMI standards. AORN recommendations are also evidenced-based. If you decide to enforce long sleeve attire in the sterile processing area you would not be in violation of AAMI standards. Your decision would be based on current and sound information. We might see this issue addressed in later editions of AAMI docs.

Ray Taurasi is Principal, Healthcare CS Solutions.
Healthcare facilities are jeopardizing both patient safety and budgets if they aren’t partnering effectively and proactively with their original equipment manufacturers and third-party servicing companies. That’s because quality- and customer-focused vendors have the knowledge, resources and insight to provide ongoing training to Central Service (CS) and Operating Room (OR) professionals, and share valuable tips and strategies for keeping instruments properly maintained and rotated, and in good working condition.

As Rick Schultz, author, inventor, lecturer and retired CEO of Spectrum Surgical Instruments, explained, this education must address on how to properly decontaminate, select the appropriate cleaning brushes and inspect the devices. He also recommends staff-led training where CS employees “take ownership of the process and become the teacher.”

Maintaining well-functioning instruments also requires a facility to implement a proactive preventive maintenance schedule. Unfortunately, many facilities fail to look at maintenance from a full inventory standpoint. “Many times, they are just servicing sets that are available and ‘down for reprocessing’ in the department when the service team [arrives],” said Daniel DeShane, Regional Product Manager, Surgical Instruments, STERIS Corporation.

“This is not the best way to use budget dollars and it leads to surgeon satisfaction issues, patient safety concerns and higher spend on new equipment purchases.”

Establishing a maintenance schedule based on set usage is more effective than a “set time interval” approach, reminded Steven J. Adams, RN, CA, CRCST, RN Manager of Central Sterile Processing at Sinai Hospital of Baltimore. He explained the benefits this way: A facility might own five minor instrument sets. Depending on the number of surgical cases that rely on this type of set, as well as the way inventory is rotated, some sets may be used 100 times or more if a repair interval is set for every six months, whereas the other sets may only be used 15 times or so. After 25 or 30 uses, the cutting tips of scissors, for example, may begin to dull. “Those sets will continue being used until the six-month interval is reached,” said Adams. This could lead a surgeon to use scissors that tear human tissue instead of cutting it cleanly.

It’s also important to understand that set time interval repairs will have a negative impact on the bottom line if rarely-used devices are being subjected to the same repair and maintenance schedule as frequently-used sets/instruments. “If sets are flagged according to their use, proper maintenance can occur before problems arise,” Adams noted.

Tracking the benefits
Computer-based tracking systems can help CS departments better monitor device usage and streamline their preventive maintenance efforts. Tony Thurmond, CRCST, CIS, CHL, Central Service Manager for The Christ Hospital Health Network in Cincinnati, OH, has seen firsthand how such systems can benefit CS departments and their collective organizations. “Instrument tracking has the ability to notify the technician when an instrument or tray is due for refurbishing,” he said. And the benefits don’t end there. The systems also have the ability to place messages for the technician regarding vital information on cleaning, inspecting and processing an instrument. “This allows us to catch problems, such as dullness and damage, early.”

Because not all servicing companies are created equally, Schultz stressed the need for due diligence when exploring and researching the options. Peer networking and IAHCSMM chapter involvement can prove highly effective for CS professionals to discuss vendor selection and their performance, as well as best practices and regulatory issues, he said. “Partner with your repair vendor or other vendors and encourage them to sponsor chapter meetings and supply a speaker and food. If a local chapter doesn’t exist in your [area], I encourage you to partner with your peers and IAHCSMM to establish a new chapter.”

Don’t overlook carts and containers
Another word of advice to CS professionals is that case carts and instrument containers deserve the same meticulous care and attention as the items placed on or inside them. Containers are medical devices and have a direct impact on patient safety. “An improperly functioning container [is similar to] finding a hole in a wrapped surgical tray; the integrator will change, but if the seal is compromised, sterility cannot be assured,” said Deshane.

CS professionals should inspect containers after every use — being sure to look for loose gaskets, missing rivets and dents that affect the seal/gasket. “If a container is compromised, the patient is at risk due to non-sterile instruments,” Schultz warned. As for case carts, these should be inspected at least quarterly by a qualified repair vendor. “Failure of a caster, latch or door hinge has the potential to cause injury to staff.”

Additionally, the underside of the cart must be inspected for dirt, suture strands, mop strands, dust and other contaminants that can potentially end up in the sterile environment.”

Plastic retention rings for the cart shelves are also vulnerable to damage and wear, reminded Amanda Coss, National Education Coordinator for Mobile Instrument Service & Repair. HPN

IAHCSMM VIEWPOINT
Good repair vendor relations improve safety, cut costs
by Julie E. Williamson
Solutions to reduce HAIs

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Wet sets: Assessing the issues

by Mark Duro CRCST, FCS

The world of sterilization is a very complex one. With all the variables related to steam sterilization, there is always an opportunity for something to go wrong. Observing moisture in or on steam-sterilized items is one example. From time to time we may observe that a pack is wet after it is removed from the sterilizer and cooled or receive a call from the Operating Room (OR) stating that they opened a set and it was found to be wet.

Post-sterilization moisture in terminally sterilized sets is clinically unacceptable and can be a nuisance to investigate. A resource to help investigate this issue is AAMI ST79 Annex P, Moisture Assessment, which explains that, “Wet packs are a concern because the moisture on or within a package can create a pathway for microorganisms to migrate from the outside to the inside of a package.”

It is important to understand that there is a difference between a wet pack and a wet load. AAMI ST79 Annex P states, “Visible moisture left in (interior) or on (exterior) a package after sterilization and the proper cooling period should be considered a wet pack. If moisture is present on or in two or more packages the load should be considered a wet load.” In most cases the single wet pack issue is mostly due to user error. For example, it could be due to improper loading, placing a wrapped set under a rigid container system, not using the correct packaging material, or failing to use the proper dry-time for the item and for the sterilizer. Other factors that lead to external moisture can be tied to poor clinical practice, load contents and configuration, sterilization process failures, boiler system issues, poor sterilizer performance or environmental issues.

Visible exterior moisture that can be seen immediately in Sterile Processing can be caught early. AAMI ST79 Annex P states “Moisture found on the outside of a package may be caused by condensate dripping from the sterilizer cart railings or shelves, collection of condensation in improperly trapped steam lines, or condensation dripping from metal items on a shelf above other items.” Poor load configuration or overloading can be a culprit with external moisture. When loading textile packs like basin sets, ensure that they are leaning or facedown so as to not retain moisture.

Investigating interior moisture

An interior moisture event, however, is far more problematic. When we receive a call from the OR stating that they received a wet pack, there is a series of investigations that CS professionals have to conduct. It is important to obtain as much information from the OR or site of use as soon as possible. Obtaining the lot control sticker or label from an instrument tracking system can start the investigation. Once either of these are obtained, CS personal can begin the process of tracking that individual set to the actual load and verifying that the printout met all stated parameters.

A common failure that occurs in almost every CS is when staff fail to verify cycle selection either before a load is started or upon load release. Once the load has been identified, if it is determined that it was in fact run correctly, sterile processing technicians should try to find other items that were included in that same load and open a few samples to ensure the load was not a complete failure. It is not unheard of for a full load of instruments to be accidentally run on a Bowie-Dick cycle or other cycle that was not compatible. When a load is run on a Bowie-Dick cycle it is often noticed immediately upon cycle completion. It is extremely important, if not working in an automated environment (i.e., in which sterilizers are connected to instrument tracking system software), that the person initialing the cycle print-out verify that the load exposure and dry time are accurate. This will help prevent wet loads or wet packs. In my experience, in instances of a single wet pack, the incident can usually be attributed to poor tray configuration, inappropriate contents or improper assembly.

Some of the sterilizer issues that can contribute to wet packs can be identified...
It is possible for container load cards, locks, lot control stickers, tape, barcode labels and other debris to be clogging the sterilizer drain. Refer to the sterilizer's written instructions for use to establish how often to clean the drain screen. It is best practice to complete this task daily.

Tray configuration is also a culprit with wet packs or wet sets. Sometimes orthopedic loaner trays may enter a facility in a configuration for which they have not been validated to be sterilized. Spinal procedure trays are notorious for having multiple levels of screws and rods that are placed in tight multilevel plastic polymer trays that do not allow for adequate steam removal.

It is important to ensure that the trays that do come in on loan are in their intended configuration. In an effort to reduce the number of trays, vendor services, with the intention of being helpful, may add extra levels to a tray. However, this rearrangement usually adds more density to the set which can contribute to it being wet post-sterilization. Rubber finger mats can also cause internal moisture if not placed properly in the set. Improperly aligned mats that do not allow for proper steam removal will also retain moisture. It is important that sets are not too heavy or overloaded and that items that are placed in sets be steam permeable. Occasionally, CS staff is asked to put items in sets that are not intended to be processed in a steam sterilizer.

Failing to disassemble instruments is another contributing factor. There are many instruments that must be disassembled properly before sterilization or they could retain moisture. With some heavier sets, absorbent tray liners may be needed to assist in wicking excess moisture. It is also important to ensure when assembling kits, especially complex multi-tiered trays, that the contents be thoroughly dried before packaging and sterilization. In addition, if rigid containers are being used it is imperative that the manufacturer's validated filters be used and if there are reusable valves that they be properly inspected and maintained. Refer to your container manufacturer's instructions for use to verify whether they can be stacked during sterilization; not all containers can be stacked when loaded into a sterilizer.

A common mistake with loading peel packs is that they are not placed on edge. Peel packs should be sterilized on edge with adequate space between them to ensure proper steam penetration and drying. Racks designed for this purpose can facilitate proper pouch orientation, sterilant contact, and drying.

**Wet load**

In the event a wet load is identified (several trays from samples taken from the same load are found to be wet), the load should be recalled and the contents repackaged. The sterilizer should be identified and temporarily taken out of service until testing on that unit can be completed. AAMI ST79 8.3.1 recommends, “If ‘wet packs’ are observed, they should not be released. They should be reprocessed in a manner that ensures that excess moisture/con-densation does not occur. They should be repackaged (including the outer wrapper), and the Cls should be replaced with new ones. Sterilized textiles should be removed and replaced with freshly laundered tex-tiles that have not been ironed. Disposable products such as gauze and cotton balls should be discarded.”

When it is observed that wet packs and wet loads are occurring frequently, it is important to document exactly when these events occur. Document the dates and times and whether it is isolated to a specific sterilizer or if it is in multiple sterilizers. Try to isolate a common cause related to timing, as interruptions with the steam supply could be a contributing factor. When trying to figure out if it is a facility failure, a team including CS, Facilities, the sterilizer manufacturer’s representative or service technician, as well as infection control and risk management should be involved. Having a solid team in place can help better investigate the possibilities of the steam supply or sterilizer failure. This team can further investigate possible reasons for the failure. The steam supply to the sterilizer(s) should be evaluated. Is the steam coming from a source that also supplies other areas such as the linen department or dietary or is the steam independent? Some sterilizers have dedicated steam generators rather than house steam and if not properly maintained with routine preventative maintenance, these generators can contribute to wet packs/loads. When documenting, have staff note the location of the failed items (e.g., are they on a specific location or shelf, or were wrapped items placed under containerized items?). Another potential factor that can contribute to wet packs/wet loads is excessive entrained water in the steam supply.
Wet sets: Assessing the issues

Circle the one correct answer:

1. All containers can be stacked when loaded into the sterilizer.
   A. True
   B. False

2. Wet packs are a concern because the moisture on or within a package can create a pathway for microorganisms to migrate from the outside to the inside of a package.
   A. True
   B. False

3. To assist with eliminating moisture with heavier sets, the following can be done:
   A: use an absorbent tray liner
   B: wrap the kit twice
   C: add more metal mass to the set

4. Which AAMI ST79 Annex helps users assess and investigate moisture?
   A: Annex B
   B: Annex M
   C: Annex P

5. In case your entire department needs to repack- age due to excessive humidity, it helps to have the following on hand:
   A. Wrapping material
   B. Chemical indicators
   C. Indicator tape
   D. All of the Above

6. It is best to put cooling carts of sterilized items in a place where cool air is blowing on them as they will cool faster.
   A. True
   B. False

7. Peel pouches should be placed on edge in steam sterilizers.
   A. True
   B. False

8. It is acceptable to reuse textiles that were part of a wet load?
   A. True
   B. False

9. If one item is found to be wet the entire load should be considered a wet load.
   A. True
   B. False

10. Sterilization failures are usually due to faulty equipment.
    A. True
    B. False

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Presented by

Mark Duro, CRCST, FCS, is an IAHCSMM-approved instructor and Educational Consultant to 3M Health Care. Duro, an IAHCSMM fellow and executive board member, has been in the sterile processing management profession for 26 years and is the current Vice President of the Massachusetts Chapter of Central Service Professionals and Chair person for IAHCSMM’s orthopedic council. He is also on the AAMI ST79 working group, is a voting member, and was recently appointed to the AAMI ST79 Advisory Council. Duro is the previous Director of Sterile Processing Operations at New England Baptist Hospital in Boston and currently serves as the AORN news advisory for sterile processing.

Reference

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Streamlining the receiving and delivery system

Adopting a better system

In 2015, MSHS partnered with Jump Technologies Inc. to develop and expand their InnerTrack with Receiving solution to meet the demands of a major health system. The cloud-based solution required no servers and no rack space in the hospital data center and hardware requirements were minimal and focused on mobility: two wireless printers, two iPad minis, 15 iPod touches, and 15 wireless scanners.

Over the next two months, MSHS Receiving and Delivery staff would refine the application, providing feedback from the ground-up – working on everything from user interface design, to workflow requirements, to reporting and performance metrics. The platform soon expanded to include detailed delivery performance reporting, integration with MSHS’s McKesson Materials Management system, visibility to incoming shipments through direct interface with UPS and FedEx, a priority work-stream for urgent deliveries, and creation of an enhanced electronic record and audit trail, including recipient signature. Over the course of four weeks, the InnerTrack implementation and training took place in three segments: 1.) Proof of concept – discovery of current processes. 2.) Set-up – installation of software on mobile devices and interface with the Materials Management Information System. 3.) Training – conducted multiple hands-on-training sessions using the software on devices for Unload, Stage, Load, and Deliver processes; actual walk-throughs of offloading trucks and receiving incoming shipments from FedEx and UPS.

The MSH team has been using InnerTrack successfully for more than 12 months, and in 2016, all MSHS acute care facilities adopted the application. “At this point, our employees are able to train each other as we roll the product out to other campuses,” stated Les Grant, Corporate Director of Materials Management for MSHS. “They definitely take pride in having had a role in the development process and feel a sense of ownership in the overall business process.”

The investment pays off

Using time-motion studies, MSHS has recorded a 100-plus percent increase in overall productivity, as measured by Packages Processed/Minute/Employee (see table) and saw an immediate improvement in their existing workflow. Four to five team members can use InnerTrack to process packages by taking an “assembly line” approach to fully leverage the receiving stages built into the application.

Resource redeployment: With InnerTrack, the productivity gains enabled MSHS to redeploy a Receiving office staff member into an implant management support role.

Visibility: InnerTrack provides clinical end users with near real-time updates on the status of surgical product deliveries. “Especially in the case of custom-made or case-specific implants, it’s incredibly valuable to be able to communicate to your clinical staff exactly where an item is in the delivery process — and prioritize delivery if needed” noted Grant.

Audit trail: The receiving system creates an end-to-end electronic record of every incoming package, from the off-loading of the shipment from the truck to staging and then delivery to the final destination, capturing an e-signature of the final recipient for audit trail tracking of each incoming package.

Performance metrics: MSHS can now track delivery performance by facility, package type, and even by individual staff member. “Our same day delivery confirmation rate is approaching 99 percent this month comparable to (or better than) UPS and FedEx benchmarks nationally,” asserted Grant.

Going forward

MSHS and JumpTech continue to refine and develop the application with a goal of using the tool to track and monitor incoming freight charges. Also, Grant said they plan to adopt the JumpStock inventory management solution for Nursing and OR units and build out additional reporting capabilities. “The ultimate goal is total control of inventory, from loading dock to patient.”

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<th>MSHS InnerTrack Productivity Gains</th>
<th>Manual</th>
<th>InnerTrack</th>
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How does your team “measure up”?

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Innovation – How the department approaches day-to-day operations for internal customers that highlights and reinforces its importance to the organization, including the use of information technology and performance improvement management processes to improve efficiency and productivity.

Customer service – How the department manages product evaluations, contracting, purchasing, distribution, inventory management, consulting and facilitation for internal customers, including the operating room, nursing floors, and others, such as laboratory, radiology, clinical specialties and outpatient services.

Patient Care – How the department’s administrative, financial and operational activities directly and indirectly influence doctors and nurses and clinical performance in terms of high-quality patient care.

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Comprehensive Strategic Planning – How the department efficiently and intelligently works with partners along the supply chain continuum, including raw materials suppliers, manufacturers, distributors, group purchasing organizations, service companies (such as consulting firms and waste management firms) to assist their internal customers within the individual hospital or multiple facilities within the health system for the benefit of patients.

Document and submit your accomplishments by May 15, to editor@hpnonline.com.

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• Any nomination must focus on team-driven contributions and results more heavily than outsourced services to consultants, distributors and GPOs. Basically, emphasize what your team has accomplished over what a third-party vendor did for you.

• Any nominated facility must be willing to share relevant basic financial details with our readers, such as annual revenues, annual expenses and annual purchasing volume.

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NEW TECHNOLOGY

'Deep learning' AI provides accurate, timely interventional radiology advice to providers

Interventional radiologists at the University of California at Los Angeles (UCLA) are using technology found in self-driving cars to power a machine learning application that helps guide patients’ interventional radiology care.

The researchers used artificial intelligence (AI) to create a “chatbot” interventional radiologist that can automatically communicate with referring clinicians and quickly provide evidence-based answers to frequently asked questions. This allows the referring physician to provide real-time information to the patient about the next phase of treatment, or basic information about an interventional radiology treatment.

“We theorized that artificial intelligence could be used in a low-cost, automated way in interventional radiology as a way to improve patient care,” said Edward W. Lee, M.D., Ph.D., assistant professor of radiology at UCLA’s David Geffen School of Medicine and one of the authors of the study. “Because artificial intelligence has already begun transforming many industries, it has great potential to also transform healthcare.”

In this research, deep learning was used to understand a wide range of clinical questions and respond appropriately in a conversational manner similar to text messaging. Deep learning is a technology inspired by the workings of the human brain, where networks of artificial neurons analyze large datasets to automatically discover patterns and “learn” without human intervention.

“This research will benefit many groups within the hospital setting. Patient care team members get faster, more convenient access to evidence-based information; interventional radiologists spend less time on the phone and more time caring for their patients; and, most importantly, patients have better-informed providers able to deliver higher-quality care,” said co-author Kevin Seals, MD, resident physician in radiology at UCLA and the programmer of the application.

The UCLA team enabled the application, which resembles online customer service chats, to develop a foundation of knowledge by feeding it more than 2,000 example data points simulating common inquiries interventional radiologists receive during a consultation.

Through this type of learning, the application can instantly provide the best answer to the referring clinician’s question. If the tool determines that an answer requires a human response, the program provides the contact information for a human interventional radiologist. As clinicians use the application, it learns from each scenario and progressively becomes smarter and more powerful.

Natural Language Processing technology was implemented using IBM’s Watson artificial intelligence computers. This prototype is currently being tested by a small team of hospitalists, radiation oncologists and interventional radiologists at UCLA.

PRODUCTS & SERVICES

Thwarting the cache and carry business

Secret supply stashes symptoms of deeper problems

by Rick Dana Barlow

Ever check the space above the ceiling tiles in the examination and patient rooms at your hospital?

Pffft! Why, pray tell, should I do that, you ask?

When nursing lacks confidence in Supply Chain’s ability — and competence — to provide enough products on storeroom shelves or in the warehouse for replenishment, they may stock some accessible backup materials in the unlikeliest of places for quick and easy access as needed.

Forget just-in-time. This represents just-in-case. In terms of supply chain efficiency and effectiveness, it’s just a mess.

Yet with today’s electronic capabilities for tracking and tracing products are these seemingly desperate measures really needed? Does maintaining a secret stash make for a sacred cow?

Short of regaining nursing’s immediate trust and confidence in their skills, what can Supply Chain do about it?

Healthcare Purchasing News has explored inventory management issues in myriad ways since its inception in 1977. This time, however, HPN decided to explore Supply Chain professionals as performing some archeological/detective work in determining whether their facility contains hidden alveoles of products. Think of it as Supply Chain for the Lost Crusade.

That’s easy, you might exclaim. Go tech! Shouldn’t investing in and implementing real-time location system technology (RTLS) that uses radiofrequency identification (RFID), infrared, ultraviolet, ZigBee, and other “modalities,” do the trick? Bar-code scanners require line-of-sight so products hidden from view may still be hard to find.

Identify and chart the problem first, sources counter. Before you invest in tech you may want to start with the organic, they contend — as in eyes, hands and legs. Bring in tech to maintain an improved process.

Doug Duvall, Solution Architect, Versus Technology, worked as an Operating Room Anesthesia Technician in a “former life,” where he had “first-hand experience with the organic, they contend — as in eyes, hands and legs. Bring in tech to maintain an improved process.

Doug Duvall, Solution Architect, Versus Technology, worked as an Operating Room Anesthesia Technician in a “former life,” where he had “first-hand experience with the organic, they contend — as in eyes, hands and legs. Bring in tech to maintain an improved process.

“First I’d go to the ICU Charge Nurse and ask for one. She’d refuse to give me one, claiming they had none. I’d ask how is it that the ICU has no pumps? She would assure me there were none. I would explain that this case was coming to ICU after surgery, so if she gave me a pump, it would come back. Still, she held firm.”

Then Duvall got serious and hit the back channels.

“Having gone through the official channel, I’d then look in the secret hiding places I knew about — behind curtains, in supply closets, even ceiling tiles,” he continued.

“When I found a pump, I would have to sneak away with it, hoping no one noticed.”

In search of … the walkabout

Carola Endicott, Vice President of Services and Operations for Cardinal Health Inventory Management Solutions, Cardinal Health, promotes a “down-under” method of scouting.

“As they say in Australia, take a ‘walk-about’ with the best guide you can find — a friendly nurse,” she said. “We recently toured several operating rooms and discovered numerous secret caches of supplies, carefully stowed for later use. Unfortunately, almost all the supply hidey holes included some expired products. This reinforced the problem with this approach. The Supply Chain team spoke with the specific nurses involved in those rooms, and was able to pull those supplies back into central storage.

“In one case, there was so much ‘recovered’ stock, they were able to stop ordering some products for several months,” she continued. “The key is to find the nurses
Inventory management made easier

Getting proactive, not reactive, with real-time automation and advanced analytics

Staying ahead in today’s value-based reimbursement environment requires buying and having visibility to the right products, at the right time, every time. That’s why more and more supply chain leaders understand how managing product inventory “the way we’ve always done it” can be a costly, unproductive way to do business.

Total visibility
Efficient, cost-effective healthcare delivery is contingent on having an inventory management platform that not only tracks par levels and usage consistently and accurately, but will also provide critical, up-to-the-minute data that can point to trends such as cost per case or department; predict needs in advance, and guide purchasing decisions. That’s what a real-time automated solution with an advanced analytics component does. It gives hospitals constant, widespread visibility across the supply chain and valuable data that can be used to reach fiscal and care delivery goals that were almost impossible to achieve earlier.

“Without a good system there can be a lot of guess work; you might see that you had purchased something before but that doesn’t mean that it was used,” explained Lisa Stepps, an Operations Manager at Cardinal Health and previous Project Manager-Data Analyst for a Cardiovascular Service Line at a major hospital in Atlanta, GA.

“Without visibility you might make assumptions or piece together pieces of information from various systems to identify trends; but, it doesn’t give you the detailed data to pinpoint and drive decisions that will impact your operational and financial management.”

Using automated inventory management paired with RFID (Radio Frequency Identification) technology can put an end to labor-intensive auditing, line of sight reading of boxes and manually keying product information into multiple systems. All of which can be prone to human error and unable to concurrently support clinical and operational efficiency, maximize reimbursement opportunities, strengthen supply chain’s negotiating power, monitor contract compliance, support patient safety initiatives, and deliver significant bottom line savings.

No more expired products
Wouldn’t it be great to know exactly when every product on the shelf is going to expire well before it happens? With the right data and tools on hand, this can be done. Continuous, real-time monitoring at the individual product level gives you visibility to recalls and expirations 24/7. You can also generate expiration reports that quickly identify products before they expire. Plus, advanced analytics, when used across multiple departments, can determine exactly where the high- and low-volume users are of any product on hand that may be expiring soon positioning hospitals to utilize supply prior to expiration.

Conversely, if products are not being used then you’re equipped with data to use for conversations not only with internal staff such as physicians, but also to help guide conversations with the manufacturer. “If you wait until products are short dated, then you’re just eating the cost,” suggested Stepps.

“But if you can proactively manage that and use the system alerts and auto-generated reports to put this information front and center with stakeholders then you can say here it is, here’s the red flag.”

Savvier purchasing
Bulk purchasing and consignments can be great ways to reduce costs. Having good, accurate data – in real time – will also add valuable support and guidance and help you to avoid costly mistakes. “Hospitals have been able to use data to look at their utilization and come back and say I haven’t used any of those products in the last three months; but I have used a 120 of this item so if we can talk about bulk for this particular item then I’m in,” said Stepps. “Some will do a bulk purchase on a particular item every quarter. They know, because of the data, that they’re not at risk of buying those products and having them expire on the shelf because their utilization supports the purchase. It becomes less about price and more about can I use it?”

Negotiating also requires collecting and evaluating data from various departments and systems, a time-consuming and painstaking task if you’re relying on older inventory management methods, says Stepps, who has worked in the clinical settings both with and without a real-time automation system. “If I needed to know something, I’d have to go to my purchasing team who has to go to their analyst and then I’d have to wait for them to turn that information around,” she said. “Then I have to somehow marry all that information together. It was very laborious.” Automated inventory technology changes all of that. You don’t have to wait to have or have a data analyst in your department to get the answers you need.

Charge capture
Capturing the true cost-per-case to optimize billing and reimbursement functions is another goal that every supply chain aims for. That’s exactly what automated inventory management paired with RFID technology can achieve: end-to-end product visibility and accurate usage capture on every case, in real time. All scans made at the point of use can go through an integration system which immediately sends that product information into the clinical documentation system while also sending it to downstream billing. “It’s one point of capture that’s feeding these multiple areas so that they all remain in sync,” explained Stepps. “That feature is huge. The clinician is touching it once but it is actually doing several things. You’re capturing usage of that item, the cost of that item, and you can include that information in your cost-per-case. You could look at all your stent procedures, for example, and get a full picture of what that cost is – not just the high-dollar, but low-dollar costs too.”

Leveraging data to build cross-functional alignment
Data will always be a critical and powerful tool for communicating among the supply chain and clinical staff, particularly with physicians who may be willing to consider other product options if given a good reason to do so. Stepps explained how having strong data can change the conversations you have with medical directors and physicians. “They’ll start to look at compliance and at utilization because you can compare that information and share it; we’re really comparing apples to apples now,” said Stepps.

“It’s no longer an emotional conversation, now it’s a very data driven discussion. It’s also looking at your contract compliance. If you’re required to use 30 percent with a particular manufacturer and you have one physician who never uses that supplier, you’ll have the hard data right there to call that out. I’ve had physicians come in and say they want to stock a specific product because they use it ‘all the time’ but a look at the data shows he’s literally used one in two years. It’s very eye-opening. You can’t argue with the data.”

Whether your supply chain fuels one hospital or an entire IDN, implementing an automated inventory solution with RFID technology and advanced analytics capabilities can improve processes and outcomes across the board. The Cardinal Health Inventory Management Solution cloud-based system uses RFID technology to interface around the clock with multiple departments, streamline workflows, bolster purchasing decisions, increase billing and reimbursement accuracy and, ultimately, help to improve patient care.
who have realized this stocking strategy ultimately hurts the nurses and patients. Without a guide, this process can become a wild goose chase and, in the end, can engender more distrust between Supply Chain and Nursing.

Bob Yokl, President and Chief Value Strategist, SVAH Solutions, and former hospital Supply Chain manager, also finds that “walk-around management” remains the “best method” for finding hoarded, misplaced or missing supplies.

“At one facility where I worked, every Friday a supervisor and I would check out a different hospital department or to see what was going on,” he said. “Walk-around management involves rummaging through cabinets, drawers, PAR level stations, exchange carts, etc., to see what is going on after the products are delivered from your storeroom or receiving departments. Yet, this search for insight doesn’t need to be intrusive to be effective.” Yokl found his efforts a “real eye opener” on nursing behaviors.

“We found that nurses were hoarding sheets, towels, wash cloths and blankets from the truck load,” he said. “We also discovered that our trays, kits and sterile packages were being broken into to retrieve just one item needed for a procedure (e.g., glove, syringe, dressing, etc.) then staff members were discarding the rest of the tray.”

To stop the hoarding, Yokl and his team assured the nurses that their linens would be available when they needed them, he indicated. Change didn’t happen overnight. “It took time, but we won our nursing staff over with our 100 percent fill rate on their linens,” he added.

For the kits and trays opened for various component products, Supply Chain “provided individual items that were frequently needed, but not available other than in a kit or tray,” Yokl recalled. “This solved most of the egregious wasting of our kits and trays.”

Dave Kaczmarek, CMRP, FAHRMM, Principal, Healthcare Supply Chain Solutions, and former hospital Supply Chain manager, muses that a facility simply needs a supply chain distribution system that is so good the clinical staff feels no need to hoard supplies.

Short of such operational near perfection, Supply Chain may “need to get creative as the clinicians,” he quipped. “Where are there potential hiding places? On most nursing units there really aren’t that many. Yes, there is always in the ceiling tiles, but my experience is that linen winds up there much more than supplies. That leaves the desk area, the break room, the clean utility room and staff lockers.”

**PAR for the coarse?**

Perhaps the better question is whether Supply Chain should try to find these hoarded supplies that nurses unsatisfied with Supply Chain’s performance stow away, and if so, how? Kaczmarek asked.

“The real problem with hoarded supplies is not the value of inventory tied up, it is the waste that so often results as supplies outdate or become unusable,” he continued. “There is also the danger that an expired item will be put back into circulation and be used. But the overall cost and danger is low, and the effort needed to constantly police for this type of activity could be substantial. So Supply Chain actions to prevent the hoarding — education and system that make it unnecessary — are the better use of resources.”

John Freund, CEO, Jump Technologies Inc., concurred. “You could spend all day trying to find technology to get rid of hoarding, but reality is nurses don’t hoard because they like to. They hoard because they still remember the last time there was stock-out, and a doctor yelled at them because an item they needed for a patient wasn’t there and care was delayed,” Freund noted. “Stock-outs equal hoarding. So what we really want to do is eliminate stock-outs — challenging because most hospitals don’t have the data to properly manage inventory.”

Visualization, hunches and gut feelings without accurate data fuel PAR replenishment, according to Freund.

“A Supply Chain tech goes into a store room, visually scans the on-hand inventory and decides what looks ‘low,’ especially among their high-velocity items,” he explained. “They use their first-hand expertise with the unit to decide what they need to reorder, and to make sure nothing stocks out, they’ll key in a number that tricks their system into replenishing an item. This renders PAR levels useless, and the outcome is overstocked on-hand inventory tying up cash and space, and causing problems like higher percentages of expired supplies.

“You can’t have a good process when the only data is what’s kept inside a supply tech’s head,” he added. “Hospitals need real data that’s both continually updated and shared by all.”

Mutual mistrust between Supply Chain and Nursing develops as an unintended consequence of this type of PAR replenishment, Freund insisted.

“The current processes and lack of accurate data feed into a vicious, inefficient process: Stock-outs erode nurses’ confidence in Supply Chain and causes hoarding,” he continued. “The combination of stock-outs and hoarding causes Supply Chain to overstock. Overstocking causes higher costs. PAR levels get reset but not well-utilized. Inaccurate PAR levels and poor replenishment processes cause stock-outs. And so it goes.”

Jamie Kowalski, CEO, Jamie C. Kowalski Consulting LLC, and a former hospital Supply Chain manager, proffers a composite blueprint from his clients and experience. Start by having a Supply Chain tech count inventory in each department with a rep from that department at least quarterly, and then reconcile that with either the materials management information system (MMIS), the general ledger, PAR levels, item master or any other record of note, Kowalski suggested.

Eliminate closed cabinets, he continued, and replace them with open shelving, clear bins attached to the wall or on an open — or wire shelf — cart.

“Ask the Environmental Services and/or evening and night Security staff to randomly check departments, looking above ceiling tiles, in closets, etc.,” he said. “If the issue is suspected to be severe, install cameras in supply storage areas or place cameras in some of the rooms that they are most likely to stash inventory, such as an office, lounge, classrooms.”

Record and require a sign-off for all items delivered to all storage or user areas for 60 days, he continued. “Cut the on hand or PAR levels of supplies to a very low level, or just don’t deliver as much, and track how long it takes for those departments to complain that stock is running out or not available.”

**Value-matching**

Chesapeake Regional Medical Center initially investigated a number of ways to track items that move around the facility, especially equipment, wheelchairs, IV poles and mobile items that can be hard to find, according to Seth Larson, Director of Supply Chain Management.

“Our team has brainstormed how we could use RFID but so far, we’ve just found the systems to be cost prohibitive, especially for lower-cost items,” he said. “We were not
going to put a tag on every package, every bandage.”

Instead, they decided to match the value of an item to the business process to manage it, according to Larson.

“The more expensive an item, the more control you need,” he said. “So by rule, some things, like implants, pacemakers, tissue, have to be recorded by lot and serial number in the implant log, and in turn, you can see usage. Then as you go down the price scale, control becomes the PAR level itself and controlled access to the location where the item is kept. When we looked at RFID, we were all over the board. Some thought the every supply should be tagged, others thought only most expensive items. A colleague new to healthcare suggested we require the manufacturers to put tags on all items, even the most low cost items, but that’s going to drive a lot of additional cost. It’s not that you’re not going to lose a box of bandages occasionally, but for $3, how much control do you need?”

Larson labeled it a life-long problem that relies on trust between clinicians and Supply Chain.

“We’re required by accreditation bodies to control access to areas where supplies are stored,” he continued. “The staff has to have a badge or another method of controlled entry. Even with that, it’s hard to get rid of the movement of supplies that aren’t intended to move. What I see is a nurse hoarding her favorite item, hiding a stash in a desk drawer or in a locker, keeping a supply of her own just in case. She’ll still remember the time the item ran out back in ‘93, and she doesn’t want that to happen again. I see this [happen] a lot in specialty areas, like the Cath Lab and the OR. As you get into high-cost items, like implants and tissues, there’s more tracking, so it’s harder for those things to go missing.”

Staff at Duvall’s former hospital tried multiple methods to remedy the situation, but found RTLS combined with PAR-level asset management that finally provided a solution.

“When you’re dealing with thousands of pieces of medical equipment, no shortage of hiding places, and a culture where nursing just doesn’t believe the equipment will be available to them unless they hide it away for themselves, the only way I see to break the cycle is to start from zero, know where everything is, create a shared mission between Supply Chain/Distribution and nursing, and move forward with a plan to support nursing by providing the equipment they need on-demand in real-time,” he said.

Supply Chain and Nursing together embarked on a process improvement initiative that included buying new pumps and employing technology to track equipment as well as automatically alert Supply Chain when their units were running low so they would always have what they needed, according to Duvall. “Because they were involved in developing the solution, they trusted us, and they relinquished all the equipment hidden on their units. We were also able to reduce the overall number of IV pumps we purchased, which saved us a lot of money,” he added.

“Spending time and money to find hoarded items is time and money wasted,” Jump Technologies’ Freund insisted. “Instead, use the resources toward the goal of eliminating hoarding, or really, stock-outs. Build trust and confidence with the nurses that Supply Chain knows exactly what’s going on with the inventory in their unit. Then, work with your CFO to raise the ceiling on what’s being tracked at the individual patient level, moving it up to items costing at least $25 or more. The lower-cost items can be covered in room or procedure charges.”

Freund encouraged hospitals to move the low-cost items to a two-bin Kanban system, and put the higher-cost chargeable items in a perpetual environment.
“Once you have all the data about each item and velocity, you can begin showing clinicians meaningful reports and help them share in your plans for eliminating stock-outs,” he said. “When they feel confident in the data and in your proactive planning, they can get on board with new supply levels and stop hoarding. Fixing this problem is going to allow you to significantly reduce on-hand inventory, which frees up cash that you can spend on better places than inventory sitting on shelves. It’s a win for Nursing and Supply Chain.”

**Hoarding hot spots**

Larson said he always found the Emergency Department to be a “hot spot for hoarding and hoarding” with boxes of favorite items finding their way into lockers and desk drawers.

“Right now, our ED is being redone, and as we go from area to area, we’re uncovering secret stashes,” he said. “Just this week, the nurse manager has brought us cart after cart of overstocked supplies.”

By its very nature, the fast-paced OR can be a culprit, too, fearing a stock-out, according to Larson. However, velocity reports are making a big difference. “We’re going back and checking all the rooms and restocking as needed. We’ll take money out of this area, but we’ll be able to make sure we’re not stockout,” he said.

Larson’s team also conducts rounds throughout the hospital, especially in areas such as the Cath Lab and OR, to get feedback on supplies. At leadership meetings, they discuss issues and the problem of hoarding specifically. Yet even though hoarding may receive a lot of visibility, Supply Chain still finds it happening, he laments.

“My team recently did inventory in the Cath Lab, poking into cabinets and hiding places, and found a little back room that was stuffed with high end pacemakers and some other items that weren’t consignment and weren’t purchased,” he recalled. “It was a bunch of items a sales rep had left here, so they’re here when he comes back in and needs something. But we’re at risk — if something is lost, missing, stolen — the manufacturer will want us to pay for it. In fact, that just happened recently. But again, these are items without consignment agreements, so I’m not paying for them. We’ve got to get much better visibility and agreements covering everything that’s in our hospital. When we can discover it, we can address it.”

Yet hospitals aren’t alone in the experience of supply hoarding, Larson witnessed it early on in his Navy career, too.

“When I worked in medical records, we found years’ worth of records because we saw a ceiling tile literally bowing,” he said. “It turned out to be from the weight of hidden files, which had been stuffed up above a person’s desk instead of being recorded. So we all use the ceiling tile reference as the punch line of a funny story, but it really does happen.”

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**Here’s how to prevent hoardes from hoarding**

Blame supply hoarding on Nursing’s lack of confidence and trust in Supply Chain’s ability to deliver products and services, experts tell Healthcare Purchasing News. But that quick and easy diagnosis belies the seemingly long and arduous therapeutic journey to establish — or re-establish — the professional relationship between the two groups. Provider and supplier experts share their advice.

“The only way to establish trust is to develop a plan with Nursing and do what you’re going to say you do. The trust will only last as long as they see the plan working. In our case, the plan involved real-time locating technology to manage a periodic automatic replenishment (PAR) model for asset tracking. Our facility already had the enterprise RTLS infrastructure in place, so there was little to add except tags to every IV pump and a software module for the Supply Chain team. The tags use active infrared/RIFD technology, so they’re always automatically updating the software and PAR-level counts with their location — no need to walk around with scanners. We set up a central distribution model, where each unit took pumps from a ‘Clean Supply’ room. The RTLS monitored the number of pumps in those closets and sent alerts when clean inventory started getting low or when there was surplus. Distribution would replenish clean supply before the count reached zero, so when a nurse goes to that supply closet, there’s always a pump available — no reason to stash any away. They trust that there will always be a pump available when a patient needs one.”

— Doug Duval, Solution Architect, Versus Technology

“I’d recommend the following steps to repair and/or build relationships of trust with your hospital’s department heads, managers and their staff as follows:

1. Never lie, deflect, absolve yourself or your supply chain department of your responsibilities to your department heads, managers and their staff. Always take responsibility for your or your staff’s actions.
2. In cooperation with your department heads, managers and their staff, establish standards for your supply chain’s performance, such as, exchange carts will be refilled by 8:30 a.m. every morning, emergency orders will be delivered within 15 minutes, etc. Then meet those standards, without exception, every week, month and year.
3. Survey your hospital departments on a quarterly basis to see if your Supply Chain department is meeting their expectations based on the agreed-upon standards. Correct any deficiencies noted in your service based on this feedback.
4. Taking these three recommendations seriously will repair or build trust, in about a year or less, will repair, or build relationships of trust with your department heads, managers and their staff. Always take responsibility for your or your staff’s actions.

— Bob Yokl, President and Chief Value Strategist, SVAH Solutions

“Nurses don’t hoard supplies as a hobby, but because of a lack of trust that their supplies will be there when they need them. To break this self-preservation habit, supply chain needs to always meet or exceed their nurse’s expectations about their supplies. Then over time, nurses will hoard less and trust more in supply chain.

— Dave Kaczmarek, CMPR, FAHRMM, Principal, Healthcare Supply Chain Solutions

“First, implement systems at the point of use that allow proper data capture without nurses having to spend time managing supplies. At one large metropolitan area hospital, they’ve reduced...
PRODUCTS & SERVICES

the time nurses spend in the storeroom by 65 percent, which equals several hours per day of saved time in each unit.

“For inexpensive items, two bin Kanban systems are easy and very inexpensive to implement. Nurses love them because they don’t have to do anything except grab the item they need, and occasionally move an empty bin up to a top shelf. Kanban is an extremely accurate way to manage low-cost items. For the more expensive, chargeable items, use a perpetual PAR approach, with technology that allows levels to be visible and easily managed, with daily, actionable reports that can be shared with clinicians so they understand and agree on adjustments to PAR levels.

“If I’m running Supply Chain, I want to see what stocked out yesterday. If it’s stocking out repeatedly, I know I have to adjust par, and I suspect I have a hoarding problem. It’s a great time to be proactive, go find the nurse manager and say ‘see, we stocked out three times in the past two weeks.’ You can let the manager know that you’re aware of the stock-outs, you have a solution to the recurring issue, and you’re ready for him or her to show you around the unit, so you can be sure there’s enough on the shelf, you can get correct counts, and check for expired products. A daily stock-out report allows you to get in front of recurring issues.

“Good velocity reporting shines a light on problems right away and makes it easy to show the clinician what’s happening in their area. You can see what’s moving faster or slower than you’d anticipated, and you can adjust quickly — getting rid of the items moving slower to make room for those moving faster.

“Simple as this sounds, this level of efficient, simple inventory management doesn’t exist in healthcare today. But it can, and it should be our goal. Get rid of PAR replenishment, get simple systems that gather data, get simple reporting that we can share with clinicians, and give them the confidence that supply chain knows exactly what’s happening, so they won’t hoard and supplies won’t stock out.”

— John Freund, CEO, Jump Technologies Inc.

“Provide a place for user depart staff to note that the order was not correct as of the day/time they started to put it away. Or provide a phone number that user staff can call when an error is discovered. Then have the person(s) who filled and/or put the order away go to the user department to check on and rectify the problem.

“Make rounds periodically to see what is happening. Take corrective action. Advise the customer what corrective action has been taken.”

— Jamie Kowalski, CEO, Jamie C. Kowalski Consulting LLC

“The answer is velocity reporting. We’re starting to ramp up quickly with a relatively new reporting tool — in fact, we’re rolling it out right now on our busy 2nd floor. In this nursing unit, they have IV fluids stuffed in every nook and cranny. The bins are so full, you can’t rotate the stock, and as a result, a lot of IV fluids are expiring. The nurses felt like they wanted a lot of everything on hand, and in turn, there’s a lot of waste. It’s like the nurses aren’t used that often. I said ‘let’s just see what you’re using.’ Now we’re normalizing what they keep on hand. For things they’re using at a high rate, we’ll stock them. The more unusual items will be stocked in the hospital and we’ll replenish on the 2nd floor as needed. We’ve been planning to change out their shelving and the overstocking in this area has slowed down the process.

“Velocity reports have enormous value, both to Supply Chain and Nursing. We can show nursing exactly what they’re using. Nursing leadership is very aware of budget and they’re committed to supporting our effort to minimize spend. The data helps a lot — now, I can show them ‘par is 50 and you’re averaging 9 each month over the 60 days.’ With this data, we can reduce par and in turn, costs.

“Communication, trust, building relationship helps as everyone becomes more accountable. But it’s a balance. You have to decide how much time and effort you want to spend watching even the lowest cost supplies.”

— Seth Larson, Director of Supply Chain Management, Chesapeake Regional Medical Center

“Some areas of the supply chain are using the concept of a ‘Service Level Agreement’ or SLA, with their nursing partners. This includes delivery, restock, and stock-out resolution timeframes, and escalation procedures if those service levels aren’t met. Posting these in a visible location adds to the credibility of the supply chain promises. It also helps facilities to start in the smallest area with the biggest pay out — in terms of both high-cost products and products apt to expire, for example, the Operating Room or Cath Lab.”

— Carola Endcott, Vice President of Services and Operations for Cardinal Health Inventory Management Solutions, Cardinal Health

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“It is my view that all hospitals have standard disaster planning measures. They do the drills at least once a year for major fire, accidents, hurricanes, tornados. They have the disaster carts with backup supplies. Departments also should have policies for what they should do when they do not have any means for sterilization.”

Stephen Kovach, Director of Education, Healthmark Industries

“Manufacturers should consider validation testing for such complex and difficult to clean devices, and such testing and reprocessing instructions should be accurately reflected in the labeling.”

Steven Turtl, Biologist, Center for Devices and Radiological Health, FDA

“Hair clippings, which contain the same pathogenic bacteria as skin, can be left behind on patients, linens and the OR floor. Hospital-acquired infection outbreaks have been traced to organisms isolated from hair or scalp.”

Stephen Placeway, Senior Manager, Product Marketing, Infection Prevention, BD

“Unlike other more common conditions or diseases, sepsis does not present with its own uniquely distinguishable set of symptoms, making it hard to identify. Sepsis presents with nonspecific findings — such as increased breathing rate or altered mental status — that mimic the symptoms of other diseases.”

Pat Parks, MD, PhD, Medical Director, 3M Critical and Chronic Care Solutions Division

“We recently toured several operating rooms and discovered numerous secret caches of supplies, carefully stowed for later use. In one case, there was so much ‘recovered’ stock, they were able to stop ordering some products for several months. The key is to find the nurses who have realized this stocking strategy ultimately hurts the nurses and patients.”

Carola Endicott, Vice President of Services, and Operations for Cardinal, Health Inventory Management Solutions, Cardinal Health

Healthcare organizations (HCOs) are constantly being tasked to shave costs off the bottom line, and Supply Chain is often one of the best places to start. Over the past decade, as the number of hospitals has shrunk and the number of medium-to-large Integrated Delivery Networks (IDNs) and Regional Purchasing Coalitions (RPCs) has grown, a significant amount of conversation has been devoted to supply distribution costs and how to avoid—or at least reduce—they.

Among the many strategies spoken about are the concepts of “centralized distribution” and “Consolidated Services Centers.” One of the more plausible ideas to land in the Supply Chain Leader’s head is, “If I cut out the middle man, I could save some money.” With fees paid to a distributor ranging from 3 percent to more than 10 percent, an IDN or RPC spending $50 million or more on distributed supplies might expect to garner some handsome savings by taking on the singular responsibility of distribution or the dual responsibility of self-contracting and distribution.

In addition, if the IDN or RPC were large enough and geographically concentrated, another possibility might be to build a Consolidated Services Center (CSC) — a place where a number of Supply Chain-related functions would be housed, saving the duplicative costs of performing those functions at each individual site within the IDN or RPC. Key considerations being both the aggregation of volume and a logistics component capable of providing service to the members.

Functions that might be centralized in the CSC include:

- Commodity supply distribution
- Physician preference item inventory control and distribution
- Print management and production
- Record retention and storage
- Laundry services
- Linen pack preparation
- Durable medical equipment storage and distribution
- Pharmacy packaging and production
- Food services cook-chill production and distribution
- Biomedical repair services
- Storage and distribution of disaster supplies

It should be intuitively obvious to even the most casual observer that there are lots of things to be considered before leaping into the “Consolidated Waters.” Decisions made regarding the expenditure of millions of dollars should be well-thought out and justified, with extensive research and financial modeling, because once made, it is difficult to retreat.

To help with the decision-making process, I have formulated a series of issues and questions to consider and have also solicited input from a group of veteran Supply Chain industry experts—Jay Mitzel, former Supply Chain Executive from TriHealth and Summa Health; Jim Francis, Chair, Supply Chain Management and Chief Supply Chain Officer, Mayo Clinic; John Gaida, who recently retired from Texas Health Resources as Senior Vice President of Supply Chain Management; Bill Mosser, Vice President of Materials Management, FMOL Health System and LogisticsOne; Bob Simpson, President and CEO of LeeSar; and Charlie Miceli, Vice President and Network Chief Supply Chain Officer, the University of Vermont Health Network. All are respected leaders, and all have pondered these same questions. Some chose to move forward and some chose other alternatives.

Let’s get started:

What is your organization type? Are you a small to medium IDN, a mega-IDN, a small RPC or a large Alliance associated with a major group purchasing organization? You will notice that I did not ask if you were a stand-alone community hospital because those entities are rapidly disappearing and it is doubtful that such an entity would have enough non-acute affiliates to justify centralizing any of the functions involved. For every organization type, there are specific considerations, many of which
are addressed with the ensuing questions. The biggest difference between IDNs and RPCs/alliances is the question of management and ability to drive participation and compliance, since many of these organizations have voluntary membership.

**What is your Operation/Management structure?** Are you highly centralized, moderately centralized or decentralized in your management structure? The answer to this question will tell you a lot before you ever take the plunge. If there is a single bottom line to be managed against and a single decision-making structure, the chances of success will be greater than if decision-making is decentralized among several bottom lines. This is where bigger is far from better. If you are a huge mega-IDN with a distinctively decentralized decision-making style, your chances of getting and keeping buy-in (not to mention compliance) are far less than a smaller IDN with tight decision-making and accountability.

**What are you thinking about doing and what do you hope to accomplish?** Articulate your thoughts. Write them down. Share them. Hold frequent open discussions with stakeholders and Subject Matter Experts. Don’t be afraid to get mud on your face. The most obvious reasons for doing anything are to improve quality and service while reducing costs. Simple distribution of commodity items, for example, is not so simple when you begin to look at it. Other functions, such as putting in a Pharmacy “assembly line” or centralizing the Sterile Processing function require specialty expertise and must conform to several specific laws and regulations. Twice in his career, Jay Mitzel made the decision to consolidate his Consolidated Distribution Center because the organization he was working for needed space in their main campus. On both occasions, Mitzel was able to find an acceptable building for a pittance, and on each occasion, he did a careful and thorough analysis of all the costs associated with the opportunity. He saved his organization substantial money. However, he says, “You need to be patient, tenacious and take the long-term approach. You do not reap the economies you expect immediately.”

**Why do you want to do these things yourself?** Be honest. One of the respondents for this piece (who shall remain unattributed for obvious reasons) said, “These things are usually built around a person rather than doing what the organization needs/wants. You get someone who is passionate about it, sells the idea internally, and they do it — only to wake up one day and the person leaves and the organization is left scratching their head saying, “Why did we do this?” Do not allow your desire to accomplish something spectacular leave your organization in the lurch long after you have moved on.

Jim Francis, of the Mayo organization, offered these comments:

- **What is the scope of the CSC?** Just supply chain management or a true consolidated service center for multiple shared service activities?
- **Is there a clear business case and value proposition?**
- **Does the organization consider operating a CSC a core competency?** Would other healthcare organizations buy distribution services from them? That may lend itself to a joint venture.
- **Do subject matter experts exist that can run the CSC with the efficiency and cost effectiveness that a national distributor or 3PL can?**
- **Is it a sustainable business (long term financial viability) venture?** My belief is that it is a hard model to replicate given the years of experience that Cardinal, McKesson, Owens & Minor, etc., for example, have spent fine-tuning a low-margin business. We have a mixed distribution model with a primary distributor that also does LUM/JIT to some of our locations. The primary reason we have a distribution center is our main location is in Rochester, MN, and it is there for inventory management reasons/disaster and business continuity, not that we are experts in running a distribution center.

Ed Hiscock of Trinity Health mentions these considerations:

- **Ensure that you are able to drive SKU reduction and remove variation.** Think beyond just medical/surgical products. Simply intermediating your distributor will not drive a significant return-on-investment. Accurate expression of demand will be a key success factor.
- **Ensure that you have sound point of use systems/processes and comprehensive span of inventory control.**

Bill Mosser of FMOL adds these reasons for FMOL adopting a Consolidated Services Center:

- **Purpose is to reduce handling (touch points) and provide one-stop shop for our hospitals and non-clinical entities;**
- **Too many current distributors handle only those items that they can make the necessary margin on: acute versus non-acute, drugs versus supplies, commodities versus PPI, patient Care versus diagnostic.**

- **Central Distribution approach allows:**
  - Our clinicians to determine what we’ll use, which drives our standardization efforts by category;
  - Our LogisticsOne team to insure track & trace and data standards requirements are met;
  - Our strategic sourcing to reduce manufacturers that are non-compliant with our distribution needs;
  - Our new procurement cycle processes to be aligned from P2P;
- **Transportation network allows us to connect facilities for other related needs:**
  - Laundry, mail, specimen collection, records management; etc.
- **Onboarding process for LogisticsOne included direct connection to Supply Chain Operations leaders from the manufacturers:**
  - Eliminates sales rep involvement and interference;
  - Aligns partnering goals beyond sales;
  - Streamlines P2P and electronic commerce;
  - Helps identify mutual benefits and waste beyond product sales;
  - Establishes service levels to allow for long term contracting;
- **Streamlining all products to be processed through LogisticsOne allows:**
  - Our Clinical Value Analysis teams (PACs) to see variation and address standardization across continuum of care;
  - Streamlines contract compliance monitoring;
  - Supports more disciplined new product assessment process;
  - Allows timeline alignment for new product or substitution introduction.

Next month: Crans highlights and explores seven more issues along the path to CSC operations.

Fred W. Crans is a strategic business leader and developer for Sedlack Management Consultants Inc.’s healthcare practice with extensive experience in supply chain operations, distribution, operational improvement and strategic leadership. The veteran supply chain consultant with provider, supplier and group purchasing organization experience, also is a frequent contributor to Healthcare Purchasing News. Crans has spent the last decade specializing in evidence-based decision-making methodologies. He can be reached at fcrans@asedlak.com.
Reducing medical errors: How Supply Chain can help

by Karen Conway, Executive Director, Industry Relations, GHX

Medical errors are not new news. The high number of deaths due to preventable medical errors made the headlines in 1999 with the publication of the Institute of Medicine’s To Err is Human report. Since then, there have been numerous other studies on the same topic, nearly all saying that the 1999 report underestimated the magnitude of the problem. Most recently, a 2016 study published in BMJ estimated that medical errors may be the third leading cause of death in the United States, second only to cancer and heart disease. Medical errors are not just an American tragedy. That same study also noted that the number of preventable deaths are likely underestimated in Canada, the United Kingdom and possibly many other countries due to a lack of information as to whether a medical error contributed to a patient’s death.

What’s even more alarming is that despite numerous initiatives to increase the safety of hospitals, there has been relatively little improvement beyond a reduction in the number of hospital acquired infections. Why is that the case? One answer is that medical errors are a systemic issue, resulting from care being delivered in what is essentially an unsafe environment. Isolated interventions alone are not enough. They need to be part of an overall effort to transform the healthcare delivery environment in a manner that reduces the likelihood that an adverse event could occur in the first place. The supply chain can play an important role in this regard, which was the message delivered by Anne Snowdon, RN, PhD, to those attending the HIMSS Supply Chain Special Interest group meeting at the annual HIMSS conference in Orlando in February.

In her speech, Dr. Snowdon shared some real-life examples of issues that could have been avoided with a supply chain infrastructure that supports better visibility into the products, people and processes involved in patient care. The examples included:

• A spine surgeon who used off-label screws on thousands of patients, only to have the screws rust after implantation.
• A Michigan hospital that was unable to identify the multitude of patients who may have been treated with syringes that were recalled because the supplier could not guarantee sterility.
• The physician who was unable to determine if a stent implanted in a patient’s bile duct contained metal, which would preclude the patient having an MRI, even though the stent was implanted at the same hospital where the patient was being treated.

In each of these cases, the problems could have been avoided had the products been labeled with GS1 standard identifiers and had the hospitals captured the data about the products used in patient care in the patients’ medical records.

Dr. Snowdon is a professor of entrepreneurship and strategy at the Odette School of Business at the University of Windsor and the chair of the World Health Innovation Network (WIN), which seeks to accelerate health system transformation to improve economic and clinical performance. In 2016, WIN published a report on the value proposition of greater visibility for healthcare systems. The paper references a report by the Canadian Institute of Health Policy, Management and Evaluation that sought to understand why so little progress has been made in improving patient safety, not only in Canada but around the world. One of the more alarming factors noted in the report was both leadership and staff acceptance of less than optimum environments for delivering patient care. One referenced study found that equipment was either missing or faulty in one out of three operations, representing a threat to patient safety and adding work for clinical staff.

Patient safety interventions also add work for nurses and other clinicians. That same report referenced a study that found nurses had to spend an extra 115 minutes per patient per day on activities associated with preventing ventilator-associated pneumonia. But the likelihood of these steps being taken is directly related to whether the work can be integrated into daily practice and if those required to do the work believe it will really make a difference.

This is one of the challenges being addressed in healthcare systems in the U.S. as they prepare for upcoming regulations requiring capture of unique device identifiers (UDIs) for implantable devices in electronic health records. Members of the AHRMM Learning UDI Community work group focused on device capture are looking at how to make it easier for nurses to scan UDI-compliant barcodes at the point of use. Research I recently completed for graduate school uncovered a disconnect between hospital supply chain professionals recommending the use of stacked barcodes (due to the lack of scanners that could read concatenated or 2D barcodes) and resulting confusion for nurses who did not know which barcode to scan. This speaks to the importance of supply chain and clinical staff discussing why barcode scanning is needed and then working together to find
a solution that achieves the goal with as little disruption as possible. Even better, if supply chain can help automate processes to minimize how much time clinicians have to spend on supply-related tasks, caregivers will have more time to spend with patients in an optimum environment for all involved. **HPN**

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Value analysis training is a missing link to achieving VA potential, success

by Robert T. Yokl

How many formal training hours have you and your Value Analysis team had, taught by a Value Analysis expert, in the last five years (zero, three, ten or more)? This is the question my team and I frequently ask VA staff members at value analysis venues. Generally, the answer that we almost always hear is “zero,” or we do VA training ourselves. What would you think if you would ask this same question of your surgeon, an airline pilot, or a policeman or policewoman and this was the same answer (zero) that you received?

Professionals = training

I can think of no professionals that I know of who have received no formal training in their discipline ... can you? Well, it’s the same with Value Analysis professionals. How can we calls ourselves professionals without having comprehensive value analysis training for our Value Analysis leaders and our VA team members? Larry Miles, the father of value analysis, suggested 40 hours of basic training, and that’s just for starters. We also need continuous learning afterward our VA basic training, just like any other professional, to keep sharpening our VA skills.

Shortcut to excellence

From my experience, training is a shortcut to excellence in value analysis since you learn to apply proven VA techniques, methods and best practices versus “winging it,” which only leads to you saving very little money or not improving your outcomes. The worst thing you can do is think you know how to train others in VA, just because you say you can. Value analysis is an art and science that takes hours of formal training to perfect and years of experience to master before you can ever consider training others in this discipline. The takeaway here is: There is no substitute for training!

Avoid costly mistakes

We observe, almost weekly, mistakes made by Value Analysis team leaders and their team members caused by the lack of training. For instance, Value Analysis teams will take months or even years to study a product, service or technology when no VA study should take more than 90 days. Big savings are left on the table untouched because VA teams don’t know how to value-stream map a product, service or technology to avoid missing hidden savings or quality improvements. Or the team stops at the first best savings idea it comes upon as opposed to looking for even more lower cost alternatives that are a better fit. These and other costly mistakes are made every day by Value Analysis teams that could have been avoided with formal VA training.

Keep everyone on same page

Value analysis training enables all who have taken it to be on the same page, in step with each other and have a common language. This is important if you want your VA team to communicate easily, clearly and effectively. For instance, if I talk about a functional equivalent product to a VA team that I have trained they all immediately understand what I’m talking about. There is no need for me to have a lengthy discussion to explain this term. It is just part of the value analysis language they were taught in their training sessions that have now become second nature to them.

Enable VA study auditing

The major benefit of value analysis training is that a multi-step process is taught to your team members that should be followed on each one of their value analysis projects. One of the advantages of doing so is that your team leader can audit their projects to see if their project managers overlooked money or quality enhancements because you:

• Skipped a step in your VA process
• Missed a key customer in your VA study
• Used short cuts to speed up your VA project
• Had a misunderstanding of how to conduct the study

With this information your VA team leader can either agree that your project has been completed as planned, or that steps or customers have been missed that need to be retraced or retraining is needed to clear up any misunderstandings on how to conduct a VA study. In practice, this is a quality control check on your VA projects.

Easy onboarding transition

How can one jet passenger plane have two or three pilots over a four-day period who travel thousands of miles and their piloting is seamless? The answer is training! This same principle is the reason you can easily orient and transition the onboarding of new VA team members onto your VA team. The alternative to this training is to have your new team members groping for answers, needing explanations and questioning unfamiliar protocols for weeks or even months while they catch up to the rest of your VA team members. Not a very productive way to do business wouldn’t you agree?

Pushing back on push-back

We, too, often hear from Supply Chain and Value Analysis leaders that they know everything there is to know about value analysis, it takes time and money for VA training which they don’t have, and it’s hard to quantify and justify the return-on-investment. To answer these objections, let me rephrase a quote from trainer Zig Ziglar, “If you think value analysis training is expensive, just think of what it is costing your healthcare organization not to have VA training for your team leaders and their team members” This is the question you should be asking yourself — not whether you have the knowledge, time, or money to do so. Trust me when I tell you that the VA training will pay for itself in no time.

Robert T. Yokl is President and Chief Value Strategist SVAH Solutions. Yokl is an acknowledged leader in healthcare value analysis and clinical supply utilization management. He has four decades of experience as a healthcare supply chain manager and consultant, and also is the co-creator of the Clinitrack Value Analysis Software and Utilizer Clinical Utilization Management Dashboard that moves beyond price for even deeper and broader clinical supply utilization savings. For more information, visit www.svhalsolutions.com. For questions or comments, email Yokl at bobpres@strategicva.com
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