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BUYLINE

Making the grade

Rick Dana Barlow
Senior Edior

Back in the early 1990s, *Hospital Purchasing News* was a busy oversized tabloid, newspaper-style trade publication that concentrated on what was then called materials management and central service topics in the acute care setting, both of which today are nestled under the supply chain and sterile processing and distribution (SPD) umbrella.

By mid-decade as President Clinton's healthcare reform initiative headed into full swing, *HPN* embarked on a massive topical and visual redesign that expanded coverage beyond the hospital walls (hence the new name of *Healthcare Purchasing News*), along with a more colorful and magazine-like look and feel (yes, the old brownish "hpn" price tag was relocated to the historical archives, but check out the photos embedded in "Buyline" online.)

The "new" *HPN* not only pushed into supply chain and SPD coverage in non-acute settings, which I since have labeled "remote care" but back then was tagged with the curious "alternate site" label. It also steamrollered into operating room/surgical services and infection control topics from a supply chain perspective.

To accommodate the new topical expansions, we created a bimonthly "OR Purchasing News" supplement within the magazine as well as a smaller-sized quarterly "Infection Control Impact Section" as a pullout.

Within the new "OR Purchasing News" mini-magazine, we launched an annual departmental award to recognize cost containment/expense management success in surgical services that joined our annual awards for materials management leader and CS departments. Our goal was to emphasize and promote the importance of managing and reducing costs in the OR, which remains one of the key revenue- and cost-generating departments in the organization.

Each November during those "tri-9 years" of 1994-1996, *HPN* profiled an OR team doing exceptional work. In November 1994, **Scripps Memorial Hospital**, La Jolla, CA, earned the first award, then known as the OR Cost-Containment Department of the Year. The next year, on the opposite coast, **New York Methodist Hospital**, Brooklyn, NY, brought home the title. In November 1996, which would turn out to be the last year the award was given, the winning facility emerged back on the West Coast with **Mt. Diablo Medical Center**, Concord, CA, capturing the honors. We still doff our fedoras to them.

As *HPN* changed publishing companies and formats over the years, that Surgical Services award slipped into the historical archives and perhaps the memories of veteran readers through the decades.

Guess what? A quarter century later, it's back and better than ever with a bright new name, shiny new focus and a treasured new attitude. Just in case you missed the colorful cover, the winning recipient of the **2022 Surgical Performance Excellence in Supply Chain Award** is **Lehigh Valley Health Network**, Allentown, PA, for its comprehensive take on perioperative business.

Meanwhile, **McLeod Health**, Florence, SC, earned Honorable Mention for its extensive achievements in its orthopedic service line. Read about both in this edition of *HPN* and online. We salute these impressive and innovative organizations – Lehigh Valley for its macro perspective and McLeod Health for its micro focus. You should, too.

Finally, *HPN* also has been deep into the assessment process for its 30th annual SPD Department of the Year Award. At press time in early February, we selected four finalists based on the breadth, depth and merit of their detailed nominations. By the time this edition hits your desks during the first week in March we'll already have completed the profile of this year's winner, due to be revealed in the April 2022 edition of *HPN*.

Who are the 2022 finalists? In alphabetical order, they are **HonorHealth**, Scottsdale, AZ; **NorthShore University Health System**, Evanston, IL; **Stony Brook Medicine**, Suffolk County, Long Island, NY; and **Terrebonne General Health System**, Houma, LA. Send them all double high-fives.

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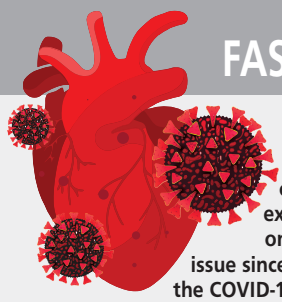

FAST STATS

41%

of Americans have experienced at least one heart-related issue since the beginning of the COVID-19 pandemic, with top issues including shortness of breath, dizziness, increased blood pressure and chest pain.

1 IN 4

COVID-19 positive Americans (27%) reported that their diagnosis has impacted their heart health.

77%

of Americans now say that they often or sometimes sit throughout the day, while walking throughout the day has declined.

40%

of those who have lost a family member to heart disease before the age of 60 have never been screened for the condition they lost a family member to, which jumps to 54% among millennials.

34%

of Americans feel that if they have a family history of heart disease, there is nothing they can do to limit the risk of developing that heart condition.

1/3

of Americans don't know that factors such as stress, high blood pressure, obesity and smoking/vaping can increase their risk of developing heart disease.

77%

of Americans are familiar with their family history of heart disease.

2/3

(65%) of Americans say they have had their blood pressure checked within the last six months.

Sources:

https://newsroom.clevelandclinic.org/2022/02/01/cleveland-clinic-survey-roughly-40-of-americans-have-experienced-at-least-one-heart-related-issue-since-the-beginning-of-covid-19-pandemic/

https://www.hpnonline.com/surgical-critical-care/article/21256217/cleveland-clinic-finds-41-of-americans-experienced-one-heartrelated-issue-since-the-beginning-of-covid19-pandemic?

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NEWSWIRE

Report reveals only 14.3% of hospitals complying with hospital price transparency rule

A new report released by PatientRightsAdvocate.org shows that one year after a law requiring hospitals to post their real prices online went into effect, andfound most of the hospitals' pricing files incomplete. Noncompliant hospitals failed to show the different prices for the same services by all insurers and plans accepted as well as cash prices.

The Semi-Annual Hospital Price Transparency Compliance Report showed that just 14.3% of the 1,000 randomly sampled hospitals are complying with a rule that went into effect Jan. 1, 2021 and was reenforced by the Biden Administration via Executive Order in July 2021.

The report follows PatientRightsAdvocate.org's first Semi-Annual Hospital Price Transparency Compliance Report released last July which found that of 500 hospitals sampled, only 5.6% were compliant.

PatientRightsAdvocate.org's new analysis of 1,000 randomly selected hospitals found:

- Only 14.3% were complying with the transparency rule.
- Only 37.9% of the hospitals posted a sufficient amount of negotiated rates, but over half were not compliant in other criteria of the rule, such as listing rates by each insurer and named plan.
- Only 0.5% of hospitals owned by the three largest hospital systems in the country are complying.

The Transparency in Coverage Rule, which will become law in July 2022, will require group health plans and health insurance issuers to publicly disclose negotiated prices for all covered items and services and historical payments, and disclose cost-sharing information upon request to a participant, beneficiary, or enrollee. The Transparency in Coverage Rule was originally scheduled to go into effect on Jan. 1, 2022 but was delayed after intense lobbying by the insurance industry.

ICD-11 officially in effect for the national and international reporting of causes of illness, death, and more

The World Health Organization (WHO) Eleventh Revision of the International Classification of Diseases (ICD-11) has now come in effect, with the latest update.

The ICD provides a common language that allows health professionals to share standardized information across the world. It is the foundation for identifying health trends and statistics worldwide, containing around 17,000 unique codes for injuries, diseases and causes of death, underpinned by more than 120,000 codable terms. By using code combinations, more than 1.6 million clinical situations can now be coded.

Compared with previous versions, ICD-11 is entirely digital with a new user-friendly format and multilingual capabilities that reduce the chance of error. It has been compiled and updated with input from over 90 countries and involvement of healthcare providers, enabling evolution from a system imposed on clinicians into a truly enabling clinical classification and terminology database that serves a broad range of uses for recording and reporting statistics on health.

Among other updates, ICD-11 improves the clarity of terms for the general public and facilitates the coding of important details such as the spread of a cancer or the exact site and type of a fracture. The new version also includes updated diagnostic recommendations for mental health conditions and digital documentation of COVID-19 certificates.

ICD is used by health insurers who make reimbursement decisions on the basis of ICD coding, by national health programme managers, by data collection specialists, and by anyone who tracks progress in global health and determines health resource allocation.

Joint Commission releases ruling on COVID-19 healthcare staff vaccination surveying

The Joint Commission will begin surveying to the "Omnibus COVID-19 Health Care Staff Vaccination" interim final rule published by the Centers for Medicare and Medicaid Services (CMS) in the Nov. 5, 2021 Federal Register, according to their press release.

Further guidance was published by CMS on Dec. 28, 2021. This rule affects the following Joint Commission deemed programs: Ambulatory Surgical Centers, Critical Access Hospitals, Hospitals, Home Care, Home Infusion Therapy, and Hospice.

As a result of the U.S. Supreme Court's decision on Jan. 13, healthcare organizations in the 24 states that were not previously subject to the "Omnibus COVID-19 Health Care Staff Vaccination" rule now are. Additionally, healthcare organizations in these 24 states need to demonstrate compliance utilizing the phased-in approach per the timelines specified in the CMS memorandum issued Jan. 14.

Beginning Feb. 14, surveyors will begin surveying to the vaccination requirements for these 24 states as follows: Alabama,

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Changes to Joint Commission accreditation requirements for the affected deemed programs are under review, and accredited organizations will be notified of any changes via Joint Commission Perspectives.

In the interim, for any findings related to the regulatory requirements for COVID-19 staff vaccination, The Joint Commission will score Leadership (LD) Standard LD.04.01.01, element of performance (EP) 2: The organization provides care, treatment, and services in accordance with licensure requirements, laws, and rules and regulations, along with the applicable Medicare conditions of participation/conditions for coverage.

The cost benefits of primary prevention of from emerging infectious disease pandemics

Two years after COVID-19 emerged, researchers have provided three cost-effective actions to help decision-makers prevent future pandemics by stopping "spillover" of diseases from animals into humans: better surveillance of pathogens, better management of wildlife trade and hunting, and reduced deforestation, according to a report from Harvard T.H.Chan School of Public Health.

The annual costs of these "primary pandemic prevention" actions (~$20 billion) are less than 5% of the lowest estimated value of lives lost from emerging infectious diseases every year, less than 10% of the economic costs, and provide substantial co-benefits. The research by 20 experts, published in *Science Advances*, was led by Dr. Aaron Bernstein, director of the Center for Climate, Health, and the Global Environment at Harvard T.H. Chan School of Public Health.

Today, 3.3 million people are expected to die each year from viral zoonotic diseases. The estimated value of these lost lives is - at a minimum - $350 billion with an additional $212 billion in direct economic losses. This amount is based on lives lost from every new viral zoonosis—diseases that "spillover" into humans—since 1918 that killed at least 10 people.

According to the authors, preventing spillover at the source is rarely addressed when policymakers and multilateral organizations discuss pandemic risks—despite the fundamental role spillovers play in spreading emerging infections. To address this, the paper recommends revising the World Health Organization's "phases of infectious disease emergence" to include a specific phase for spillover. They further coin a new paradigm—"primary pandemic prevention"—to define actions that stamp out new diseases before they spread, rather than actions that address disease outbreaks after they occur.

Primary prevention actions and recommendations include:

- Better surveillance of pathogens that may spill from animals to people
- A global viral discovery project should be developed to target where prevention activities should be focused geographically. This library can help quickly identify pathogens when they emerge and accelerate our ability to develop tests and vaccines rapidly and deploy them widely.
- More well-trained veterinarians are needed, especially in spillover hotspots, to monitor for emerging diseases and prevent spillover from wildlife or livestock into people.
- Better management of wildlife trade and hunting

Inadequate monitoring and surveillance of the wildlife trade enables zoonotic disease emergence. Deforestation, particularly in the tropics, brings people into contact with animals as they enter forests to clear them for agriculture or timber, build roads, or work in mines, that facilitate contact between people and viral reservoir hosts.

Alliance created to promote blood supply

The AABB (Association for the Advancement of Blood & Biotherapies) recently launched the Alliance for a Strong Blood Supply to help ensure sufficient blood is available for all patients during the pandemic and beyond.

In explaining the rationale behind the new organization, Debra BenAvram, CEO of AABB, said, "The COVID-19 pandemic has exacerbated chronic challenges that have impacted the nation's blood for some time."

The initial 17 organizations involved in the alliance represent hospitals, blood banks, as well as more than 200,000 physicians who provide blood to patients in need.

AABB said that many blood banks are operating with less than a one-day supply on hand, which is below the goal of at least a three-day supply. "As a result, hospitals have been forced to delay life-saving blood transfusions and postpone nonessential surgeries. Without immediate action to strengthen the blood supply, the effect on patient care could be disastrous," the AABB said.

The alliance plans to launch advocacy and communications campaigns to discuss "the importance of blood donation, the value of blood transfusions and why a robust blood supply is critical to patient care," the AABB said. The organization's members also plan to share best practices on stewardship of the blood supply.

In addition to AABB, the initial members of the Alliance are: the Alliance for Community Transfusion Services, America's Blood Centers, American College of Emergency Physicians, American College of Surgeons, ADRP, American Hospital Association, American Red Cross, American Society for Transplantation and Cellular Therapy, American Society of Anesthesiologists, American Society of Clinical Pathologists, American Society of Hematology, Association of American Medical Colleges, Blood Centers of America, College of American Pathologists, Federation of American Hospitals, and Society for the Advancement of Patient Blood Management.

Healthcare on the move

Amazon announced they are expanding their In-person care services to more than 20 new cities in 2022, which will bring more care options to Amazon Care's growing customer base.

Medline grew vendor partnerships in 2021 with more than 230 healthcare providers and health systems worth nearly $2 billion in annual, incremental medical supplies and solution sales that span the continuum of care.

Cook Medical Reproductive Health business will be acquired by CooperCompanies. It includes Cook's Reproductive Health business within their MedSurg division.

Cardinal Health partners with Kinaxis to optimize digital supply chain planning.

BD (Becton, Dickinson and Company), announced a collaboration with ReturnSafe, an all-in-one software solution for COVID-19 employee health, safety and compliance, to integrate the BD Veritor At-Home COVID-19 Test directly within the ReturnSafe testing management platform.

DHL Supply Chain announced its Life Sciences and Healthcare (LSHC) sector is investing upwards of $400 million to expand its pharmaceutical and medical device distribution network with the goal of bringing critical healthcare products closer to trade partners and patients.

Christiana Care Health System, Inc. and Prospect Medical Holdings, Inc. announced the signing of a Letter of Intent for ChristianaCare to acquire Crozer Health from Prospect. HPN

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1 https://www.ama-assn.org/system/files/2020-11/in-office-bp-measurement-infographic.pdf

SURGICAL PERFORMANCE EXCELLENCE IN SUPPLY CHAIN

Lehigh Valley perioperative business team soars through surgical savings

by Rick Dana Barlow

Eric Ross, Keith Carl, Tamara Gates, Coy Ackerman, Alexandre Warman, Janelle Alfano, Trevor Eisenman, Allison Hontz

When it comes to helping surgical services holistically control expenses and generate cost savings in how they care for patients and equip clinicians across the sprawling Lehigh Valley Health Network in the eastern Pennsylvania, a small team of six certainly means business.

Led by Alexandre Warman, Administrator, the Perioperative Business Services (PBS) team specializes in perioperative services support, network perioperative value analysis and perioperative data analytics to enable surgeons, physicians and nurses to perform surgical and endoscopic procedures as cost-effectively as possible across 18 distinct locations. This team also manages centralized scheduling and billing for the Network.

Warman's team reports to the President of Lehigh Valley-Hecktown Oaks and the Vice President, Perioperative Services. The second team, Contracting and Value Analysis, led by Allison Hontz, Director, reports to the Vice President, Supply Chain and Chief Procurement Officer.

"We are two teams in two different divisions, but attached to the hip," Warman noted.

Roughly 90 miles due west of New York City and roughly 60 miles northwest of Philadelphia, Allentown may serve as the hub for Lehigh Valley's network, but within the last four years the PBS team has seen its sphere of influence span coordinated health sites in nearby Bethlehem, Phillipsburg and Stroudsburg as well, with the number of surgical procedures supported exceeding 88,000 in fiscal year 2021 from nearly 56,000 four years earlier, a 57% growth rate in volume. And they're projecting more than 91,000 in fiscal year 2022, according to Warman.

The expansion motivated Lehigh Valley to centralize and standardize processes for surgical and endoscopic procedures throughout the network, which helped to bolster enterprise-wide value analysis efforts.

The necessity to leverage market share and partnerships with key suppliers became necessary, Hontz and Warman explain to Healthcare Purchasing News. As LVHN acquired new facilities, the need to centralize and standardize became priority. From a Surgical Services perspective [value analysis] moved to a Business Service function and grew to cover all 18 locations, they emphasize.

Lehigh Valley created a Network Value Analysis Steering Committee in 2019 that oversaw seven committees specializing in selected areas, including radiology, patient care, surgical services, pharmacy, cardiology, business/purchased services and physician practice offices a k a LVPG (for Lehigh Valley Physicians Group).

In 2020, Lehigh Valley created the Network role of Director, Contracting and Value Analysis, and hired Hontz for the position. She reports to the Vice President and Chief Procurement Officer of Supply Chain but also has a connection to all seven of the Value Analysis Committees.

And while PBS may mean business, it's not all business.

"I would say that it is not 100% a business function," Warman said. "I think it is purely just under the name of business, but we are 100% a mix of both clinical and business, utilizing all members of the team."

Rather than launch a value analysis project exploring a particular specialty, such as cardiology or orthopedics due to the high cost of implants and supplies and recruiting surgeons to participate based on outcomes-based data, PBS instead spread out more holistically across the enterprise, earning the team the inaugural Surgical Performance Excellence in Supply Chain Award by HPN.

"It doesn't make sense to silo the work," Warman said. "LVHN utilizes physician chiefs and physician leaders in addition to business leaders and other subject matter experts to lead projects. Other (Subject Matter Experts) SMEs include [Information Systems], Infection Control, Supply Chain Analytics, Supply Chain Management, Value Analysis (VA) and other VA teams as necessary, as there is overlap with many products. We collaborate as a team. It does not come from top down or bottom up, but rather from the collective group."

Lehigh Valley wanted PBS to move away from the silo mentality several years ago as an impetus for the Network VA program.

There are many products, services and devices out there that intermingle with many divisions in healthcare, according to Hontz and Warman, so the steering committee meets monthly to discuss challenges, progress and next steps.

Quick wins, lasting results

Warman attributes data analytics and value analysis as integral components to PBS' success.

"This team has designed and implemented innovative solutions [that] offer leadership readily available data to improve efficiency, lower cost and provide the highest quality patient care," he noted. "The development of key performance dashboards has provided business intelligence around procedural volume, length of stay, and efficiency metrics such as, on-time-first-case-start percentages, turnover times, same-day cancellation rate and case scheduling accuracy. This team continues to push forward with innovation, linking surgical case data with quality and cost data. These efforts continue to set LVHN apart from health systems across the nation."

At press time, with an operational blueprint in place and generating results, Lehigh Valley and PBS were exploring ways to automate this process through an enterprise resource planning (ERP) system as well as an automated electronic VA system, according to Hontz and Warman.

Achieving perpetual cost savings in surgical services can be challenging, Warman indicated.

"While LVHN has implemented quick wins with savings strategies, including reducing the number of vendors utilized across service lines, [such as] urology, orthopedics, and general surgery, LVHN has come up with ways to engage our front-line colleagues to find cost savings while keeping patient safety and quality a priority," he said.

Hontz acknowledges that a series of quick wins can help establish credibility with clinicians, but the process extends much more deeply.

Even though items might seem [like] a quick win, such as a surgical blade conversion for better price, there is still a great amount of collaboration, education and work processes that must be followed, according to Hontz and Warman. They acknowledge that while monitoring the quick win, they still have to make sure that no other products are being brought in that are similar, and they continuously measure quality and outcomes through monthly VA meetings. Clinical feedback and integration are critical as they rely on the entire collaborative team – including physicians – so that the VA process is followed regardless of quick win or not, which drives the integrity of the process.

Pandemic posed challenges

Warman says he saw the COVID-19 pandemic as an opportunity for PBS that he did not want to go to waste.

"While we utilized COVID as an opportunity to review sustainability and purchasing power, we were limited to what we could actively achieve," he said. "While LVHN did postpone inpatient volume in 2020, this was for a four-week period. By May our operating rooms were running at 125% to recover the postponed surgical volume."

They approached contracting accordingly.

"Our Supply Chain actively sought contracts that would sustain and cover the increased volume despite strict supplier allocations and backorders," Hontz indicated. "This was an achievement [in and] of itself. Lesson learned, our Supply Chain now incorporates new ideas and language when negotiating new contracts."

It takes a team

Instead of recruiting a single person to spearhead this process and ride herd, Lehigh Valley dedicated a department to drive it.

Warman indicates that decision was by design.

"To be successful in VA you must understand the theory of constraints," he said. "You are only as good as getting through the process of your weakest point. To achieve this, it takes a team. Active projects in Surgical Services are approximately 30, and there are an additional six VACs at LVHN."

Hontz prefers to treat the VACs and clinicians as customers.

"We share and bring initiatives to each other as well as work together on analysis projects and implementations," she added. "We must co-exist as everyone shares a responsibility in the project."

PBS motivated teamwork and achievement using gamesmanship, according to Warman.

Throughout fiscal 2020 to date, PBS created multiple initiatives, such as the "Periop Olympics" and "Super Bowl of Savings," to recruit nurses and VA teams to participate in cost-saving initiatives. Among the accomplishments: Supply reduction and PAR level reviews across operating rooms that delayed nearly $161,000 in operational purchases during a three-month period, he noted.

"This colleague engagement raised the interest of our surgeons which led them to begin their own campaign of cost reduction by removing the preference from their preference cards and moving to procedure-based cards," he said.

Five notable quantitative examples include the following:

- TURP (transurethral resection of the prostate) averaged $577.00 a case, and was reduced to $450.00 a case for $5,461 in annual savings
- TURB (transurethral resection of bladder tumor) averaged $277.00 a case, and was reduced to $186.00 a case for $2,093 in annual savings

Fast Facts on Lehigh Valley's Perioperative Business Services team

PBS FTEs	2 in PBS, 4 in SC VA
Number of acute care facilities serviced	9 includes 1 Children's Hospital
Number of non-acute care facilities serviced	491
Number of OR suites	~90
Number of beds (operating)	1,700
Hospital admissions	72,800
Emergency department volume	23,500
Outpatient visits	4.7 million
Surgeries	91,000
Births	7,000

Source: Lehigh Valley Health Network Perioperative Business Services, February 2022

STAFF ROSTER

Lehigh Valley Health Network Perioperative Business Services

- Coy Ackerman, Director, Supply Chain Analytics
- Janelle Alfano, Perioperative Business Services Manager
- Keith Carl, Manager, Supply Chain Value Analysis
- Trevor Eisenman, Contract and Product Manager
- Tamara Gates, Contract and Product Manager
- Allison Hontz, Director, Contracting and Value Analysis
- Eric Ross, Supply Chain Value Analysis Analyst
- Alexandre Warman, Administrator, Perioperative Business Services

- PERC (pulmonary embolism rule-out criteria) averaged $1,443 a case, and was reduced to $1,016 a case for $5,124 in annual savings
- Lap chole (laparoscopic cholecystectomy) averaged $641.00 a case, and was reduced to $429 a case for $75,189 in annual savings
- Lap Appe (laparoscopic appendectomy) averaged $786.49 case, and was reduced to $747.60 a case for $22,284 in annual savings

Warman and Hontz add that they continue to explore further cost savings in fiscal 2022.

Cost-cutting infusion

PBS though Supply Chain Value Analysis emphasizes the Quadruple Aim principles daily, according to Warman.

"Our dashboard creation and surgical scheduling are examples of 'Better Health and Better Care,'" he indicated. "Examples of 'Better Cost' can be found with our experienced charge posters and value analysis team. They provide daily audits to ensure the accuracy of our supply and implant usage in all cases. FY2021 case charge posting accuracy was over 95% for the entire team. Our team is recognized as an important and critical asset to our Perioperative Nursing, Anesthesia and Surgical colleagues across the health network."

Through PBS' efforts with clinicians and administrators, annual cost reductions ranged from more than $925,000 to more than $3.2 million during the span of a six-year period, 2015 to 2021, according to Warman. More than $2.5 million in savings was generated in FY2021 alone, he added. Since beginning these efforts, Lehigh Valley has booked more than $10 million in cumulative cost savings. Lehigh Valley participates the regional group purchasing organization AllSpire that works with HealthTrust as its national GPO.

"We continue to empower our front-line colleagues to find savings across the system," he added.

Moving Toward Clinical Integration

Figure 1

In fact, Lehigh Valley builds the Quadruple Aim into its annual performance evaluations so that staffers are assessed on better care, lower costs and patient and employee satisfaction.

"Value Analysis is a systematic, objective, evidence-based process that brings together stakeholders having product and clinical use, knowledge, financial analysis and purchasing contracting expertise to reduce overall cost while maintaining or improving quality," he noted. "We are making quality decisions and balancing the needs of multiple constituents in the healthcare delivery systems. In short, value analysis is the conduit to accomplishing the quadruple aim in today's healthcare environment.

"LVHN performance evaluations allow our leaders to provide attainable goals that match LVHN corporate goals," he continued. "Based on each goal achieved by the individual determines a final score."

Warman's and Hontz's teams strive for clinical and operational integration, too. Although many definitions and explanations of clinical integration remain available throughout the industry, Lehigh Valley explains its own effort through a visual representation of a golden star [See figure 1], as well as through seven key tenets.

- Accountability comes from the entire team
- It does not come from top down or bottom up; it requires everyone to be on the same page
- Transparent data are shared in standard meetings
- Individual interventions are sent for outlier performers
- We enlist clinical leadership and physician champions in opportunity identification and communication across all initiatives
- All data is vetted with our VA team, surgeons, and Operating Leadership prior to presenting to all teams, which is critical to fostering colleague and surgeon trust
- We include all formulas, calculations and methodologies in presentations

Hontz and Warman expresses pride in their team's accomplishments to date.

"The colleague engagement and experience provided by this team is endless, as observed by their achievements," they agreed. "The daily efficiency, drive, pride and innovation of this team of incredibly enthusiastic colleagues supports LVHN's mission to heal, comfort and care for the people of our community." HPN

All photos courtesy Lehigh Valley Health Network

Clockwise: Eric Ross, Trevor Eisenman, Coy Ackerman, Alexandre Warman, Janelle Alfano, Tamara Gates, Keith Carl, Allison Hontz

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HONORARY MENTION

McLeod implants cost-efficiency into orthopedic service line

Specialty focus designed to blunt sting of federal reimbursement cuts to serve patients

by Cheryl Flury and Rick Dana Barlow

Surgical Services may be one of the leading revenue generators for a healthcare organization, but it's also widely acknowledged as one of the leading cost centers. This motivates providers to identify and rein in expenses as quickly and thoroughly as possible.

Generally, healthcare organizations tackle this on a product or project basis; the more astute concentrate their efforts on specific specialties or service lines involving the consumption and use of the highest-cost products and clinical expertise.

For Florence, SC-based McLeod Health, a seven-hospital system serving patients in an 18-county region spanning North and South Carolina, their first target was orthopedics.

"Often orthopedic profits fuel other service lines," noted Dr. Patrick Denton, Orthopedic Surgeon, Director of Sports Medicine, and Orthopedic service line leader.

And target it they did with pinpoint accuracy and accountability. In fact, their dedicated efforts and impressive achievements in this complex but comprehensive project earned them **Honorable Mention** for the inaugural **Surgical Performance Excellence in Supply Chain Award** by *Healthcare Purchasing News*.

While McLeod Health's total joint service line was critical to the health and well-being of its patients, it was a strain on the health system as a result of the U.S. Centers for Medicare & Medicaid Services (CMS) reimbursement cuts. Leadership recognized the need to find new ways to reduce spend in this area without negatively impacting care.

"All of these outside influences were putting cost pressure on us," recalled Boyd "BJ" McCluskey, Director, Resource Optimization, McLeod Health. "We needed a measurement and a way to track [data] between Supply Chain, Quality, Finance and clinical."

To sustain the viability of the service line, McLeod's orthopedic and supply chain teams joined forces to examine how they could reduce costs, maintain patient care quality, and improve financial outcomes for the organization. To do so, they needed visibility into every aspect of total joint procedures that could impact costs, quality and outcomes by surgeon and by case, including supply usage/costs, amount billed to/ reimbursed by payer, patient outcomes and case revenue/profit.

Outlining the Process

McLeod's orthopedic and supply chain teams joined forces to examine how they could reduce costs, maintain patient care quality, and improve financial outcomes for the organization. They needed visibility into every aspect of total joint procedures that could impact CQO by surgeon and by case:

- The supplies used in the case and their cost (as well as supplies that were picked for the case but returned to inventory or wasted)
- Total case cost (fixed and variable costs)
- Amount billed to the payer
- Reimbursement received
- Patient outcomes, including infections and readmissions
- Case revenue/profit (reimbursement less costs)
- Variation of the direct and indirect cost per facility

The goal was to create a dashboard containing this data, making it as close to real-time as possible, then using the dashboard to measure the impact and outcomes of decisions.

A key challenge this team faced was that the data resided in separate systems, including healthcare supply chain technology and clinical and financial platforms, that lacked integration:

- Enterprise resource planning (ERP) system for item master and purchase order (PO) data
- Inventory point of use (POU) system for supply consumption data (e.g., supplies used by each surgeon in procedures)
- Cost accounting system for financial data (e.g., what supplies were billed, how much the health system was reimbursed by payers)
- Quality system for patient outcomes data, including infections, readmissions

"One of the surprising things was what a challenge it was to get all the appropriate data that we needed," Denton noted. "Unfortunately, some data is in one computer system for supply chain, some data is in another system for our CFO and revenue management, another one for what we actually used in the procedure. We needed a way to filter this data and make it as clean as possible."

They strove to set up a simple platform, according to McCluskey.

"We needed to see one complete picture accessible to all," he said. "And we wanted to scale it for other service lines if we were successful."

To create an integration solution, the team worked with SupplyCopia to develop a user-friendly and intuitive dashboard to support its total joint CQO pilot. This Software-as-a-Solution (SaaS) product could easily combine disparate datasets and apply artificial intelligence (AI) and machine learning (ML) to generate actionable insights on cost, quality and outcomes.

To present a comprehensive picture of CQO for McLeod's total joint procedures, the SupplyCopia team performed a series of data integrations. First, the team integrated supply purchasing costs from the item master with the BOM to establish a cost structure for each physician by procedure. Next, they integrated the cost data with reimbursement data from the finance system and utilization data from the POU system. Lastly, they integrated patient demographics data with the cost and reimbursement data.

In addition, the procedural data was analyzed and as a result, a bill of materials (BOM) was created for McLeod's total joint procedures, with supplies used by each surgeon in each case. This gave the health system a baseline for supply standardization efforts.

"Some really phenomenal insights came from that," said Dr. Michael Rose, Chief Innovation Officer, McLeod Health. "The variation in materials going into a case was unbelievable. We were able to define about 10,000 combinations of products used among nine or 10 surgeons in total joint procedures."

The revelations were eye-opening.

"Docs were seeing this for the first time," Denton noted. "We used this data to work with suppliers on pricing with surgeons at the negotiating table. This opened up conversations with vendors."

Uniting around teamwork

One of the most unique aspects of McLeod's CQO initiative was that it was physician-led. Many organizations have been working to establish clinically integrated supply chains where clinical and supply chain teams work together to improve cost, quality and outcomes. But physicians can be resistant to change, particularly when they question the credibility of the data presented by supply chain.

The McLeod team realized that if they were to enact real change in the health system's total joint program, the orthopedic team must lead the effort and decide what data was necessary to evaluate supplies and their impact on CQO. Supply chain would support the initiative by obtaining and validating the requested data, as would stakeholders from the finance, value analysis and quality teams. In essence, it was not only a healthcare supply chain transformation project but also a clinical and financial transformation project.

"This work was presented to our physicians with cost, quality and outcomes data together in one place," said Carmen Winfield, Vice President, Supply Chain, McLeod Health. "It required close collaboration between various departments. Supply chain would provide the cost of supplies, finance the reimbursement side and quality the patient outcomes. So that was our goal -- to put it all together so physicians could see the big picture and make evidence-based, data-driven decisions."

Showcasing cost savings

Physician preference typically plays a role in hip and knee implant product selection. While one surgeon believes one manufacturer's implant delivers the best patient outcomes, another surgeon believes another manufacturer's product is superior. Because implant components represent a significant portion of the overall procedure cost, the McLeod team was particularly interested in knowing how these items impacted CQO. The integration and analysis of this data would facilitate the linkage of specific products, or product combinations, to procedural costs and quality of care delivery. From there the orthopedic team could standardize on those supplies that delivered the greatest value: Best outcomes at the lowest cost.

"Once we established this baseline, we wanted to utilize the data to test hypotheses or changes," Denton said. "If we switch to vendor X and use their products because they've come back to the table and given us a better price, does that affect any of our outcomes or results? Or if we implement a new technology (e.g., computer navigations, robotics) how does that affect our cost structure and our outcomes?"

With new insights from the integrated data set, the McLeod team uncovered significant opportunities for product and process standardization, waste reduction and contract optimization. Most importantly, they were able to base their decisions on what delivers the greatest value to their patients. Ultimately this work enables McLeod to have the financial viability to continue to perform life-changing total joint procedures, which are critical to the health and livelihood of its patient populations, according to Dr. Rose. Further, they anticipate planned healthcare supply chain optimization initiatives in the total joint service line based on the results of this work will drive significant savings to the health system.

Looking forward

The team has identified which supply combinations yielded the highest quality outcomes at the lowest possible cost. Armed with this information, they worked to establish a standardized bill of materials for each total joint procedure, meaning those items essential to a case. They were able to standardize procedure packs (e.g., total knee case) with supplies that would cover 85-90% of all cases, recognizing there would still be times when a surgeon required a unique item based on patient needs.

"We've standardized a lot of processes based on these insights," Denton said. "We've questioned whether we should use a specific medication or intervention in certain procedures. Then we looked into the data to find the evidence to say, 'We think it should be this and everybody should do this.' And we have about a 95% compliance rate with those processes."

They also used the dashboard for enhanced healthcare supply chain management, such as monitoring compliance with supply standardization for joint procedures.

Next, the team looked at implants. With implants having the largest price tags among supplies used in total joint cases, the McLeod team was particularly interested to know if implant choice (manufacturer/ brand) impacted clinical outcomes.

"As we look across all of this patient demographic data and we look at patients one year out, the joint itself does not matter," said Dale Locklair, Senior Vice President, Planning and Facilities Management Group, who has since retired. "The data shows that in the hands of a skillful surgeon particular implants do not make a difference in the long run. We drew the conclusion that those supplies that we call 'physician preference items' in healthcare, really do not contribute significantly to outcomes in total joint procedures at all."

While the choice of supplier and implant did not have a significant impact on patient outcomes, it did influence the cost of the procedure, explained Dr. Rose. But acquiring lower cost implants isn't the only solution to improving financial outcomes for the health system. "In the supply chain area, I think we've learned a couple of really important things. One is that the choice of the vendor is an important factor in the cost, no question about it. However, what we learned from this experiment is you can't take enough expense out of the implant to make this line profitable, and it is unlikely to ever be that way. We also need to impact care outside of the hospital after the procedure, including complications, readmission and length of stay."

Supply Chain's Winfield emphasizes the data elements and value. "We have been discussing how we can leverage the data we have today on what the preference cards say versus what is actually used and done in the room. How can we create a more accurate preference card to say: 'This is what our data says you should use versus what you did use' and 'Here are the products you used that you did not plan to use.' That's going to be one of our biggest opportunities for savings." HPN

Optimizing operations in the OR

Providers look to hit reset button to 2019

by Erin Brady

Photo credit: romaset | stock.adobe.com

Since the start of the pandemic more than two years ago, health systems have had to quickly think of time saving ways to operate more effectively. This is especially true in the operating room (OR) where time is never a luxury for staff members.

Hospitals continue to postpone surgeries due to hospital beds being needed for COVID patients. The World Health Organization (WHO) reported that elective surgeries are still disrupted in 59% of the world's countries.[1]

COVID is still a financial burden to hospitals, accounting for hospital expenses to be up 10.6% on a per-adjusted discharge basis. In addition, healthcare workers are experiencing higher rates of burnout due to long hours and heavy workloads. "This issue has contributed to the rise in labor and other expenses as a result of low staff morale leading to high turnover rates and additional expenses associated with security measures and training."[2]

Patient safety has always been and will continue to be a priority for healthcare workers. With the lingering COVID-19 pandemic still on the rise, health systems have had to reevaluate their safety tactics for both patients and staff.

Healthcare Purchasing News spoke with a number of healthcare professionals and supply/solutions providers about time management challenges and what OR staff could do to help with workflow efficiencies.

Time management

Kim Haines

Kim Haines, BSN, RN, Certified OR Nurse, Lean Certified Clinical Program Director, Perioperative Services Medline Industries, says staffing restraints imposed by the pandemic have driven greater interest in OR efficiency improvements from a logistical and supply flow perspective.

"Building procedural efficiencies through surgical packs to minimize the need to pull supplies improves workflow for supply chains, SPD, and OR staff when time is more critical than ever," said Haines. "Now is the time to look at the activities staff members spend the majority of their day doing and determine if there are better, faster or more efficient ways to focus on critical functions that enhance throughput and revenue and less on non-value-added time chasing and managing base supplies," she said.

"We've seen success everywhere – especially surgical staff working outside of the OR to support the needs of other units as the pandemic's wrath shut down elective surgeries," she continued. "Supply Chains are working together to shift inventory and labor to accommodate the fluctuations of demand. Clinical staff are adapting and using product alternatives or substitutions that they hadn't used before, reducing waste supply and only using what is needed to minimize supply shortages. The pandemic stressed our supply flows, but the OR remained resilient."

Christian Baker

COVID-19 has caused hospital staff to be more conscious than ever about cross contamination. Christian Baker, Senior Product Manager, ORMI AliMed, says disposable products have gained popularity due to the pandemic from both an infection prevention and workflow efficiency perspective.

"We have seen customers use more single-patient-use items to decrease turnover times. AliMed has a full line of single-patient-use foam positioners and disposable straps to not only provide faster cleanup but help reduce cross-contamination between procedures," he noted.

Reducing OR turnover time in between patient cases is another way healthcare facilities can build efficiencies into the perioperative space. Diversey developed its TurboTurn OR turnover program to help improve results and employee safety while increasing productivity with specially designed products, procedures and equipment for cleaning operating room areas.

"Our mission has been to design a total cleaning solution that integrates products, tools and equipment to optimize results as efficiently as possible," said Larinda

Becker, the company's Executive Director of Marketing, Infection Prevention. "Diversey's TurboTurn program allows your staff to quickly align tasks to ensure the lowest turnover time without compromising quality."


Larinda Becker

Elements of the TurboTurn program include:

- Oxivir Disinfectant Cleaners with 1-minute contact time against key healthcare associated pathogens but gentle on surfaces and staff.
- Virex Plus concentrate for a 3-minute contact time, used for floors and walls along with the TASKISUM single use microfiber system.
- MoonBeam3 UVC disinfection technology for use in between procedures or end of day terminal cleaning to provide added assurance.
- Products and procedures to streamline and standardize processes and ensure proper cleaning and disinfection.

In late 2021, Medline launched its Peri-Op Performance Program, which helps provide clinical and business roadmaps to healthcare systems to improve OR efficiencies and outcomes. Through the program, Medline conducts a thorough discovery assessment to better understand the partner's goals and initiatives to find ways to reduce costs and spending, improve patient and procedural outcomes, streamline supply chain management and procurement, and to optimize space and storage throughout the facility.

Haines highlights Springfield Memorial Hospital in Springfield, IL as a program success story.

"Springfield Memorial Hospital was looking for a way to re-evaluate their operations. The outcome was a plan that included product and procedural recommendations to improve supply chain operations and create efficiencies in other areas, including sterile processing instrumentation tray utilization and consolidation, suture management redundancies, as well as skin health and hand hygiene solutions," she said.

CS/SPD and OR collaboration

Collaboration between the Central Service/Sterile Processing & Distribution (CS/SPD) departments and OR teams is critical to optimizing procedural efficiency because reprocessing of instruments and devices takes time and effort to be done effectively and safely.

"Prior to the COVID-19 pandemic, we spent a lot of time talking about the OR and SPD as two individual parts," said Brent Begin, Vice President of Surgical Workflows Sales at Getinge. He emphasized that OR and CS/SPD working together will improve efficiency. "Since the pandemic, we have increased our prioritization of analyzing the connectivity between these two integral departments and working to ensure the healthcare provider and patient are at the center of all our thought processes."


Brent Begin

Begin stresses the value of the big picture.

"We are now increasingly focused on throughput and efficiency in a holistic sense and strive to help various departments seamlessly work together," Begin added. "Through these technologies, we truly believe that this creates an environment where the total solution is greater than the sum of its parts."

To enhance instrument cleaning and disinfection, Ruhof developed its Elementum detergent, which conforms to 2018 ASTM: D8179, AORN and AAMI guidelines for optimal cleaning detergent characteristics. It features four new molecules of enzymes created for the medical device cleaning market to quickly break down tough-to-clean medical soils, according to the company.

Supply in demand

Supply shortages have challenged companies and health systems everywhere. Manufacturers have responded by increasing production and offering logistical strategies and tactics to help healthcare organizations maximize their inventories beyond just ordering more product.

Karen Ward, RN, MAOM, CNOR Clinical Specialist, Surgical, Mölnlycke, noted the unprecedented demand for surgical gloves and the company's response.


Karen Ward

"Our field sales team actively works with each of our customers to ensure we are meeting the needs of their OR," said Ward. "We continue to allocate Biogel surgical gloves to help ensure that our current customers have access to a consistent supply and encourage them to prioritize the glove's use for surgical procedures."

To provide customers with guidance on sterile surgical glove conversation, Mölnlycke developed the Surgical Glove Conservation Strategy document, which includes recommendations from the World Health Organization on the appropriate use of surgical gloves, particularly with the high demand of exam gloves.

"AliMed has seen a huge spike in demand for gel positioners, which has prompted us to increase our supply. We recently launched our AliBlue Gel Positioners to help mitigate the national shortage we have been seeing," said Baker.

Ventilator manufacturers have also experienced spikes in demand during the pandemic. To meet the need, Getinge boosted its ventilator production by 160%, according to Begin, as well as increasing production of heart-lung support systems.

"While our ICU and CC products addressed the frontlines of the ICU, we also saw a need for innovative products to help address increased efficiency due to significant staff shortages and an increase in patients," Begin said. "We worked to showcase our solutions, including our Torin OR Management System, that has been developed to address these needs through the maximization of data to automate otherwise manual processes, enhance coordination and enable surgical departments to manage their workflows, even in absence of typical levels of OR human capital. Through this innovative solution, we helped to empower hospitals and healthcare providers to accomplish more with less effort."

Becker says Diversey has launched several new products and services to address staffing needs and shortages to simplify products and processes. These also help improve turnover speed that may enable not only a safer environment, but possibly more cases through the facility, stating:

"There has never been a more critical time for cleaning and disinfection to help patients and staff feel confident in facilities. We created materials and checklists for reopening, short-term product solutions to avail capacity, and expanded production, warehousing and availability of product through 24/7 production, she said."

To overcome the shortage of commonly used raw materials in the production of PPE, Medline turned to alternative materials, which it leveraged to develop new products.

"Early in the pandemic PPE was the hot commodity, everyone needed it and there wasn't enough to go around," said Haines. "To better supply PPE and facemask manufacturing, along with all other key categories made of nonwoven raw material, we pivoted to support the market by introducing alternative raw materials, substitute items and spot buy items.

"Specifically, within the OR, with surgical drapes and gowns, we introduced a new bilaminate drape material and spunlace gown material to increase our overall capacity and support the market when nonwoven materials were in such high demand," Haines added. "As we learn of supply disruptions that will impact components in our kits, we proactively work with customers on alternates to ensure they are getting the supplies they need."

Evolved training methods

Surgical care continues to evolve despite the ongoing supply chain disruptions caused by the COVID-19 crisis. One challenge has been properly training OR teams on new products as they have struggled with staff shortages, COVID-19 prevention measures and postponed/cancelled procedures. As a result, the push for virtual learning options increased.

"We have leveraged the use of virtual meetings and tailored our videos to train and instruct healthcare professionals on the use of AliMed products," said Baker. AliMed's website includes a series of step-by-step training videos for their products.

Mölnlycke has responded to the challenges of staff training with a variety of online resources:

"[We have] focused on increasing our surgical gloves virtual training, education and evidence access on our Connect2Know.com website," said Ward. "Educational videos for open, closed and assisted glove donning techniques along with printable instructions for staff are easily viewable and downloadable. For those needing protection from chemotherapy agents, we have enhanced our reference materials for the best gloves to use with chemotherapy permeation charts available on our website as well as Connect2Know.com.

"[We've] also expanded our virtual speaker program to include topics on Sharps Safety and the utilizing the LEAN process in the OR to minimize waste," she continued. "Instructions for scheduling programs live or virtual with our clinical nurse specialists are posted and also regularly communicated through our field sales team."

Diversey offers its training program, which has been awarded the AORN Seal of Recognition, online, virtually or in-person. The company has also developed numerous online videos, podcasts and training delivery methods to adapt to the OR's needs.

Medtronic also has taken a hybrid training approach with a mix of in-person and online training programs.

"For our industry, one of the greatest educational challenges over the past two years has been offering remote learning as COVID-19 eliminated most in-person options for training — the preferred method for many physicians. We called this transition the 'remote pivot,'" said Matt Anderson, Vice President & General Manager of Surgical Innovations, Medtronic.


Matt Anderson

He added, "Since the beginning of the pandemic, we have expanded our provider training programs. We now offer a secure, live platform where trainees join a faculty member in the OR and observe a procedure from multiple points of view both from around the room and laparoscopically. This allows for a more comprehensive experience where trainees interact with the faculty member in live dialogue, regardless of location."

For the parts of the world where in-person training is possible, Medtronic includes a hybrid visiting clinician program to its platform. Through the program, trainees have their choice of attending procedures in-person or virtually.

"Historically, the adoption of remote surgeon training solutions has been slower relative to other education markets. The universal need for a remote pivot in response to the pandemic has significantly reduced resistance to remote training technology and accelerated its adoption. As a result, the adaptation from in-person to hybrid clinical education is a practice we anticipate leveraging going forward as we expand access to the latest technology and accompanying education for providers across the globe," Anderson said.

Medline's Haines stresses a return to the fundamentals of education.

"We had to design a multimodal approach to education; of course, virtual replaced face to face training but the pandemic also challenged us to look at

Overcoming a different pandemic

Matt Anderson, Vice President & General Manager of Surgical Innovations, Medtronic, told *Healthcare Purchasing News* that the world is battling a lingering and worsening pandemic that isn't COVID-19; obesity.

He articulates three possible solutions:

1. Innovation

"Our bold focus is to lead the way in superior minimally invasive surgical options for bariatric patients," he said. "We are dedicated to advancing minimally invasive technology further toward robotic assisted surgery with the goal of even shorter recovery times, fewer surgical site infections, and ultimately better patient outcomes."

2. Clinician and surgeon education

"We must also provide education to support the safe and effective application of the latest technology and techniques. Our world-class education and training programs enable providers to learn best-practices from the start so patients in need of bariatric care have the best clinical experience and outcomes possible."

3. Technology

"Bariatric care is complex. It can be isolating and intimidating for many patients who struggle with obesity – such that approximately 50% of bariatric patients drop out of their program before surgery. Navigating the pre-operative checklist of insurance-driven requirements and multiple appointments with different providers can be overwhelming, making this already difficult decision seem more daunting.

"Our solution to this profound hurdle in access to care is GoFurther – a secure app where patients connect with their provider to stay on track for surgery and monitor progress leading up to and following their procedure. This new app offers a more comprehensive care pathway, so patients are better supported and more engaged on their journey to better health."

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how we can provide quick and simple forms of education," she said. "Time was a luxury that we didn't have with surgical backlogs and staffing shortages, so education had to be built around the time that was available, and that looked very different. Now, more than ever, it's time to focus on re-engaging and re-training staff. Although the right intent is there, everyone needs a refresher on "back-to-basics."

Healthcare resilience

Over the course of the COVID-19 pandemic, there have been shortages from supply chain to healthcare workers. In a survey conducted by the American Association of Critical Care Nurses (AACN) in September 2021, 92% of nurses think their careers will be shortened by the pandemic and 66% have actually considered leaving the profession.[3]

Additionally, there will be more registered nurse job openings this year than any other profession, according to the American Nurses Association. "With more than 500,000 seasoned RNs anticipated to retire by 2022, the U.S. Bureau of Labor Statistics projects the need for 1.1 million new RNs for expansion and replacement of retirees, and to avoid a nursing shortage."[4]

Nurses experience some of the highest rates of lower-back injury, with about 25% of worker's compensation claims attributed to injuries caused by physically transporting patients, according to the Occupational Safety and Health Administration (OSHA) and mentioned in the AliMed training video for their new PPS Glide Air-Assisted Lateral Transfer System. Time out of work for injury exacerbates an already thinning workforce, says Baker.

"Customers are looking for ways to manage staffing shortages that have been exacerbated by the pandemic. Many hospitals are moving to air-assisted lateral transfer devices, which help minimize the risk of those injuries while using fewer resources when moving larger patients," Baker said.

To help combat these challenges, AliMed is launching the PPS Glide Air-Assisted Lateral Transfer System —a safer, more resource-efficient transfer device, according to the company. It requires two caregivers to operate and can hold up to 1,200 pounds, significantly reducing the risk of nurse injury.

To address labor shortages, Getinge supports increased efficiency, throughput and workflow optimization, Begin indicates.

"One specific innovation is the connection of our Torin OR Management and T-DOC instrument tracking technologies," he said. "The two solutions work together to help improve workflows and the efficiency of processes and procedures in healthcare facilities. This emphasis on real-time bi-directional communication allows healthcare facilities to build efficient schedules to maximize OR space and better support patients." HPN

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The Contagion Contingent

2022 IP Operations Worth Watching

by Kara Nadeau

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This year marks the 50th anniversary of the Association for Professionals in Infection Control and Epidemiology (APIC). As APIC President Linda Dickey, RN, MPH, CIC, FAPIC explains, much has changed in healthcare and within the profession during this time.

Linda Dickey

"We came from a place where infections were thought to be part and parcel of the healthcare course. There was a belief that some percentage of infections would occur and there was no way to prevent them," said Dickey. "Fast forward 50 years where our goal is zero infections. While we recognize we will likely never live in a world without infections, and some germs are our friends, we do want to shoot for zero when it comes to pathogenic microbes that cause serious illness."

While physicians, nurses, respiratory therapists and other healthcare staff members had always done what they could to prevent infections, APIC established the role of the infection preventionist (IP), someone solely focused on this critical area of healthcare delivery. Today, IPs employ evidence-based practices to keep patients safe from device-associated infections, surgical site infections (SSI) and other healthcare associated infections (HAI).

In honor of the IP profession, *Healthcare Purchasing News* presents its 2022 Infection Prevention Operations Worth Watching, highlighting U.S. health system and hospital IP teams that have demonstrated outstanding dedication, practices and successes in infection prevention.

A true team approach to IP in the time of COVID

The COVID-19 pandemic has complicated the work of IPs, with efforts now split between protecting patients and healthcare staff members from the SARS-CoV virus and the continued fight against HAIs. That is why this year's list of IP success stories include efforts aimed at addressing both long-standing infection risks and the new challenges presented by COVID-19.

"The pandemic has amplified and magnified the skill set needed to be an IP because you have to be very resilient and a team player who helps coordinate various stakeholders and move a lot of levers at the same time," said Dickey. "You have to be able to multitask and keep your eye on several different priorities simultaneously."

The IP Team members for Dartmouth-Hitchcock Medical Center in Lebanon, N.H. have played a vital role in the success of IP goals despite the challenges of the COVID-19 pandemic. At the same time, they have continued to strive for professional growth and development by earning graduate degrees, acquiring certification in Infection Control, participating in local and regional infection control chapters, webinars and conferences, and more.

Here's how the IP team members have successfully executed on their specific responsibilities to drive improved compliance and patient safety.

SSI standardization

Jessica L. Swain, MBA, MLT (ASCP), CIC, Dartmouth-Hitchcock Senior Infection Preventionist, leads the surgical site infection (SSI) prevention efforts working with perioperative leadership, nursing, surgeons and ancillary staff. This team updated SSI prevention bundles to meet best practice requirements to standardize perioperative patient care and reduce SSIs.

Dartmouth-Hitchcock, like most U.S. health systems and hospitals, has struggled to reduce SSIs and other HAIs during the pandemic, but the IP team has successfully increased compliance with documentation of the SSI prevention bundles. And while patient acuity increased between 2020 and 2021, there was no increase in SSI infections.

Swain also serves as the infection control standards and regulatory compliance expert to ensure continuous regulatory readiness throughout Dartmouth-Hitchcock, which was reaccredited by the Joint Commission in 2021 with accolades on infection control processes.

50% CLABSI decrease

Caitlin Adams Barker, MSN, RN, CIC is a Dartmouth-Hitchcock Senior Infection Preventionist and Nursing Assistant Clinical Instructor. She was Program Director for the APIC New England Chapter in 2020 and was elected Nominating and Awards Director Elect in 2021. APIC awarded her Fellow status (FAPIC) in recognition of her contributions to the profession.

Barker has simultaneously served as the IP representative for the COVID Incident Command team and led the central line associated blood stream infection (CLABSI) committee and associated work.

In 2021, Barker approved a central line insertion policy, which outlines the competency requirements and insertion protocol for providers who insert central lines. This is critical to ensuring provider competency for patient safety and reduced risk of infection

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[1]Rutala, W. A., & Weber, D. J. (2019). Best practices for disinfection of noncritical environmental surfaces and equipment in health care facilities: A bundle approach. *American Journal of Infection Control,* 47, A96–A105.

following insertion. Barker's work contributed to a 50% decrease in CLABSIs in 2021 as compared with 2020.

Safe IUC use

Erica Leonard, MSN, RN – BC, CNL, CIC is a preceptor for new IP staff and recently assumed the role of Nursing Assistant Clinical Instructor. She also participates in the Acute Care Council, Nursing COVID Resource Committee and leads the catheter associated urinary tract infection (CAUTI) committee.

Under Leonard's leadership, the CAUTI committee has achieved the following:

- New "Take CAUTI On" campaign to encourage and reward nurses for timely removal of indwelling urinary catheters (IUCs)
- Updated IUC order-set to include selection of evidence-based indication and management plan for the IUC
- An online CAUTI Prevention Toolkit accessible to all staff
- Updated urine culture order to include indication to help prevent inappropriate culturing of urine
- Regular rounding on patients with IUCs to ensure IP bundle elements are being utilized
- Just in time education to nurses and providers whenever needed

These initiatives have helped decrease inappropriate use and duration of IUCs thus decreasing risk of CAUTI to patients.

C. difficile prevention initiatives

Cameron Griffin, BS, MB (ASCP), CIC, Infection Preventionist, leads the C. difficile committee and participates in the Antimicrobial Stewardship Committee to prevent misuse/overuse of antimicrobials.

In 2021, Griffin and the *C. difficile* committee implemented several new initiatives to help stop transmission and reduce infections:

- A bare below the elbows policy, new cleaning and disinfection procedures, and nurse driven CDI protocol allowing nurses to order *C. difficile* testing based on new or worsening symptoms
- A diagnostic stewardship tool and best practice alert for patients on high-risk antibiotics with a history of *C. difficile* to prevent recurrence, along with prevention education for new nurses
- Investigation of the potential benefits of an updated testing algorithm with the intention of reduction in detection of *C. difficile* colonization and resulting inappropriate antibiotic treatment
- IP team collaboration with Environmental Services (EVS) leadership to ensure that EVS staff are trained in IP best practices, and that all cleaning and disinfection products are ideal for keeping patients and staff safe from transmission of potentially infectious organisms

Hand hygiene success

Carrie Silver, MSN, RN, CNOR, Infection Preventionist, leads the Hand Hygiene and Personal Protective Equipment Committee, and participates in work related to HAI prevention and COVID surveillance and reporting.

Throughout the pandemic, Silver has leveraged several hand hygiene technologies to improve compliance. These efforts include:

- Implementation of an electronic hand hygiene monitoring system used by over 2,500 employees and capturing over 30,000 hand hygiene events each day
- Use of a hand washing technology to train staff on the correct steps when performing hand hygiene, which has been rolled out to a variety of departments, including EVS and ambulatory clinics
- Updated training materials for use of hand hygiene direct observation collection software that allows staff to collect both hand hygiene and PPE data for analysis and reporting, along with virtual training sessions

Advanced analytics and reporting

Kathleen Stewart, MPH, is an embedded Quality Specialist on the IP team. Stewart functions in the role of data analytics and reporting and assists the team with project management, meeting facilitation, and use of data management tools.

Stewart has created compliance reports for everything from hand hygiene to infection prevention bundles, as well as dashboards for quality reporting and keeping goals on task. Stewart also has expertise in regulatory surveys and functioned as a survey coordinator during the 2021 Joint Commission survey.

Support across the board

Stephanie Casale, BSN, RN, Infection Preventionist, assists with day-to-day IP work, including CLABSI, CAUTI, C. difficile, and COVID surveillance and reporting.

Additionally, Casale has partnered with the IP team on projects to reinvigorate new employee orientation, hand hygiene education, and C. difficile mitigation strategies. She has also taken on the role of Inpatient Dialysis expert for which she has developed a tracer to ensure IP best practices are being followed in this area.

"The Dartmouth-Hitchcock Infection Prevention team is one of the hardest working teams that I have ever had the privilege of working with," said Swain. "Although the work of the team has increased exponentially throughout the COVID-19 pandemic, each team member has continued to work toward hospital acquired infection reduction goals and improvement of patient safety and quality of care."

A nationwide approach to IP standardization

As health systems continue to grow through mergers and acquisitions (M&A), leaders are challenged to unite clinical and operational stakeholders from across various hospitals in common goals and processes.

In 2016, Ascension, one of largest U.S. health systems, created a new system level position, Senior Director of IP, and hired Lisa Sturm for the role. Sturm was charged with building a system-wide IP program to connect and engage infection preventionists at 142 Ascension hospitals across 13 major markets and 19 states in the fight against healthcare acquired infections (HAIs). She took a "systems thinking" approach focused on data/analytics, prioritization and collaboration.

Data and analytics

Gaining a system-wide view of HAIs and then pinpointing opportunities for improvement requires a robust data set and analytics that some large health systems may not have. Rather than reinventing the wheel, Sturm worked with the Ascension's analytics team to leverage the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN) HAI tracking system.

Any hospital that requests payment from the Centers for Medicare and Medicare Services (CMS) must report HAIs to the NHSN database. Ascension's analytics team has provisioning rights to all data submitted by the health system's hospitals. This enabled them to develop dashboards at the national, market, hospital and in some cases unit level (e.g., ICU, NICU) to guide Sturm and her IP and quality colleagues in their efforts.

Prioritization

As Sturm states, successfully addressing infections from a system level can't be done with a "shotgun" approach, rather, she needed a way to prioritize those facilities that had the greatest opportunity for improvements.

The NHSN features a cumulative attributable difference (CAD) calculator that allows users to perform this prioritization. With the tool Sturm can identify high rates for various types of HAIs (e.g., CLABSI, CAUTI, MRSA, C.diff, SSI) across Ascension's hospitals to determine where it makes most sense to target interventions.

"Let's say for example on a national level there were 50 central-line blood stream infections (CLABSI) across the health system in one month, but the standardized

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infection ratio (SIR) was within our benchmarks," said Sturm. "With this calculator we can apply analytics to determine where most of these infections are occurring taking into account a number of factors. If one hospital had a high number of infections during that time - let's say 10 – we could work with that hospital in a focused review to bring down the entire health system's CLABSI SIR."

Collaboration

With actionable analytics in hand, Sturm built an infrastructure to support collaboration among IP teams across the health system, which is comprised of about 160 IP staff members. She helped build an internal website and chat forum and set up a national IP community call that is regularly attended by more than 100 infection preventionists.

With a "bird's eye view" to HAIs across the health system, Sturm uses these calls to share best practices, offer IP teams resources on the system level, and connect teams with one another.

"For example, if there is an Ascension hospital in one market that has a high CLABSI rates but low CAUTI rates, and another hospital in a different market with low CLABSI rates and high CAUTI rates, I use these calls to make the connection and encourage them to meet and share best practices with one another for mutual improvement," said Sturm.

Sturm and her project manager records the calls and they share the recordings with attendees, along with her slide decks. Because call participants use the chat box feature to ask questions, Sturm saves these questions in a document, along with her answers, and sends this "chat box Q&A" to attendees, which was particularly helpful during COVID-19

Trust

Sturm said trust is a critical component of the system-wide IP program's success. Because IP teams are encouraged to be transparent with their challenges related to HAIs, they must trust that Sturm has their best interests at heart.

"They have to know that I have their backs, I'm not going to betray their transparency, but rather appreciate their challenges and honesty and will provide the support they need," said Sturm. "I remind them every day that we are a family and work together for the common goal of reducing infections."

Under Sturm's leadership, Ascension has recorded decreases in multiple HAIs. To address high CLABSI rates, she led a multidisciplinary team that standardized the placement and care of lines, creating a guideline for best practices, established competencies, and partnered with frontline teams, resulting in a 38% reduction in CLABSI over a three-year period prior to the COVID-19 pandemic.

A united front against COVID-19

When COVID-19 hit the U.S. in early 2020, Sturm's program enabled IPs from across Ascension to mount a standardized, effective and efficient response to the pandemic. The national IP community calls, which previously took place once per quarter, became weekly events where she would share updates with stakeholders from across all the hospitals and they would collaborate on solutions.

"We had all the core components in place for a nationwide IP response when COVID hit, we just had to flip the subject matter," said Sturm. "The weekly calls became so popular that attendance grew beyond IP teams and out to other key stakeholders, including clinical leaders and staff members from various departments. We had hundreds of people on these calls at one point." The calls continue to this day meeting bi-weekly providing real time updates on the COVID-19 response plan, as well as other IP updates.

Next steps

It has been well documented and published that HAIs across the world increased in the face of the pandemic. Research and strategies are now in place at Ascension to address these increases, learn from the experience, and put into place reduction and prevention strategies for the future going forward. Sturm is confident that the infrastructure, teamwork and collaborative spirit that is already in place for Ascension's Infection Prevention program will prime it for on-going success to endure not only this pandemic, but any future ones that may come along.

Competency-based training sets up hospital for COVID management success

The Centers for Disease Control and Prevention (CDC) has long supported state health departments in assessing infection prevention practices and guiding quality improvement activities in U.S. hospitals through its Infection Control Assessment Tools.[1]

In late 2018, the IP team at Tampa General Hospital (TGH) in Tampa, Fla., invited the Florida Department of Health to conduct an infection control risk assessment survey of its facilities to identify and address any gaps in IP protocols and practices.

Coming out of the survey, the Florida Department of Health surveyors

Tampa General Infection Prevention team

recommended TGH institute a competency-based training program around hand hygiene, disinfection (of equipment and the environment) and the proper donning and doffing of personal protective equipment (PPE).

"We had been performing education-based training for clinical staff for years around these three areas but didn't always address the competency piece," said Kimberly Atrubin, MPH, CIC, CPHQ, FAPIC, TGH's Director of Infection Prevention. "With the addition of the annual competency-based training program, clinicians would be required to both learn the skills and demonstrate them."

In early 2019, Atrubin and her nine-person team rolled out the complete training program to TGH's clinical staff members, and the hand hygiene portion to non-clinical staff members, which comprised a total of about 8,200 individuals.

"It was a great back-to-basics initiative," said Atrubin. "Our expectation was for everyone at TGH to know how to perform effective hand hygiene because it is not only good for our patients but for our community in general."

"It's astounding how TGH has built a culture that is so supportive of IP practices," added Benjamin D. Galvan, MLS (ASCP), CIC, Infection Preventionist at TGH and a member of the APIC National Communications Committee. "Team members are more often than not willing to support IP practices and engage in education and competencies."

When COVID hit

In early 2020, TGH's IP team led the organization in renewing the hand hygiene, disinfection and PPE competencies. Any staff member who had been hired after the first round of competency training in early 2019 had to undergo this training upon hire so "by the time COVID hit, we knew everyone had gone through the training at least once," explained Atrubin. "They had the skills, we just had to refresh them."

Like most IP teams, the TGH team was flooded with an influx of staff questions and requests when COVID-19 began spreading throughout the U.S.

"I was expecting to get flooded with questions from clinical departments but surprised at the abundance of questions from non-clinical departments as well," said Atrubin. "Every department wanted the IP team involved."

Atrubin and her team took a "divide-and-conquer" approach to supporting both clinical and non-clinical staff members, with Atrubin leading efforts around in-patient workflows and another team member taking on ambulatory settings. "It really helped having a main point person to field inquiries and requests," she commented.

At the same time, TGH's Chief Quality Officer led a COVID Clinical Task Force with daily clinical team meetings, while the hospital's Chief Operations Officer facilitated house-wide daily meetings for staff members across all departments.

"It was great having those meetings in place because it became dedicated time where everybody heard the same questions and the same answers," said Atrubin.

The IP team also established a webpage that housed the most current COVID resources for TGH. When there was a change in practice or protocol, TGH's Chief Executive Officer would send out an email alerting staff members to the change.

"We really leaned on the fact that we were an academic medical center and made sure staff understood the science behind changes," said Atrubin. "For example, we provided detailed information on the meaning behind PCR test results and what the results meant for patient isolation practices."

"Now in our third surge of COVID, staff members are responding very efficiently," said Galvan. "Much of our work in IP is encouraging clinical staff members and helping them feel confident that they can take care of patients safely because they have the training and can trust their skills."

Extending IP into the community

In parallel with its internal efforts to combat COVID, TGH has provided IP support to the greater Tampa Bay community through its TGH Prevention Response Outreach (TPRO) program.

"At the time when COVID hit, our CEO and senior leadership recognized we needed to support the community," said Atrubin, who is the TPRO Director. "We have a lot of community partners and they were coming to us asking for help and recommendations on the pandemic."

Over the past two years, Atrubin and the TPRO team have worked with numerous Tampa Bay organizations on IP protocols, including the Tampa Bay Lightning hockey team, The Florida Aquarium, several museums and schools. Looking ahead, they plan to expand the program to address other areas in occupational health beyond COVID.

"The TPRO program was one factor that really drew me to the hospital because it is something that you don't really see anywhere associated with an academic medical center," said Galvan, who joined TGH in 2021. "The program aligns with APIC's new vision and mission to advance infection prevention outside of healthcare and into the public domain where it needs to be."

Monitoring and motivation drive 130% increase in hand hygiene compliance

Hand hygiene can help prevent the spread of infectious agents in healthcare facilities, but as the CDC points out, healthcare providers clean their hands, on average, less than half of the times they should.[2]

Seeking to better protect patients and staff from the spread of HAIs, St. Joseph Hospital in Savannah, Georgia launched an initiative to improve hand hygiene (HH) compliance. They selected and installed an electronic HH compliance monitoring system (CenTrak) in November 2019. Once pandemic-related hospitalizations surged in early 2020, the IP team knew compliance was crucial.

They understood the critical secret: their team must invest time into the process to achieve the greatest success. Emmitt Smith, RN, CIC, Infection Control Practitioner, who served as the dedicated team lead, engaged the technology, advocated for hand hygiene, remained open to ideas, and reinforced how data improves operations.

To garner greater support, Emmitt distributed hand-written letters to every high performer via the mail, highlighting how critical their work was and how proud the hospital was of their growing HH achievement. In addition to the encouraging letters shared, pizza parties for high compliance units motivated staff to compete and grow their pride in the HH project.

The efforts of Emmitt, the IP team, and each individual staff member resulted in a 130% increase in HH compliance. The compliance numbers are now consistently among the best in the nation and often as high as 90%. Furthermore, the facility's cost of HAIs has dropped by more than $400,000 since reenergizing their HH compliance campaign.

Visual feedback and education results in 70% higher surface disinfection scores

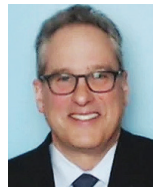
While surface disinfection has been a long-term challenge in healthcare, the COVID-19 pandemic has made it even harder to maintain compliance. The CDC states in its 2020 annual National and State Healthcare-Associated Infections (HAI) Progress Report,

"The COVID-19 pandemic created a perfect storm for HAIs in healthcare settings. Many hospitals faced extraordinary circumstances that may have reduced the implementation of standard infection prevention and control (IPC) practices."[3]

In 2021, the IP team at Hackensack University Hospital in Edison, N.J. sought to determine the effectiveness of adding a color additive (Kinnos Highlight) to bleach wipes, which provides immediate visual feedback to EVS staff on their cleaning effectiveness. The liquid blue indicator, when dispensed

onto bleach disinfectant wipes, provides a temporarily visible bright blue trace to depict wiping surface coverage before fading away to clear in minutes. The IP team documented their work, which was published in the November 2021 edition of the *American Journal of Infection Control (AJIC)*.[4]

"Environmental disinfection is foundational for an effective Infection Prevention program to help minimize the risk of transmission of certain pathogens (e.g., C difficile, MRSA, Multidrug resistant gram negative bacteria)," said Jerry M. Zuckerman, MD, Vice President of Infection Prevention & Control, Hackensack Meridian Health, who helped lead the research. "To assess the effectiveness of room cleaning, ATP bioluminescence assays or fluorescent markers may be used. This approach has several limitations including limited sampling and they only provide feedback after the cleaning process is complete."



Jerry M. Zuckerman

"The advantage of adding a color additive to the bleach wipes is that it allows the person to see, in real-time, the areas that they have, or have not, cleaned," Dr. Zuckerman added. "Making the invisible, visible will enable more efficient/effective cleaning at the time it is being performed and contribute to our overall infection prevention improvement efforts."

Dr. Zuckerman and his team performed a prospective study from July 2021 to August 2021. During the control phase, routine terminal cleaning of isolation rooms was performed by EVS staff using standard bleach disinfectant wipes (Sani-Cloth Bleach Germicidal Disposable Wipe, PDI Healthcare). During the intervention phases, EVS staff were provided with the color additive (Kinnos Highlight) to combine with their standard bleach wipes. Disinfection quality was quantified through both fluorescent marking removal (Diversey VeriClean Fluorescent Marking Spray) and ATP bioluminescence assay (3M Clean-Trace Luminometer).

The results showed that use of the color additive on the bleach wipes improved fluorescent marking cleaning scores by 70% and ATP scores by 30% in just a few weeks. While the facility's cleaning assessment scores varied significantly before addition of the colorant, after its addition they achieved 100% passing scores.

"The pilot performed was a result of a shared decision-making process between environmental services and infection prevention," said Dr. Zuckerman. "The recent COVID surge and staffing shortages has put further roll out of the product on temporary hold. In the short term, we hope to see an impact on EVS job satisfaction as they learn and recognize how their efforts contribute to patient safety."

Scope storage initiative drives greater compliance and safety

Effective scope management and storage have been hot topics in infection control, with several highly publicized infection outbreaks tied back to contaminated scopes. The U.S. Food and Drug Administration (FDA) and industry associations continue to publish new guidance on scope handling and reprocessing in light of these events.

As an organization dedicated to patient safety, infection prevention, and quality improvement, the safe and effective reprocessing and storage of endoscopes has been a high priority at The Queen's Health Systems in Honolulu, Hawaii.

"The drying of endoscopes is important to decrease the risk of microbial growth while they are stored and before the next use," said Julian Martinez, CRCST, CIS, CHL, Coordinator, Sterilization & Disinfection, Infection Prevention & Control, The Queen's Health Systems. "Drying at the right temperature and humidity promotes optimal scope readiness. Proper storage of scopes is important to protect them from damage, decrease the potential for microbial growth, and ensure monitoring of its use is managed."

The Queen's Health Vice President of Surgical Services was the first to acknowledge that the health system's scope management processes and equipment at the time did not meet industry standards: AAMI ST91:2015 and SGNA:2018. In particular, the old scope cabinets in place were insufficient and could not support the organization's growing demands.

"With the old cabinets being conventional and outdated, the issue of compliance was not having the endoscopes stored properly in a secured cabinet, and not allowing adequate space around the scope for optimal drying capabilities," Martinez explained.

The VP engaged the Infection Prevention (IP) department, and they collaborated on a solution. Because new scope storage cabinets would be a capital expenditure, the VP and IP team built a case for why their request should be at the top of the health system's priority list. They also developed a list of required cabinet features to meet compliance standards which included drying capability, humidity control, and ability to store longer scopes.

"Our organization was committed to making a move to comply with society guidelines for temperature, humidity, and the drying of the inner channels," said Martinez. "The purchase of these cabinets was going to help us improve on compliance, and leadership at The Queen's Health Systems was very supportive during the process."

Leadership acknowledged the importance of scope drying and storage for the safety of the health system's patients and approved the cabinet purchase (Clinical Choice ScopeVault cabinets). According to Martinez, the cabinets have helped The Queen's Health Systems improve compliance in several ways:

"ScopeVault cabinets helped us achieve appropriate storage standards by not having the scopes touch the bottom of the cabinet and by circulating HEPA filtered air within the cabinet space and through the scope channels to ensure the scopes remain dry. These improvements have provided greater patient safety by providing endoscopes that have gone through the proper disinfection process and are appropriately dried. We can easily store endoscopes that previously would not fit in the older cabinets with the space-saving design."

Martinez added, "by utilizing an endoscope cabinet that can provide security and proper drying of the channels, it ensures that we are providing the best possible care to our patients."

Supporting those who protect caregivers and patients

Like physicians, nurses and other healthcare workers, IPs have been working nights, weekends and holidays under intense pressure throughout the pandemic. But unlike those on the front lines, it is not generally known what IPs are doing behind the scenes to protect patients and their caregivers from harm. Their efforts are monumental and APIC has been doing what it can to help its members take care of themselves while they fight the fight.

"It's hard to find time to unplug when you are working long hours, buried in email and your phone is ringing off the hook, but we have to. If we don't, we will burn out," said Dickey.

Despite the unprecedented challenges IPs have faced over the past two years, APIC members continue to plan for the future of the profession.

"We are in the same boat as all of the other healthcare fields with the need to fill the pipeline with new talent to replace those who are retiring," said Dickey. "We've had volunteers continue to do good work to figure out what APIC's future will look like. I want to honor those people who have carved out time to continue to help move us forward as a profession." **HPN**

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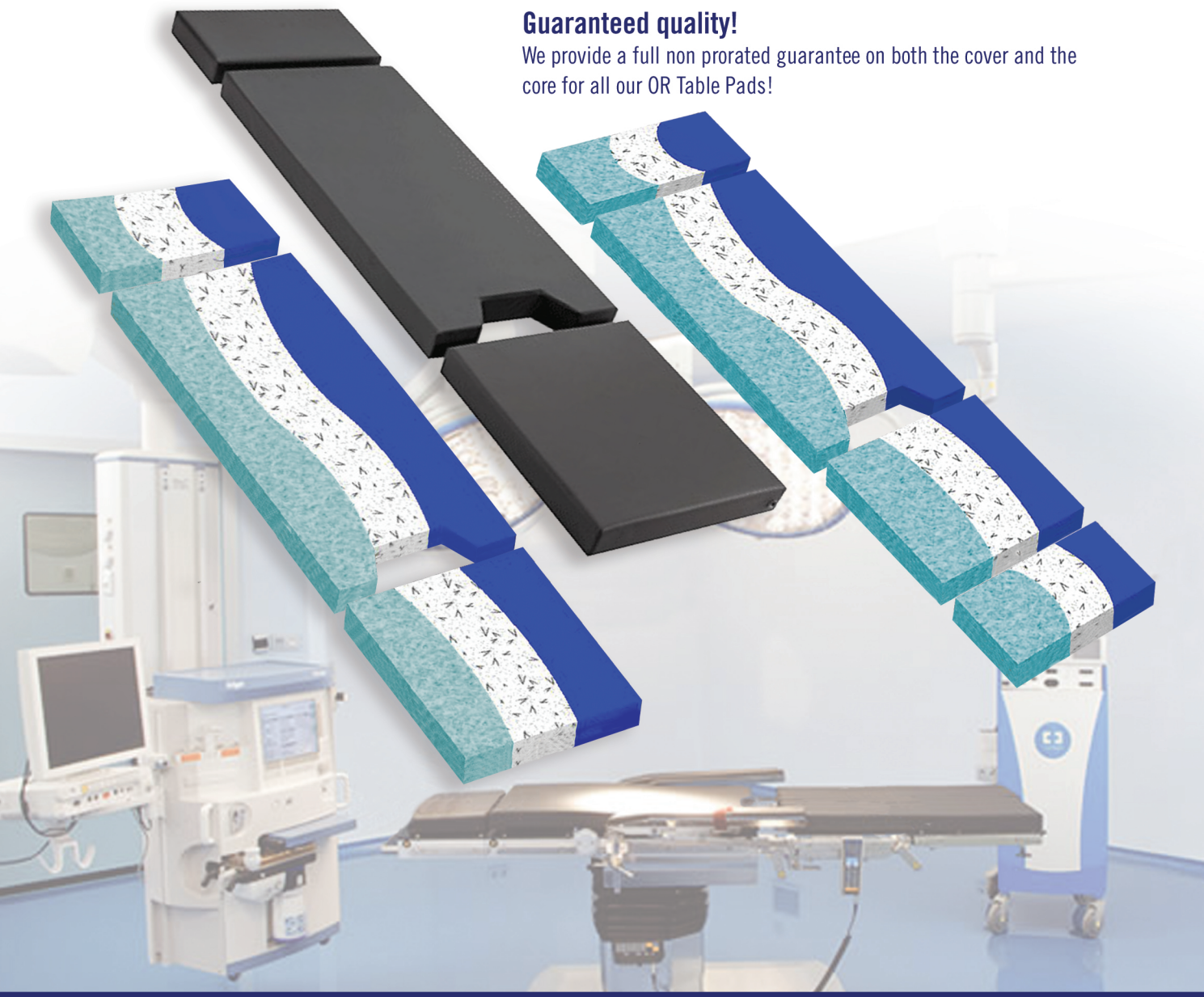

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by Kara Nadeau

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The average annual salary of Central Service/Sterile Processing & Distribution (CS/SPD) department professionals is up 5% again this year, according to the results of the 2022 *Healthcare Purchasing News* CS/SPD Compensation Survey. As we enter the third year of the COVID-19 pandemic, job security remains high with fewer lay-offs and furloughs, but those in the field report the continued struggle to secure salaries and respect reflective of the vital role they play in patient safety.

The average annual salary for SPD Technician/Coordinators in 2022 is $49,083, up 23% from $39,833 in 2021. While CS/SPD Directors too saw a huge leap in pay, $139,867 in 2022, up 32% from $105,656 in 2021, the figure is likely skewed by a few respondents in this category who reported salaries on the very high end of the range.

CS/SPD Managers reported a modest pay increase with an average annual salary of $86,756, up 8% from $80,518 in 2021, as did Surgical Instrument Technicians with $55,055 in reported annual earnings, up 7% from $51,500 last year. CS/SPD Supervisors experienced a slight bump at $58,863, up 2% from $57,778 in 2021.

Lower pay was reported among CS/SPD Educators with average annual pay at $65,500 in 2022, down 15% from $76,944 in 2021, which could be a correction to the huge pay leap reported in this job category between 2020 ($63,846) and 2021 ($76,944). Reported pay for CS/SPD Technicians dropped as well, with an average annual salary of $41,176, down 9% from $45,156.

Overall, 70% of survey respondents said their salaries had grown over the previous year, up from 64% in 2021, and 24% expect bonuses in 2022, up slightly from 22% last year.

"Overall, my view on SPD salaries is they are still way too low," said Debra Bohlman, CRCST, CIS, CHL, Sterile Processing Supervisor, ThedaCare Regional Medical Center, Appleton, WI. She also serves as Secretary-Treasurer for the Healthcare Sterile Processing Association (HSPA).

"The trend is to up the starting pay, but many organizations still aren't adjusting salaries for seasoned workers who have stayed through the years and the pandemic," Bohlman continued. "Sterile Processing is a physical, demanding and complicated profession, and salaries need to catch up. SPD staff members can improve the state of the profession by getting certified and taking a proactive approach to their own education."

Many healthcare staff members have been compensated by their employers for the extra work they have taken on during the pandemic, but CS/SPD professionals seem to have been overlooked in many cases.

"Salaries continue to [stagnate] as many SP professionals still struggle to gain the focus and recognition we all feel is deserved," said Tony Thurmond, CRCST, CIS, CHL, FCS, Sterile Processing Manager, Dayton Children's Hospital, HSPA Past-President and member of the HSPA Board of Directors. "Over the past two years, SP professionals have shown their versatility and flexibility, with many stepping out of their departments to provide additional help to those departments providing patient care. While other specialties have provided that same help, it seems that those on the front lines have an increased opportunity for pay raises."

Tony Thurmond

While fewer CS/SPD professionals said they were laid-off or furloughed because of the pandemic, 15% in 2022 versus 26%

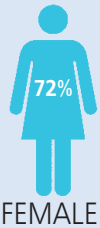
AVERAGE ANNUAL BASE SALARY: $67,096

INCREASE OF BASE SALARY SINCE LAST YEAR?

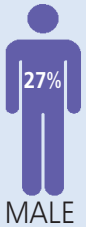
70% Yes, it increased
24% It remained the same
6% No, it decreased

2021 AVERAGE ANNUAL BASE SALARY: $63,617

AVERAGE PAY BY GENDER



FEMALE
$59,468



MALE
$88,170

1% of survey respondents chose not to disclose their gender

PERCENTAGE INCREASE OVER LAST YEAR 3.0%

EXPECTING A BONUS THIS YEAR?

52% No
24% Yes
24% Don't know

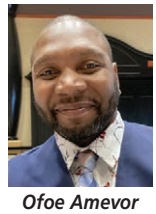
2012 AVERAGE ANNUAL BASE SALARY: $55,581

in 2021, job security dipped slightly, with 85% of respondents reporting they felt very or somewhat secure in their jobs in 2022, compared with 90% in 2021.

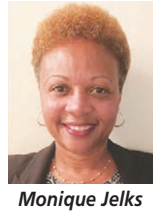
Staffing shortages in healthcare because of the COVID-19 pandemic have prompted many healthcare facilities to hire travel professionals to fill temporary needs. Although the media spotlight has been largely focused on the nursing shortage, CS/SPD professionals too are in high demand and traveling has become a popular and lucrative option.

For example, a recent traveler job listing on Sterile Processing Staffing, Interim Management & Consulting Firm Moab Healthcare's website offered $2,200/week, $50 an hour overtime and benefits.

"While in the past CS/SPD professionals may have chosen not to travel because these positions lacked insurance benefits, today there are now great packages that offer benefits or pay enough for the traveler to purchase their own insurance," said Ofoe Amevor, CRCST, CIS, Sterile Processing Manger & Operations Leader , Six Sigma Black Belt, Traveling Consultant. "Hospitals must consider the consequences of the popularity in travel positions, including high turnover in their departments and the cost of training new staff members."


Ofoe Amevor

Monique Jelks, MSOL, BA, CRCST, Sterile Processing Area Director, Central Surgical Support Services, Indianapolis, and member of HSPA's Board of Directors, agrees that travel positions are putting pressure on hospitals to compete for CS/SPD talent, stating:


Monique Jelks

"[There is a] rising need for traveling SP techs who fill the staffing gaps in many SPDs. Although traveling SP techs are an excellent resource to help SPD productivity and ensure instrument sets are available for surgery, they are not permanent. SP directors and managers must be intentional and aggressive with recruiting and training both experienced and inexperienced SP technicians. Hospital executives will also have to figure out how to compete financially with the healthcare traveling companies who recruit SP technicians."

Significant gender pay gap

Again, this year, the survey found male CS/SPD professionals earning significantly more on average than their female counterparts. The average annual salary for males surveyed was $88,170, compared with $59,468 for females; a $28,702 pay gap. Two likely reasons for this discrepancy are the much higher percentage of female survey respondents, which was 72% of total respondents compared with males at 27% (1% of respondents chose not to disclose their gender), and a handful of male respondents who reported very high salaries this year.

The degree debate

As in past years, average annual salary increases with level of higher education attained.

Those with post-graduate degrees reported the highest pay ($103,384), followed by Bachelor's degrees ($81,354), Associate degrees ($66,519) and high school diplomas ($56,310).

The CS/SPD profession has been making strides in expanding higher education opportunities in some parts of the U.S., according to Lucas Bonner, a Sterile Processing Consulting Director based in Houston.

"More hospitals are working with colleges in their communities to develop sterile processing course curriculum that is relevant to their CS/SPD operations. I have seen this trend growing in Miami, Seattle and Dallas in particular, with hospitals in those areas banning together to invest in higher education and offering student internships in their sterile processing departments."


Lucas Bonner

But education is also a hot button issue among CS/SPD leaders, and staff members without formal degrees who have worked many years in the field earning extensive hands-on experience that cannot be gained in the classroom setting. Some in the field report that they have seen seasoned CS/SPD professionals being passed over for leadership positions in favor of individuals with college degrees but little experience in the field.

"I've seen cases where a hospital is hiring for a CS/SPD director or manager position and will choose an individual with a degree and only a couple of years' experience over someone who has been working in the profession for years," said Amevor. "How can someone in a leadership position teach technicians when they don't understand the department or know how to do the job?"

Facility type, location matters

The type of facility and its geographic region continues to play a central role in how CS/SPD team members are compensated. Once again, those working in integrated delivery networks (IDNs) report the highest average annual salary of $89,148, followed by those working in teaching hospitals with a reported average salary of $79,535. CS/SPD professionals working in standalone hospitals earn

SALARY BY TITLE

CS/SPD Manager	23%	$86,756
CS/SPD Supervisor	19%	$58,863
Lead CS/SPD Technician	19%	$41,176
CS/SPD Technician/Coordinator	17%	$49,083
CS/SPD Director	8%	$139,867
Educator	6%	$65,500
Surgical Instrument Technician	5%	$55,055
CMDRT - Cert Medical Device Reprocessing Tech	2%	$45,833
OR Liaison	1%	$52,500

FEMALE		
High-School	34%	$56,106
Associate's Degree(s)	23%	$58,712
Bachelor's Degree(s)	11%	$60,775
Post-Graduate Degree(s)	4%	$89,357
MALE		
High-School	12%	$56,904
Associate's Degree(s)	6%	$98,650
Bachelor's Degree(s)	6%	$124,400
Post-Graduate Degree(s)	3%	$119,750

SALARY BY CERTIFICATION

Already certified	91%	$68,049
In the process of obtaining certification	5%	$60,277
Considering certification	3%	$51,500
Not certified	1%	$60,000

$58,070 on average annually, followed by those in surgicenters/ambulatory centers at $52,261.

Facilities in urban locations pay the most when it comes to the CS/SPD, with staff earning an average of $73,224 in 2022, followed by suburban facilities at $68,500 and lastly those in rural areas at $53,075.

While CS/SPD professionals in the Pacific region of the U.S. reported the highest average salary at $86,916 in 2022, they were not the biggest pay gainers, with pay remaining about the same compared with 2021 ($86,521). That designation goes to those in the Central Region with a 17% pay leap to $62,974 in 2022 from $53,539 in 2021. Those in the second highest region for pay, the Northeast, also saw a significant bump at $70,000 in 2022 up from $63,743 in 2021, a 10% increase.

The average annual CS/SPD salary in the Southeastern region saw the biggest drop at $53,541 in 2022 compared with $57,569 in 2021, a 7% decrease. Those in the Mountain region, which continues to be on the high range of CS/SPD pay, also reported a decline in annual salary at $67,148 in 2022 from $69,806 in 2021, a 4% decrease.

"Certain regions of the country pay far lower than they should," Bonner commented. "It is not surprising when a sterile processing technician making $13 per hour in a hospital quits and takes a job at a retail store paying $3 more per hour. Hospitals need to pay attention to salaries in their markets and compensate their CS/SPD staff fairly to maintain them."

Certification makes a difference

While the drive for certification among CS/SPD professionals is largely backed by the desire to perform reprocessing safely and effectively, as well as hospital mandates, putting some cash behind certification efforts doesn't hurt.

There was a slight uptick in survey respondents who are already certified at 91% in 2022, compared with 89% in 2021. The average annual salary for certified CS/SPD professionals is $68,049, compared with $60,000 for those who are not certified. On the flip side, while 70% of those surveyed said their employers require certification, only 19% said they are compensated for earning certification units/points.


Damien Berg

"In my system as well as the rest of the country, I'm seeing that if you tie quality outcomes and key performance indicators (KPIs), along with certification and education, there tends to be a rise in salaries of SP professionals," said Damien Berg, BA, BS, CRCST, AAMIF, HSPA's Vice President of Strategic Initiatives. His previous role was Regional Manager, Sterile Processing, for UCHealth in Northern Colorado, where he continues to serve in a consultant role.

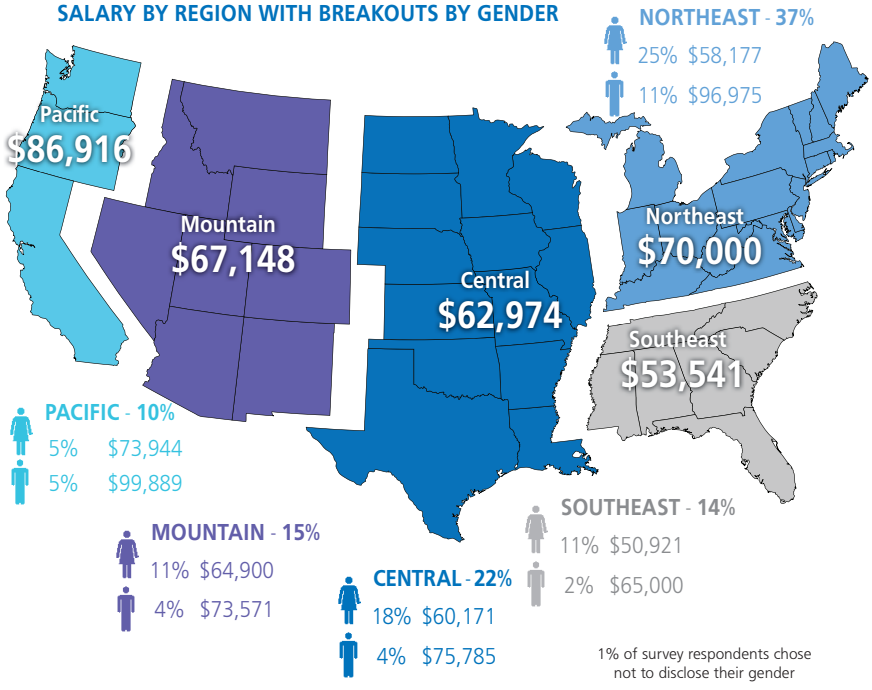
Siri Sorensen, MA, CAE, PMP, CMP, HSPA's Director of Certification and Membership, said the organization continues to see certification numbers trend upward, stating:

"In 2020, when the pandemic started, we did see almost a 25% loss in applications due to the inability for applicants to test, as testing centers were closed in light of the pandemic. In 2021, though, we were just shy of a 30% increase over 2020. Currently, we are closing in on our pre-pandemic 2019 levels."

Those holding certification from HSPA (formerly IAHCSMM) jumped to 76% in 2022 from 69% in 2021, a 10% increase, while those certified from the Certification Board for Sterile Processing & Distribution (CBSPD) held steady at 28%. Association for the Advancement of Medical Instrumentation (AAMI) certification, which is high on the list, dropped slightly at 21% in 2022 compared with 23% in 2021.

"The push of certification by accreditation bodies and the focus of the Sterile Processing areas throughout the medical industry has brought a new awareness that wasn't present prior to the pandemic," said Jan Prudent, BA, CRCST, CIS, CHL, CER, CFER, FCS, Sterile Processing Manager for Eastern Idaho Regional Medical Center in Idaho Falls and HSPA Board Member. "The issue now is that there is a shortage of qualified applicants and a need for bodies to perform the tasks at hand. Although I pride myself on raising the bar with certification, it is my opinion that with the staff shortage, quality and certification may be overlooked and corners could be cut."


Jan Prudent



A continued focus on continuing education

When asked about continuing education courses/lessons, 88% of respondents said they participate in 10 or more each year, which is about the same response as last year. But looking at those who participate in 20 or more annually, the percentage jumped to 44% in 2022 up from 35% in 2021, a 26% increase.

"As technologies advance and we learn more about the intricacies of the science of sterilization, the need for education continues to grow," said Natalie Lind, CRCST, CHL, FCS, HSPA's Director of Education. "Initial education and continuing education are critical to help ensure our practices provide the safest experience for our patients. Many Sterile Processing professionals have used this time to further their education, become certified, and enhance their skills. If there is one thing the


Natalie Lind

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Nearly 80% of all surgical procedures in the US today use electrosurgery to cut or coagulate tissue. One of the challenges in electrosurgery is keeping an uncoated electrode free and clear of eschar buildup during use. Removing eschar buildup requires a surgical pause, adding extra time to the overall procedure.

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pandemic has done for education, it has driven home the importance of infection prevention."

But not all continuing education courses/lessons are equal, cautions Thurmond.

"While more offerings are available, I am seeing some watered-down or especially brief content being offered for continuing education (CE) credits, which dilutes the value of education and diminishes the benefits for technicians. Patient safety and positive outcomes are our priorities, so it is important that SP professionals avoid taking the easy way when seeking education and CEs and instead pursue education that furthers their knowledge and professional development," he said.

There has been a shift to more virtual education because of the pandemic, which is a double-edged sword, explains Berg:

"Especially in light of the pandemic, we have seen more virtual education and training than ever before, which presents both positives and negatives. The positive it that it can be on-demand, occurring whenever the team has time; however, one of the negatives is we lose the human touch as well as the return demonstration or hands-on learning that is so vital to our profession. I believe a good mix of both virtual and in-person education is the new future of education, and HSPA will continue offering both to meet the needs of our members, certification holders and others within the SP profession."

In his work with CS/SPD departments across the U.S., Bonner has seen a greater focus on education, with more hospitals establishing permanent educator positions.

"Education became a very strong focus in early 2020 when the pandemic hit and has remained a priority in many institutions," said Bonner. "The need for CS/SPD departments to expand their roles and take on new responsibilities such as the reprocessing of single-use devices has been one driver."

"Another driver is state funding to hospitals for investing in education during the pandemic," he added. "California and Oregon have been leaders in this effort when it comes to sterile processing. For example, the University of California has hired permanent CS/SPD educators, in addition to directors and managers, in its San Francisco, Irvine and Los Angeles medical centers."

Department structures stable as roles change

There has been little reported change in CS/SPD reporting structure in the past year, with the following functions reporting directly to the CS/SPD head in their facility: Sterile processing (97%), decontamination (93%), case carts (64%), medical equipment cleaning/disinfection (43%) and GI/endoscopy (30%).

But COVID-19 has added new responsibilities and concerns related to the pandemic. When asked if they had implemented any new processes or procedures in their departments in light of the pandemic, survey respondents noted a number of changes. These include:

- Processes and equipment to reprocess single use N95 masks, powered air purifying respirators (PAPR) and controlled air-purifying respirators (CAPR)
- Rationing of supplies due to backorders/shipping issues
- Mandatory COVID-19 screening, mask wearing and vaccination
- Limited time off due to staff-shortages
- Guidelines for decontaminating equipment used in COVID-19 positive cases

"The biggest change I have seen is greater flexibility (changing shifts, hours, duties) due to the changing work and personal challenges and environment," said Berg. "Our workflow has not changed but it has created more of a focus on getting back

to the basics and doing what we know works best in our profession. I have also seen more recognition on what Sterile Processing does in healthcare facilities. This is the time to embrace that for positive changes in our pay, education and certification."

While the roles and responsibilities of CS/SPD professionals have changed over the years, many departments are still operating on outdated policies according to Bonner. Over the past two years, he has worked with 15 sterile processing teams across the country to update their policies and procedures, including salary updates that reflect cost of living and the increasingly advanced skills required to perform reprocessing on today's complex instrumentation.

"Hospitals are still working off CS/SPD policies set in the 1990s/early 2000s, including pay structures set decades ago," said Bonner. "Many have never even thought about updating them because they do not have a CS/SPD educator or manager to guide them, or leaders have been promoted from within and have limited visibility to what is happening to the field outside of their four walls. For those hospitals unwilling to change I ask, 'If Joint Commission came into your facility today would you be able to tell them your CS/SPD policies are up-to-date?"

Amevor has been a Sterile Technician Manager been for 11 years and frequently consults with U.S. CS/SPD departments, both remote and on-site, providing coaching, project management and other services.

"You need someone very knowledgeable to update the policies and a good team to help ensure they are passed through," he said. "Policies must go through review from so many different committees within the hospital and are typically approved by someone not in sterile processing. CS/SPD leaders must be prepared to answer questions from these stakeholders as to why things must be done in a certain way."

Salaries need to keep pace with technological development, according to Prudent. "As technology of instruments and complexity of cleaning/sterilizing equipment evolves, the amount of knowledge and work increases for the Sterile Processing technician," she said. "Salaries have increased but so have the other [salaries] throughout the employment scene. I feel that the increases that happened at the beginning of the pandemic were timely and much needed. The problem is that time has elapsed, and we are now lagging behind again."

CS/SPD technology and process trends

HPN continues to track growing trends in the CS/SPD profession, asking survey respondents if they have implemented new and emerging technologies and processes aimed at reprocessing effectiveness, efficiency and safety. Here is what those surveyed reported this year:

- **Big changes in IFU methodology:** The most significant reported change was in instructions for use (IFU) methodology, with 16% of those surveyed saying their facilities have made changes, which is double the number from last year (8%). Below are some of the reported changes:
  - Reviewing IFUs prior to purchasing new products
  - Referring vendors and physicians to IFUs when discrepancies arise
  - IFUs required for all loaner sets
  - The addition of new sterilization, extended wash and ultrasonic cycles
  - Efforts to convince leadership that other departments beyond the CS/SPD are also responsible for following IFUs
- **Track-and-trace system usage holds steady:** The majority of those surveyed

say their facilities use such a system (62%) or are currently in the process or planning stage (6%), which is unchanged from 2021.

- **Efforts on emerging disease safety dip slightly:** Two years into the COVID-19 pandemic, fewer survey respondents said they have a safety training program in place for handling instruments for patients with suspected emerging diseases (46% in 2022, 49% in 2021), and there was a slight dip on those in the planning stages (3% in 2022, 4% in 2021).
- **Sterile processing workflow management systems grow in popularity:** More departments reported using workflow management systems this year, with 53% saying "yes" compared with 46% in 2021.
- **Reprocessing related outbreak measures continue:** Similar to last year, nearly half (46%) of survey respondents reported that their facilities had put new measures in place.

While the survey did not include questions related to robotic surgery, those interviewed commented on increased use of the technology and its impact on the CS/SPD department.

"We do continue to modify our workflows to be more efficient and we are seeing some more technology, such as robots for total knees and DaVinci robot rooms, increasing," said Bohlman.

"Robotic instrumentation is booming, with the promise of a new surgical procedure standard that produces faster surgery with less hospital stay," said Jelks. "Even smaller community hospital surgeons are trained to this technology. Robotic instruments require more critical thinking skills for technicians as they have very complex reprocessing steps from decontamination to sterilization."

Strengthening the sterile processing profession

While the CS/SPD profession is making tremendous strides in generating increased recognition and respect within the healthcare field, it is clear that much work still needs to be done, particularly with regards to compensation.

CS/SPD professionals offer their thoughts on what needs to be done to further advance the profession.

Call on hospital leaders

"While most hospitals recognize the efforts of nursing staff during National Nurses Week (NNW), they rarely acknowledge Sterile Processing Week," said Bonner. "I call on hospital leaders to acknowledge the important work of their CS/SPD teams. Most hospitals also fail to reward sterile processing staff members who maintain their certification, while the award annual bonuses to nurses who do. While hospitals may invest in sterile processing education, they neglect the compensation part of the equation."

Thurmond agrees. "SP professionals should continue to provide excellent service and look for opportunities to show their worth to their organizations," he said. "They should invite members of the C-Suite to the department for a visit and present their successes and challenges and share what keeps them awake at night. For so long, we have been the 'unseen heroes.' It is more than time that we are seen and recognized for our role in patient care, and there are many things we all can do to move the needle in a positive direction."

Demonstrate value

"We must continue to improve ourselves and our profession daily, said Berg. "Yes, it is about the patient and about providing the best in reprocessing, but we need to tell our story through data and quality outcomes. We must be known for our knowledge and expertise regarding instrumentation and reprocessing, and how we make a positive and proven impact to the hospital, department and profession."

"Once we show this worth, asking for better things and more recognition becomes easier," he added. "I can say from personal experience that showing your team how important they are and listening to feedback and ideas is critical and will help with staff satisfaction and retention."

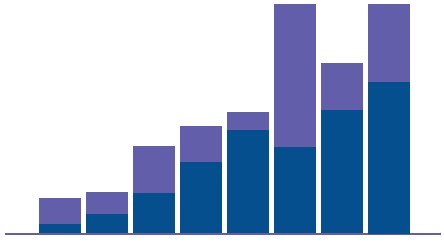
Stay on top of the game

"The biggest statement an SP technician can make to improve the state of the profession is to become certified," said Jelks. "Second to certification is joining an SP professional organization such as HSPA (myHSPA.org). Last but not the least, to improve the state of the profession, we must stay educated and current with trends and standards, which can be achieved by reading recommendations and journal and magazine articles, including HSPA's PROCESS magazine. Whatever becomes the latest trend for surgery also becomes our responsibility to keep patients safe."

Prudent encourages CS/SPD professionals to empower themselves. "Communicate with others, stand up for the patient and what is right, pursue your own education and promote the profession," she said. "Become a member of Healthcare Sterile Processing Association and join the team of committees to raise the bar on patient safety. There is safety in numbers and everyone in the field has something to contribute. Become passionate and become a volunteer and patient advocate. You are needed!" HPN

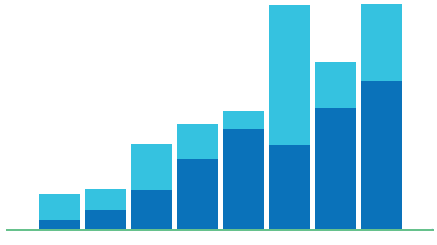
SALARY BY TYPE OF FACILITY

Hospital, Standalone	48%	$58,070
Hospital, Teaching Facility	24%	$79,535
Surgi-Center/Ambulatory Center	15%	$89,148
IDN/Alliance/Multi-group	12%	$52,261
Clinic	1%	$57,500
Long-Term Care Facility/Home Healthcare	1%	$37,500



SALARY BY TIME IN CS/SPD

Less than 2	3%	$46,500
2 - 4	4%	$46,428
5 - 9	14%	$53,300
10 - 14	18%	$63,703
15 - 19	15%	$63,865
20 - 24	18%	$67,306
more than 25	29%	$82,362



SALARY BY TIME AT FACILITY

Less than 2	12%	$59,772
2 - 4	21%	$73,027
5 - 9	19%	$76,333
10 - 14	19%	$62,705
15 - 19	10%	$66,000
20 - 24	8%	$53,214
more than 25	11%	$67,105

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Certification

The CBSPD (Certification Board for Sterile Processing and Distribution) has pre-approved this in-service for one (1) contact hour for a period of five (5) years from the date of original publication. Successful completion of the lesson and post-test must be documented by facility management and those records maintained by the individual until recertification is required. DO NOT SEND LESSON OR TEST TO CBSPD. For additional information regarding certification, contact CBSPD - 148 Main Street, Suite C-1, Lebanon, NJ 08833 • www.cbspd.net.

HSPA (Healthcare Sterile Processing Association, https://myhspa.org) has pre-approved this in-service for 1.0 Continuing Education Credits for a period of three years, until February 10, 2025. The approval number for this lesson is **STERIS-HPN 221002**.

For more information, direct any questions to *Healthcare Purchasing News* (941) 259-0832.

LEARNING OBJECTIVES

1. *Explain the importance of the manual cleaning process*
2. *Understand the effects of poor manual cleaning*
3. *Discuss general elements for a robust manual cleaning process*

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SELF-STUDY SERIES

Manual cleaning – the critical human element

by Cody McElroy, MBA, CSPM, CSPDT

Most of us perform manual cleaning every day. Picture a sink full of soapy water, a washcloth or sponge, a scrub brush and some steel wool pads, and a pile of dirty dishes, pots, cups, utensils, and cooking tools on the counter. Even if you use an automatic dishwasher, you may need to clean off the stuck-on food before you put the items into it, or they won't get completely clean. It takes time and effort to be sure your dishes and cooking tools are ready for their next use.

Now imagine a basin full of soiled surgical instruments waiting beside a sink. These delicate, complex tools have been inside a living human body repairing damage, removing infected or cancerous tissue, or diagnosing illness. Now they must be readied for the next surgeon or specialist who will need them to help the next patient. Clearly, this job is not as simple as washing your household items. Manual cleaning in a hospital sterile processing department (SPD) is a specific, complex, and labor-intensive process that cannot be taken lightly. Although technology and automation are integral to the instrument processing workflow, the manual precleaning process can't be automated – it requires a careful human touch.

Manual cleaning is serious business

Manual cleaning is arguably the most critical step of the cleaning process. To effectively clean a surgical instrument, technicians must remove all blood and soil. Blood, like other liquids, tends to flow over and into joints, hinges, grooves, and other difficult-to-clean locations. Unlike other liquids, the sticky blood (possibly mixed with other residual soils) then coagulates and dries into these grooves and joints, which creates a major cleaning challenge. "Any organic material or residual cleaning agents remaining on an item can inactivate chemical disinfectants or sterilants [and can] … protect microorganisms from destruction," according to ANSI/AAMI ST79:2017. Blood is not the only soil that must be removed from surgical instruments. Technicians must identify and remove a variety of biological and procedural soils, many of which require specific techniques.

Cleaning as part of the sterile processing cycle is defined as the "removal of contamination from an item to the extent necessary for further processing or for the intended use."[1] Instrument decontamination is a two-step process, and the first step is manual precleaning. Technicians must remove all gross soil during this

Figure 1: Cleaning is the first step in decontamination.

step or the subsequent reprocessing steps may not be effective.

Steps of the Cleaning Process:[1]

- Sorting: items such as utensils, basins, sharps, non-immersible items, and powered equipment are grouped separately to facilitate the cleaning process and help prevent damage to instruments.
- Disposal: used single-use instruments and other items are removed from the basins and trays of soiled reusable instruments.
- Pre-rinsing/pre-soaking: reusable devices are moistened and/or soaked in a cleaning solution to loosen soil on the surfaces of items. Although general detergents can be used, enzyme detergents are preferred for this process.
- Washing: each device is cleaned manually or mechanically, following the manufacturer's instructions for use (IFU) and using a process specifically designed for surgical instruments.
- Rinsing: critical water (water treated by deionization, reverse osmosis, or distillation) is used to remove all soils and solutions.
- Drying: using a non-linting cloth, instrument air and/or medical device drying systems, devices are thoroughly dried to prevent potential recontamination from residual moisture.
- Inspection: once cleaned and dried, each device is examined with bright light and magnifying tools to ensure that it is, at the very least, visually clean.

Sterile processing staff understand that the decontamination station is no ordinary sink. All soiled items that come into this space must be handled as if they represent a significant health risk (also known as standard precautions) because of the potentially infectious materials that may be on the items waiting to be processed.

Moreover, manual cleaning is a double-edged sword because in addition to following their department's written policies and procedures (which typically align with national standards), technicians must follow the specific IFU provided by device manufacturers to safely reprocess each device. Some instructions may require 20 or more individual steps to completely clean the surgical instrumentation and skipping even a single step in the process could leave soil behind. In addition, the process must be performed consistently on each device, and by every technician, to assure optimal decontamination results.

Surgical instrument design varies greatly, and technicians must use the proper cleaning tools for each device. The most basic cleaning tool, the cleaning brush, comes in 10 or more different styles, a variety of lengths and diameters, and has bristles made of stainless steel, copper, or soft nylon. Using the wrong cleaning brush can damage devices or may not remove all soil. A common brushing error is using an abrasive cleaning brush on soft metal or plastic instrumentation. The resulting surface scratches create pits and groves that trap soils and microorganisms and impede the next step in the process (disinfection or sterilization).

Consequences and contributors to poor cleaning

Any failure to effectively clean surgical instruments before placing them in a mechanical washer or sending them over to the clean side for inspection and assembly can present risks to the patients we as healthcare professionals all serve. Surgical site infections (SSIs) due to improperly cleaned surgical instruments can be deadly to patients. A 2012 study from the National Center for Biotechnology Information reported a spike in surgical site infections related to dirty surgical instruments. In this study, 20% of the patients became sick, and *Staphylococcus sp.* bacteria were found on the instruments and in the surgical packaging.[2] In addition to infections, foreign materials such as bone and blood can cause allergic reactions or inflammation, and can potentially lead to anaphylactic shock.

Factors that can negatively impact the cleaning process include water quality, water temperature, cleaning chemistries, type of soil, human factors, and poor quality assurance. For example, medical devices such as endoscopes with lumens and robotic arms with channels must be manually cleaned to ensure that the lumen/channel is clean and free of any debris. If the department has hard water that is not treated (water quality), the chemistry they use may not work as effectively. If the wrong cleaning chemistry is used for the soils on the device (cleaning chemistries, soil type), some soils may not be fully removed. Then, if the lumens are not thoroughly flushed with critical or deionized water (water quality), pyrogens and biofilm can collect inside the lumen. If these cannulated items aren't properly inspected after cleaning (quality assurance, human factors), bioburden may be missed and may become fixed onto internal surfaces during the sterilization process. Any residual soils can lead to bacterial colonies called biofilms forming within the instruments. Those biofilm-covered surface areas will not receive sterilant during the sterilization cycle and will retain organisms within the biofilm that can infect the next patient on whom the device is used.

In addition to these direct risks, there are indirect risks and consequences that can negatively impact the surgical department and the hospital's bottom line. SSIs can cost hospitals valuable time spent notifying patients, correcting poor habits, and re-educating staff. They can also cause lost operating room time which can also affect revenue. According to an article published by Eloquest Healthcare, "While costs of an SSI vary widely based on the degree of infection and the site of surgery, the estimated average cost of an SSI can be more than $25,000, increasing to more than $90,000 if the SSI involves a prosthetic implant. Overall, SSIs cost the US healthcare system an estimated $3.5 to $10 billion annually."[3]

The impact of patient infections does not stop with the patient and costs associated with treating that patient. As the lawsuit filed by 67 patients of Adventist Hospital in Denver shows, infectious outbreaks caused from improperly cleaned surgical instruments can impact hospitals financially and reputationally. The 67 patients alleged that their surgical site infections were caused by dirty instruments. Investigation by state officials confirmed 76 instances in which dirty instruments were found in the operating room.[4] Even if the hospital settles the lawsuit before it goes to trial, community distrust could drive patients, and their revenue, away from the facility.

Developing a robust manual cleaning process

Because a department's manual cleaning functions have a direct impact on the health and safety of patients, it's essential that every SPD establishes a robust manual cleaning protocol.

Physical setup

A best-practice protocol begins with an optimal workspace. First and foremost,

Self-Study Test Answers: 1. D, 2. A, 3. B, 4. A, 5. C, 6. C, 7. A, 8. D, 9. D, 10. C

ensure that your decontamination area is up to code in terms of physical parameters like negative air pressure, ambient temperature, and a dirty-to-clean workflow. Next, have the appropriate personal protective equipment available and confirm that all staff can properly put on and remove the PPE. Ensure that task lighting is appropriate and work surfaces and equipment provide ergonomic support. It may also be worthwhile to consider a pass-through window so that manually cleaned and rinsed items can be passed directly through to the prep and pack area.

Follow instructions

Once the physical parameters are met, all IFU should be reviewed to ensure that surgical instruments are being effectively cleaned according to their respective instructions. IFU for all the instruments in the department's inventory should be easily available and accessible to technicians, whether in paper form or electronically.

Next, ensure that all cleaning tools, like brushes, are appropriate and available, and review the tools' IFU. Be sure that all instructions for cleaning and disinfecting each tool are being followed. Also, review the IFU for the cleaning chemistries being used in the department. Check to make sure technicians are meeting temperature, material compatibility and application requirements.

To assure that instructions are followed completely and consistently, they must be fully understood. If a device's instructions are not being followed, a tutorial may be called for to refresh everyone on the IFU. And whenever new instruments or manufacturers are introduced to the sterile processing department, an in-service should be provided on the instructions to assure proper processing of the new items.

Train staff well

In many departments, change is constant. SPD staff may change, and when technicians leave, their reprocessing knowledge specific to your department leaves with them. New people will have to learn your way of doing things. Instruments may change or be replaced with newer versions. When surgeons request new devices, everyone needs to learn how to reprocess them. To address ongoing changes, it's critical to ensure that you have a robust competency-based education and training program in place, and that you regularly audit or inspect for compliance. Your competency program should be based on your department and facility policies and procedures and each specific device's IFU. It's also helpful to have a record-keeping method in place to verify competency and document completed training and education. This can be recorded in your tray tracking system or on paper.

Competencies should be performed on an annual basis by a department educator or leader. If your department and team are large, it can be helpful to perform competency reviews on each employee's date-of-hire anniversary to avoid having to evaluate a large group all at one time. Competency checklists must also be reviewed and revised/updated periodically to keep up with changing instrumentation and IFU.

Engage your stakeholders

Actively engaging other departments that depend, in part, on your success can also prove to be extremely beneficial. Their knowledge, expertise and feedback can add value and help the SPD align with infection control standards and guidelines. Experts to collaborate with include representatives from infection control/prevention, facilities, surgical services, and patient/staff safety.

Manual cleaning matters

Improving patient safety is everybody's responsibility in a healthcare facility. However, reprocessing teams charged with disinfecting reusable surgical and diagnostic devices used on numerous patients are even more accountable for protecting those patients by doing their jobs extremely well.

Because the health and safety of patients and staff are at stake, manual cleaning cannot be taken lightly. It's the first and most critical step in the decontamination/sterilization cycle, and if it's not performed well, every step that follows is at risk of failing to achieve a device that's safe for reuse. Hospital leaders who invest in SPD education, people and resources will help ensure a successful patient outcome and a healthy bottom line for the hospital. But never forget that optimal patient safety also rests in each technician's two hands. **HPN**

Figure 2: Staff must be competent in all aspects of cleaning and inspection of surgical instrumentation.

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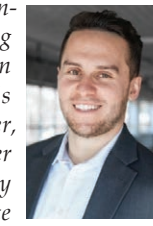

Cody McElroy is the manager of sterile processing and high-level disinfection at University Hospitals Cleveland Medical Center, a Level One trauma center with over 500 beds. Cody has a BBA from Kent State University and an MBA from Cleveland State University. He also holds CSPDT and CSPM certifications from CBSPD. Cody also teaches the sterile processing program at Cuyahoga Community College in Cleveland, Ohio.

CONTINUING EDUCATION TEST • MARCH 2022

Manual cleaning – the critical human element

Circle the one correct answer:

1. **What is the first step of the decontamination process?**
   a. Assembly and packaging
   b. Inspection
   c. High level disinfection
   d. Cleaning
2. **What type of water is used to rinse surgical instrumentation?**
   a. Critical Water
   b. Tap Water
   c. Water with added copper
   d. Any type may be used
3. **What can residual soil do when left on an instrument?**
   a. Kill microorganisms
   b. Inactivate chemical disinfectants
   c. Enhance sterilization
   d. Protect the instrument from damage
4. **What was the root cause of infection at the National Center for Biotechnology in 2012?**
   a. Dirty surgical instruments
   b. Poor surgical technique
   c. Expired antibiotics
   d. Malfunctioning sterilizer
5. **Which is a factor that affects cleaning?**
   a. Type of sterilizer used
   b. The packaging materials
   c. The quality of the water used
   d. The surgical procedure
6. **About how much can the US healthcare system spend on surgical site infections annually?**
   a. $25,000
   b. $90,000
   c. $10 billion
   d. $3 trillion
7. **What should be accessible to the technicians who are precleaning surgical instruments?**
   a. Instructions for use
   b. Sterilizer's operation manual
   c. Operating room's procedure list
   d. Risk assessment
8. **When developing a robust manual cleaning process, which other departments should be engaged?**
   a. Infection control/prevention
   b. Facilities
   c. Surgical services and patient/staff safety
   d. All the above
9. **Which tools are used to develop staff cleaning competencies?**
   a. Surgical instrument IFU
   b. Facility policies and procedures
   c. Cleaning chemistry IFU
   d. All the above
10. **How often should competency evaluations be performed?**
    a. During onboarding
    b. On staff birthdays
    c. Annually
    d. Every 5 years

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The approval number for this lesson is **STERIS-HPN 221002**.

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Many SPDs struggling to fill vacant positions

How to retain top talent to keep quality, safety at forefront

David Taylor III, MSN, RN, CNOR

Many Sterile Processing (SP) leaders are struggling to retain and recruit high quality, experienced and certified technicians, which makes it increasingly challenging to complete critical responsibilities and meet daily productivity requirements. Not surprisingly (and especially in light of the pandemic), facilities are experiencing a greater need for traveling SP technicians (in some organizations, travelers now account for 25-50% of the SPD's team).

The SP discipline requires highly skilled individuals who can critically think and problem solve even the most minute details. Unfortunately, some senior administrators and human resource (HR) leaders still view an SP technician's role as "entry level" and are reluctant to allocate adequate resources to attract high-quality technicians and provide career ladder growth opportunities, reasonable wages and other incentives to increase job satisfaction and employment longevity. Although traveling technicians can help fill critical vacancies and keep the department running at capacity, there are steps facilities should take to keep quality, safety and positive outcomes the number one priority.

Choosing a reputable agency requires due diligence to help SP leaders sort through viable candidates more effectively and efficiently. For example, an agency that knows the hiring organization and its culture can help provide a better fit with the travelers they provide for the interview process. Reputable agencies should know their candidates and provide those who have minimum levels of experience with validated competencies (and, ideally, those who are certified). They should also prescreen their traveler candidates (ensuring background checks and drug screens are completed prior to arrival); require annual physical examinations to declare traveling technicians fit for duty (including ensuring immunizations are current); have a current Basic Life Support certification that will not require renewal while on assignment; ensure certifications are up to date (or will be managed by the traveler and not require special accommodations from the hiring organizations, such as time off or other assistance); and be able to provide a replacement traveler within a specified period (i.e., 24 to 72 hours) in the event the traveler must leave suddenly or is let go by the healthcare organization.

In the near term, travelers may be the answer to cover vacancies; however, reasons behind the staffing shortage of permanent employees must be proactively addressed. The time it takes to find, interview and onboard new employees and travelers costs more than dollars. One bad outcome can jeopardize staff and patient safety and negatively impact the organization's reputation. What follows are some strategies SP leaders can adopt to retain their top talent.

Give thanks

- Recognize staff members for their hard work and accomplishments. This can include handwritten notes, printed certificates, recognition in the facility's newsletter, and verbal recognition during staff huddles and interdisciplinary meetings.
- Consider alternative approaches to retain and recognize the SP team (e.g., career ladder and mentoring programs, pay increases and elevated titles for certification attainment, and facility- or departmental-provided awards).
- Offer monetary tokens of appreciation such as gift cards, movie tickets, meal tickets to the organization's cafeteria, or concierge services such as dry cleaning or car washes.

Prevent burnout

- Create a secure and consistent work environment.
- Treat everyone equally, set realistic and understood expectations and validate performance standards.
- Take an active role in helping staff members throughout the day (rounding the departmental areas frequently and assisting on the floor as needed).
- Explore in-house counseling services for those feeling overwhelmed, exhausted and stressed (a common issue seen over the course of the pandemic).

Take a closer look at compensation

- Tie annual pay increases to performance.
- Create a tiered bonus structure.
- Incentivize extra shifts and offer shift differentials or on-call pay opportunities.
- Compensate those who are certified (ideally, pay should increase with the number of certifications held; even modest increases can improve retention).

Foster professional growth

- Consider offering in-house education and training support to assist those seeking certification or advancement within the department.
- Encourage local chapter involvement and participation in annual conferences.
- Offer tuition reimbursement for secondary education.

Conclusion

When it comes to staffing concerns and mitigation, SP leaders should think long term and remember that challenges pertaining to staffing, compensation and respect for the work performed in the SPD existed long before the pandemic. Senior administrators and SP leaders need to consider the value their SP team members bring to the table each day and use innovative thinking and strategies to keep more of their existing technicians, while ensuring that any vacancies are filled by the very best candidates who will fit with the organization's culture and keep quality and safety at the forefront.

David Taylor III, MSN, RN, CNOR, is an executive healthcare consultant for Resolute Advisory Group LLC, based in San Antonio, Texas. He has served as a contributing author for HSPA since 2019.

I can hear you clearly

by Stephen M. Kovach

Q I worked at a different medical facility, and they provided ear protection. What does ANSI/AAMI ST79 say about this? Because where I am now, they do not provide any ear protection.

A Your question is centered on ANSI/AAMI ST79 and what it states about noise exposure and protections for staff. In reviewing ST79, AAMI does not currently address this topic, but may in the future. So, let us look at what standards would address any staff members' concern(s) about noise exposure?

As with anything concerning workers' safety, each medical facility (and the department within that facility) should conduct a risk analysis of where all employees work. This is outlined in the Occupational Safety and Health Administration (OSHA) standards.

Under the regulation [29 CFR 1910.95(i)(1)], OSHA requires that employers shall make hearing protectors available to **all employees exposed to an 8-hour time-weighted average (TWA) of 85 decibels or greater at no cost** to the employees. Hearing protectors shall be replaced, as necessary.

A safe or acceptable noise level for constant exposure is **68** decibels **(dB) or below**. The decibel is a unit used to measure the intensity of a sound. Hearing damage can occur when exposed to a constant background noise of 80 to 90 dB.

You may have worn ear protection while working in the decontamination area. That makes sense, and I have seen ear protection increasingly used in departments from simple orange earplugs to full headphone ear protection provided to all staff members.

Think about this. You have noise being created constantly by:

- Instrument washers
- Cart washers
- Ultrasonic cleaners
- Case carts coming and going
- Water running.

It makes sense to see what the decibel-level is (not only in the decontamination area but whole department). You can also check with the various manufacturers of the equipment used in your department for a decibel rating and make that part of your request for proposal (RFP) when looking at buying equipment.

My suggestion is to work with your risk management department and department management team to ask for noise levels to be measured in your department. This provides documentation and helps instate a policy and program to protect workers hearing safety.

It is worthwhile to note Apple iPhone iOS 14 users have a new Settings option called "Headphone Safety" (Fig. 1). The "Reduce Loud Sounds" option empowers users with an extra means of hearing protection (required in certain regions), by setting a desired decibel-level to your headphones/audio buds. Mine is set at 75 decibels (as loud as a vacuum cleaner). If the user exceeds the set level over a seven-day limit, they will receive notification and the volume automatically reduced.

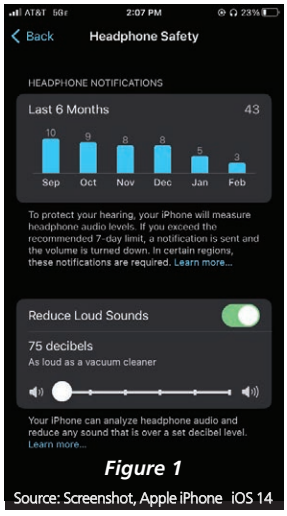


Figure 1

Source: Screenshot, Apple iPhone iOS 14

Q Can you explain the difference between the push and the pull method for using a brush to clean medical devices?

A Brushing a medical device is dependent upon the brush selected and the device to be cleaned.

- Brush with a loop on its proximal—only use the push-type method.
- Brush without a loop—use either a push or a pull-type method.

The Push Method is the method most people use. This method is used when a brush has a loop on its end or the lumen is dead ended, thus you cannot use the pull method. While it is effective, it does have its drawbacks. Cleaning by pushing the fiber end of the brush through first creates a series of jerky and inconsistent movements within the shaft. This problem does not occur with the pull through method. Using the push cleaning method also creates a natural bending of the shaft (Fig. 2), which wears on the brush.

The Pull Method (traction) is my personal preference (when possible) for brushing a channel that has two-open ends. Insert the non-brush end into the less contaminated side of the channel. Once the shaft tip appears on the other side of the channel, pull it through. This allows for proper and continuous cleaning of the inner channel for medical and surgical instruments (Fig. 3). The physics of brushing with this method reduces the stress on the shaft allowing energy to focus more on the brush and not be lost in the bending of a shaft, which can happen with the push method.

Remember, when possible, with either method, try to twist or turn the shaft as you go into the lumen. This additional friction is important when cleaning any medical device. HPN

Visit https://hpnonline.com/21256368 for references.

Brush type	Method type	Advantages/Drawbacks
Loop on proximal end	Push only	• Effective cleaning method • Jerky/Inconsistent movements within shaft • Natural bending of shaft (wears on brush).
No loop	Push or Pull	• Preferred (Pull) brush method • Reduces stress on wand • Allows energy to focus on brush (not lost bending shaft).

Push Method

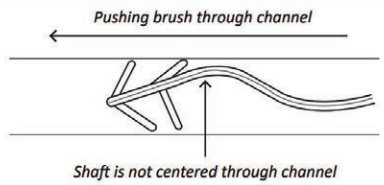


Figure 2

Pull Method

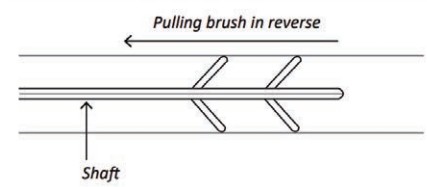


Figure 3

Rooting through RTLS options, opportunities

by Rick Dana Barlow

Photo credit: Blue Planet Studio | stock.adobe.com

At one point in time not so long ago, tracking and tracing everything was more of a luxury, if not a novelty.

Today, it's nothing short of a necessity, if not standard operating procedure by a majority of healthcare organizations.

Nearly five decades ago, bar coding insinuated itself into the pen-paper-clipboard procedural triumvirate, proving to be more efficient – even when sticky notes emerged a few years later.

The turn of the millennium, however, saw the rise of multi-dimensional bar coding (2-D and 3-D to start) and radio-frequency identification (RFID), the latter of which became a prominent modality within the overarching category of Real-Time Location Systems (RTLS).

Primary RTLS signal modality options include RFID via Wi-Fi or Ultra Wide Band (UWB), infrared (IR), ultraviolet (UV) and ultrasound (US). The emitted signals move through active, passive or hybrid chips or sensors on wireless networks.

All of this presents a plethora of choices for healthcare organizations – supply chain in particular – as well as strategies and tactics for how to adopt and implement these technological selections. For example, should a healthcare provider organization go all-in on one particular signal modality for tracking and tracing people, processes, products and equipment? Or should they apply specific signal modalities to certain tasks in a nod to a "best-of-breed" philosophy and which functional signal transmission vehicle makes the most sense?

Scanning the landscape

Technically, RTLS can be separated into three or more categories, according to Shawn McBride, Vice President and General Manager, Cardinal Health WaveMark.

McBride categorizes RTLS as real-time tracking of people (employees, patients, and visitors), real-time tracking of capital assets (wheelchairs, beds, infusion pumps), and real-time tracking of one-time-use supplies (stents, balloons, implants, sutures). "Each of these different categories can be accomplished with several technologies, and some technologies are more suited than others to each category," he said.

WaveMark specializes in tracking one-time-use supplies, according to McBride. "We are technology-agnostic, so we will use any technology that is appropriate for the workflows of our customers," he said. "We have found that RFID is well-suited to tracking supplies, so we have developed expertise in multiple types of RFID, but we also capture data with bar codes, and we will continue to look for new and evolving technologies."

One useful metric for determining the best technology for a use-case is the total number of entities to be tracked over how large a physical space, McBride recommends.

"For WaveMark's medical device tracking, it is typically tens-of-thousands devices held in a relatively small area – for example, a storage room in the OR Core," he noted. "For this, RFID is perfect because the transponders are low-cost, they are engineered to work smoothly in dense tag environments, they do not require line-of-sight, they don't need a battery and they are small, so they don't take up more valuable hospital space. These benefits result in enhanced, more efficient workflows for our end users. Examples include very fast, highly accurate cycle-counting, faster clinical documentation with reduced errors, more efficient exception management of products including areas of product reordering, identification and finding missing products, and expiration and recall management."

McBride acknowledges that facilities might want technology capable of tracking hundreds of people throughout an entire hospital.

"For this use-case, it is okay for the transponders to be a bit bulkier, it is okay for them to be higher cost – because you don't need 10,000 of them – and the system may benefit from having a battery inside of each transponder so they can communicate at longer distances," he said. "Understanding these constraints leads to the possibility of using many different technologies, including Wi-Fi beaconing, low-energy Bluetooth, IR, ultrasound, active RFID, passive RFID (no battery) or any of several others. Each of these has its own advantages driven by matching the capabilities of the technology to the requirements of the use-case."

In addition to tracking people, RFID is key to tracking workflow and fortifying the documentation process, according to McBride.

"It's hugely beneficial to optimizing your staff supply chain and optimizing your product and supplies inventory tracking with real-time status updates," he said. "RFID also supports clinician documentation at the point of care by automatically recording product details used on a patient into their record and ensuring the appropriate documentation steps are taken during a surgical procedure. Because RFID provides visibility to a product throughout its lifecycle within the health system, RFID can also help alert management to issues with staff workflow compliance. For instance, if a product isn't being documented as 'used' at the point of care but has gone 'missing' from inventory, you can identify the last place the product was 'seen' and what case it should have been associated with. This visibility allows you to mitigate when human error occurs and document appropriately."

Big picture

Joe Pleshek, President and CEO, Terso Solutions Inc., views the options more comprehensively.

"At Terso we see RFID-enabled inventory management, RTLS, patient tracking and the numerous automation opportunities to be part of a broader digital transformation called the Real-Time Healthcare System (RTHS)."

Joe Pleshek

Pleshek describes this RTHS vision as arising from the fundamental need to improve access to care, patient safety, efficiencies and lower costs. He sees it as enabled by Internet of Things (IOT) technologies as well as an increasingly mobile, connected, collaborative and remote workforce.

"RTHS disrupts the classic care delivery model by using real-time information and communications to be more proactive and less reactive," he said. "The key aspect to the RTHS is situational awareness – knowing the location of people (patients, clinicians, and care team members) and resources, such as medical devices and equipment, at all times during the patient experience. The concept of situational awareness involves sensing, collecting, analyzing and using state and event data to proactively reduce response times, introduce efficiencies, adjust priorities and match resources with demand to improve service levels."

Pleshek labels location-aware technologies, such as RFID, RTLS and GPS, coupled with cellular, Wi-Fi and Bluetooth capabilities, vital to achieving situational awareness because they are able to determine the geographical position of a person or thing.

"Aside from being able to track the exact location of a patient, a doctor, or an asset such as a ventilator, many of these same technologies can be used to monitor temperature, humidity, light, movement, low-battery situations and hygiene complaint areas within hospitals," Pleshek continued. "The RTHS uses up-to-date information from these technologies to remove delays in the management and execution of critical business processes including inventory management, asset tracking, patient and staff tracking, facility utilization and scheduling to name a few."

Terso leverages RAIN RFID passive technology to help healthcare providers track products and assets throughout their facilities by creating situational awareness about each item, according to Pleshek. This includes location, condition (e.g., temperature), clinician usage and expiration date alerting.

"RFID provides a standards-based and proven technology solution for many items especially high-cost inventory and assets," he said. "While RFID is a great fit for many applications, we believe additional 'best of breed' sensor technologies play an important role in realizing the benefits of the RTHS."

In context of the RTHS, Pleshek recommends that healthcare providers develop a clear and comprehensive understanding of the most important requirements and use cases that contribute to operational efficiency, care quality and a positive patient experience as they make their decisions. Once these requirements and use cases are understood and prioritized a road map for the deployment of location and condition sensing technologies, like RFID, can be established and implemented, he adds.

Assessing possibilities

RFID may be a clear and popular choice for RTLS applications, track-and-trace technology experts also provide insights to other options in the electronic toolbox.

"When tracking processes and products, RFID is one of the best and most cost-efficient applications," indicated McLeod Williamson, Intelligent Edge Solutions (IES) Specialist for the Government and Healthcare teams in North America, Zebra Technologies Inc. "Passive RFID can track patients, staff and even visitors – and can even provide room-level visibility. Tag costs are low, and there are no batteries in the tags that require monitoring and replacement. Reader infrastructure can be varied to meet the needs of each workflow; though cost of infrastructure can exceed that of other technologies when room-level visibility is needed in larger facilities."

McLeod Williamson

Williamson sees Bluetooth Low Energy (BLE) as a viable option, too.

"When comparing it to passive RFID, the tag cost is higher, but the infrastructure needed to grow is much lower," he noted. "BLE also offers the advantage of covering more area if proximity is a concern. That being said, highly accurate, room-level visibility is more of a challenge when using BLE over RFID, although developments are being made to improve this."

For tracking processes, products and workflow, however, Williamson still favors RFID.

"It can help support motion tracking through transition points and is ideal for processes that move through the same choke points or are limited to a smaller area where fixed infrastructure or mobile readers are being deployed," he said. "The same can be said of RFID being used to track products, especially when tag cost and lifespan is considered. Long-term assets or disposable inventory both benefit from the use of RFID tags when compared to more expensive tagging solutions that only last 1-2 years. Additionally, room-level visibility is rarely essential when tracking assets. This allows for a smaller deployment of fixed RFID readers supplemented by mobile handheld readers, reducing the cost of infrastructure while enabling hospitals to optimize their asset management efforts."

HT Snowday, Vice President, Innovation and Technology Development, Midmark RTLS Solutions Inc., expresses support for RFID and infrared (IR) as useful for tracking people, processes, products and equipment.

HT Snowday

Snowday indicates that RFID represents a broad term that encompasses several technologies with a wide range of suitability for locating people.

"WiFi RTLS, for example, is only accurate at the zone level," he noted. "Without adding supplemental technology, such as IR or ultrasound, it is typically not used for people. Bluetooth Low Energy (BLE), however, is a newer RFID technology that shows promise in this regard. While BLE is still considered an emerging technology as it relates to RTLS, advancements are being made to broaden its applicability for the workflow applications typically used when locating people. Although

currently less accurate than technologies such as infrared, the great benefit of BLE is its lower effort and cost to implement. BLE is a widely accepted standard. Advantages of BLE also include the economy of scale, integration possibilities and the ability to locate with it at a lower price point."

Snowday encourages giving IR a look.

"Infrared can quickly and definitively locate a person to the room or sub-room level and is highly suited to any use case where location certainty is necessary," he said. "Nurse call automation (clearing patient calls when the nurse walks into the room) and patient flow applications (where patient-provider interactions drive automation and process improvement reporting) particularly require the highly accurate location data that IR provides."

Snowday offers mixed reviews of RFID and IR in terms of tracking processes – including workflow.

"Various RFID technologies offer a wide variety of location accuracy, from the zone-level accuracy of Wi-Fi RTLS to the more precise accuracy of BLE," he noted "Many RFID technologies are not granular enough to manage real-time workflow or document reliable location metrics for performance improvement. However, advances are being made with BLE and other RF-based solutions that may prove useful.

"IR is much more accurate for tracking processes than most RFID technologies since it is very resistant to generating false positives," Snowday continued. "When tracking processes and automated workflow, it's helpful to have room-level or better certainty when one or more tags are in a room or the same location."

For tracking products, Snowday favors RFID.

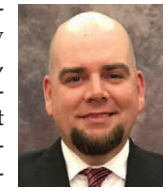
"Small and inexpensive, passive RFID tags can be attached to products and discarded when no longer needed," he acknowledged. "Although you can passively scan a device while it moves through a process, your range of applications are limited. Also, the expense of the readers/scanners needs to be taken into account, especially for use cases that require a large number of chokepoints."

RFID may be more suited for equipment tracking, too, according to Snowday.

"Wi-Fi as an RFID technology has been available for years and has been a popular choice for tracking equipment," he observed. "However, its zone-level granularity can limit its use. For example, nurses typically won't use a Wi-Fi-based locating system as the location data isn't reliable enough to provide value in the fast-paced nursing workflow. We recently launched a BLE asset tracking solution that has the lower-cost benefits of RFID technology with near-room location accuracy that both biomedical and nursing teams can use.

When assessing and choosing track-and-trace technologies, the best signal modality depends on the use case, according to Bob Metzler, Senior Product Manager, Acute Market, STANLEY Healthcare.

"For a use case that requires lower levels of location accuracy, but higher accuracy levels around doors (e.g., patient protection), organizations would be best suited to deploy a Wi-Fi-enabled tag with low-frequency chokepoints to notify staff when a patient has entered an area or doorway that the software has determined they should not enter," Metzler advised. "For a staff-focused use case (e.g., staff duress), organizations only need tags and Wi-Fi because the system can alert a security guard within a few meters where the staff member is located when they activate their duress button.


Bob Metzler

"The tags are also designed to go into a higher accuracy mode when the duress click occurs, which further improves their accuracy," he continued. "This type of deployment is cost-effective and fast, which lends itself to an efficient rollout to respond to the needs of organizations that require this type of system on an abridged timeline."

Metzler points out that other technologies have a much higher technical lift so the projects are extended beyond the ideal time frame that an organization would need such a system in place following an incident.

Sounding off

Ultrasound can be a viable selection, according to Metzler.

"For a use case, such as nurse call or patient flow, we would recommend utilizing ultrasound (US)," he recommended. "These use cases require room- or bay-level accuracy and fast result of room entrance (sub-7s), which US can provide with the least amount of environmental interference."

Metzler cautions that location services for visitor management remain a work-in-progress and an emerging market. Why?

"Primarily because of the challenge presented by a hospital-owned RTLS device given to the public," he said. "Whatever device is chosen is very likely to be lost when visitors leave the facility. Given this challenge, passive RFID and BLE are the technologies in the market currently which are seeing some success. As these technologies mature in the RTLS space, we expect this area to grow significantly."

Wi-Fi-based RTLS may be the most applicable for products and equipment, according to Metzler, even as RFID-equipped cabinets remain prominent for product storage and tracking.

"Organizations would use Wi-Fi-based RTLS to get an approximation of the location of the device (within several meters) alongside integration into the device vendor's system to get context into what the device is doing," he said. "For example, this combines 'what is the tracked item doing' with 'where is the tracked item' functionalities to determine if it should be moved to another location. This information would then be provided on an on-demand or periodic basis to the appropriate individual who would move the item. In our experience, this is typically sufficient to fine equipment, too."

Still, ultrasound can serve a useful purpose.

"Organizations would employ [US] when the use case required a [higher] degree of accuracy, such as PAR level or nurse call to know with 100% certainty that a tag was in a specific room," Metzler added.

Seeing red, infrared

Kevin Paroda, Global Product Manager, Acute Care, CenTrak, however, remains solidly behind infrared as an effective RTLS modality for many functions.


Kevin Paroda

In fact, for tracking people and processes, Paroda finds IR makes much sense.

"Infrared is the best-in-breed choice when it comes to locating staff, patients and visitors," he noted. "In healthcare, the ability to quickly and accurately locate a team member or patient is of the utmost importance. IR allows for room location insights without the signal hopping and creating difficulties for the user to determine if an object is on one side of a wall or another. The near-100% accuracy makes it possible to accurately monitor contact tracing, patient/provider interactions and staff safety. Locating a patient, staff member or visitor to the right room in 5 seconds or less is crucial for use-case solutions to be effective.

"Similar to locating people, process monitoring requires discrete knowledge of exactly what occurred, the precise steps taken and in what order," Paroda continued. "An IR solution offers certainty and

low latency. This combination allows team members to know exactly which workflow steps occurred and how to proceed. IR also provides the ability to segment rooms or areas into discrete zones with high accuracy."

For products and equipment tracking, however, Paroda favors the incorporation of RFID.

"Low-cost products are generally best tracked through RFID to minimize the expense, but high-dollar value products like artificial joints and other expensive consumables should be tracked with a technology that can provide certainty, especially if the inventory is running low," he said. "Some RFID solutions can provide this but not all, occasionally making a solution like IR necessary."

Paroda prefers a combination of modalities for tracking equipment.

"Equipment monitoring and management can often be accomplished effectively by using a mix of solutions, such as RFID and IR," he indicated. "While some key locations like supply closets, clean rooms and dirty rooms may need the more complete coverage from IR, RFID can generally be used to cover broader areas by giving an estimated source of location for a lower cost and ensure that the entire facility is covered. When it comes to equipment, a combination of RFID and IR represents the best value approach when implementing equipment management." HPN

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Standards of conduct: Critical care for healthcare workers

by Karen Conway

As we pass the two-year mark and more than 900,000 deaths in the U.S. from COVID-19, I pause to reflect on what the pandemic has taught us. Amidst the heartache and hardships, we have gained a much deeper appreciation for issues that we knew about (or should have) and which hold the keys to improving the health of society as well as our healthcare system. Those lessons range from the degree to which health inequities increase the prevalence of chronic disease and in turn hospitalizations and death from the virus among the poor and communities of color to the incidence of violence against healthcare workers that has grown significantly worse during the pandemic. The pandemic has also highlighted the frailties of a still primarily fee for service health system that is not designed for public health. To me, it has also underscored the importance of managing and safeguarding the finite resources we have to do what healthcare is supposed to do: generate better health. Just as we work to ensure the quality of the medicines and medical devices used in patient care, so, too, should we protect the ability of our healthcare workers to do their jobs, without which our healthcare system would (and could) collapse.

That's why I was so moved recently by the work of Medical University of South Carolina photojournalist turned nurse to document the journey of both patients and caregivers on COVID wards in photos displayed on the hospital's Facebook page. With permission from patients, families and healthcare workers, Alan Hawes began documenting their stories in hopes it would lead to more people being vaccinated. One of his subjects is a 37-year-old unvaccinated man who had to be intubated when he contracted COVID. Today, that same gentleman (who thankfully recovered) now pleads with others to get vaccinated because, in his words, "We need to give [healthcare workers] a break because eventually they are going to break."

While much of the news these days is about the critical shortage of healthcare workers, and in particular the financial strain faced by hospitals that must address attrition rates as high as 35 percent by hiring traveling nurses who make 2 to 4 times more than a staffed nurse, the more alarming story is the rise in violence against an already burned out and stressed workforce. According to a National Nurses United survey conducted last fall, nearly one-third of nurses reported an increase in violence. Even before COVID, the U.S. Occupational Health and Safety Administration (OSHA) declared hospitals to be one of the most dangerous places to work. The pandemic has only increased and shone a light on the threat. There is always heightened stress when people are sick, but nurses say even simple requests (to wear a mask) or questions (about vaccination status) have ignited violence.

And it's not just nurses. While they bear much of the brunt of the attacks given how closely they work with patients and families, a supply chain executive told me recently that members of her staff have also been physically accosted. The vast majority of the attacks lead to non-fatal injuries, and the real trauma comes when staff, already burned out by a relentless pandemic, do not feel safe at work. Beyond the significant toll on these essential workers, studies show workplace violence can lead to more medical errors and turnover. According to a recent poll, 2 in 5 nurses and 1 in 4 physicians are considering leaving practice.

Yes, it is hard to imagine the U.S. health system on the verge of collapse. After all, it is nothing compared to the plight of countries like Afghanistan where financial sanctions have cut off funding for supplies and clinician salaries. There, the plight of the healthcare system and the families that depend upon it is being held hostage by geopolitical conflicts. In the U.S., as the line from the cartoon strip Pogo so aptly stated, "We have met the enemy, and it is us."

Hospitals and health systems have taken steps to protect staff from violence, including beefed up security, de-escalation training and panic buttons. These can be effective, but they do not address the underlying causes, one of which is the decline in civility and respect for others. That's why I am so appreciative of recent messages posted by Northwell CEO Michael Dowling and Healthcare Financial Management Association (HFMA) CEO Joe Fifer. In his blog post, Fifer bemoans the lack of empathy for healthcare workers and notes how something as simple, yet authentic, as a thank you note from a school child can ease some of the pain. Dowling is more direct, placing blame on elected leaders who have modeled bad behavior and those on social media who have spread misinformation and gone as far as celebrating deaths among the unvaccinated. Dowling also offers several remedies, none of which are difficult, but all require a willingness to comply. His advice: Listen to others, ask questions, share your perspective and do not ridicule. Perhaps most importantly, he says respect diversity of thought, as well as of race, gender, religion, sexual orientation and, yes, political persuasion. From my perspective, diversity of thought and appreciation for a range of perspectives is at the heart of innovation that has driven advances in medical science. Now, it may just be respect for diversity that saves our healthcare system. HPN

Karen Conway works to advance the role of the supply chain as a critical enabler in the pursuit of a value-based healthcare system. As Vice President, Healthcare Value for Global Healthcare Exchange (GHX), Conway explores how the supply chain and improved data quality and visibility can support understanding of what increases value for patients and to those organizations that develop and deliver healthcare products and services.

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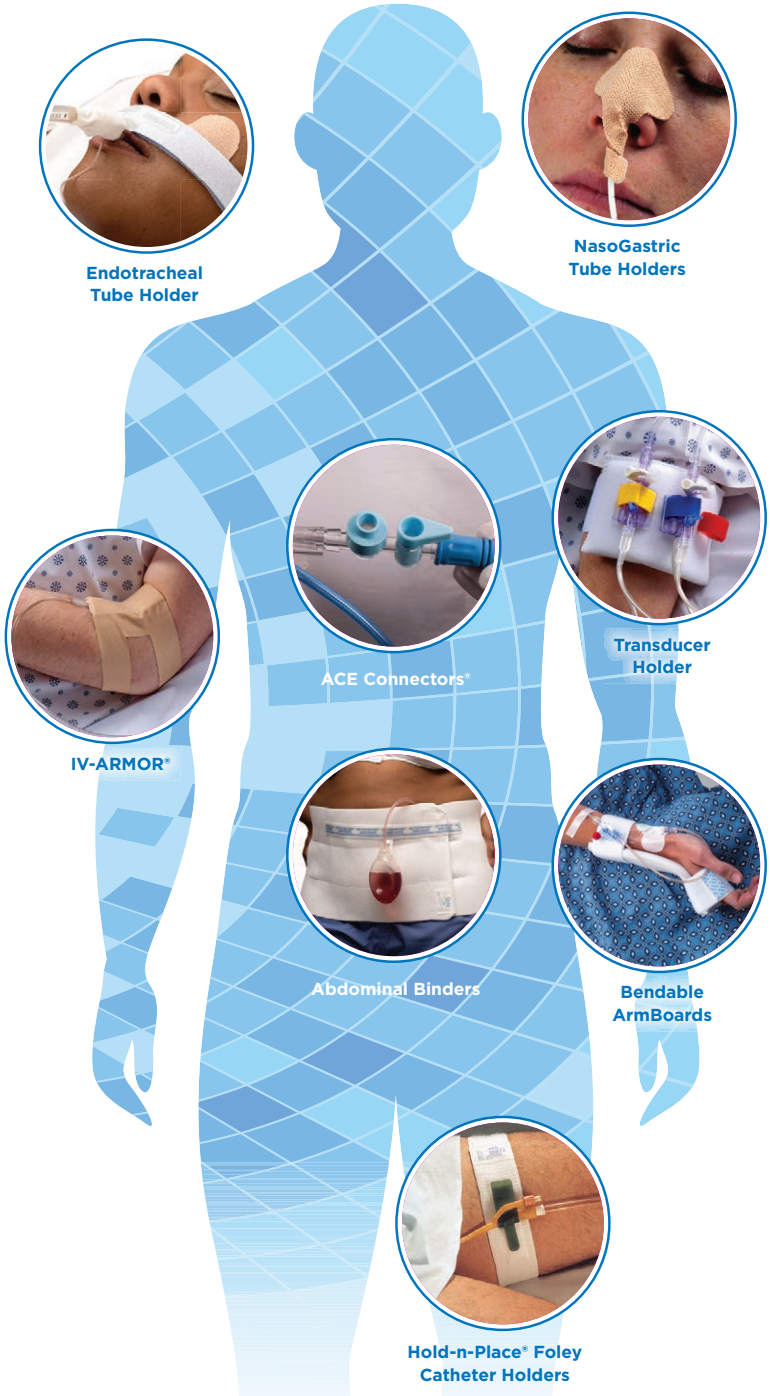

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