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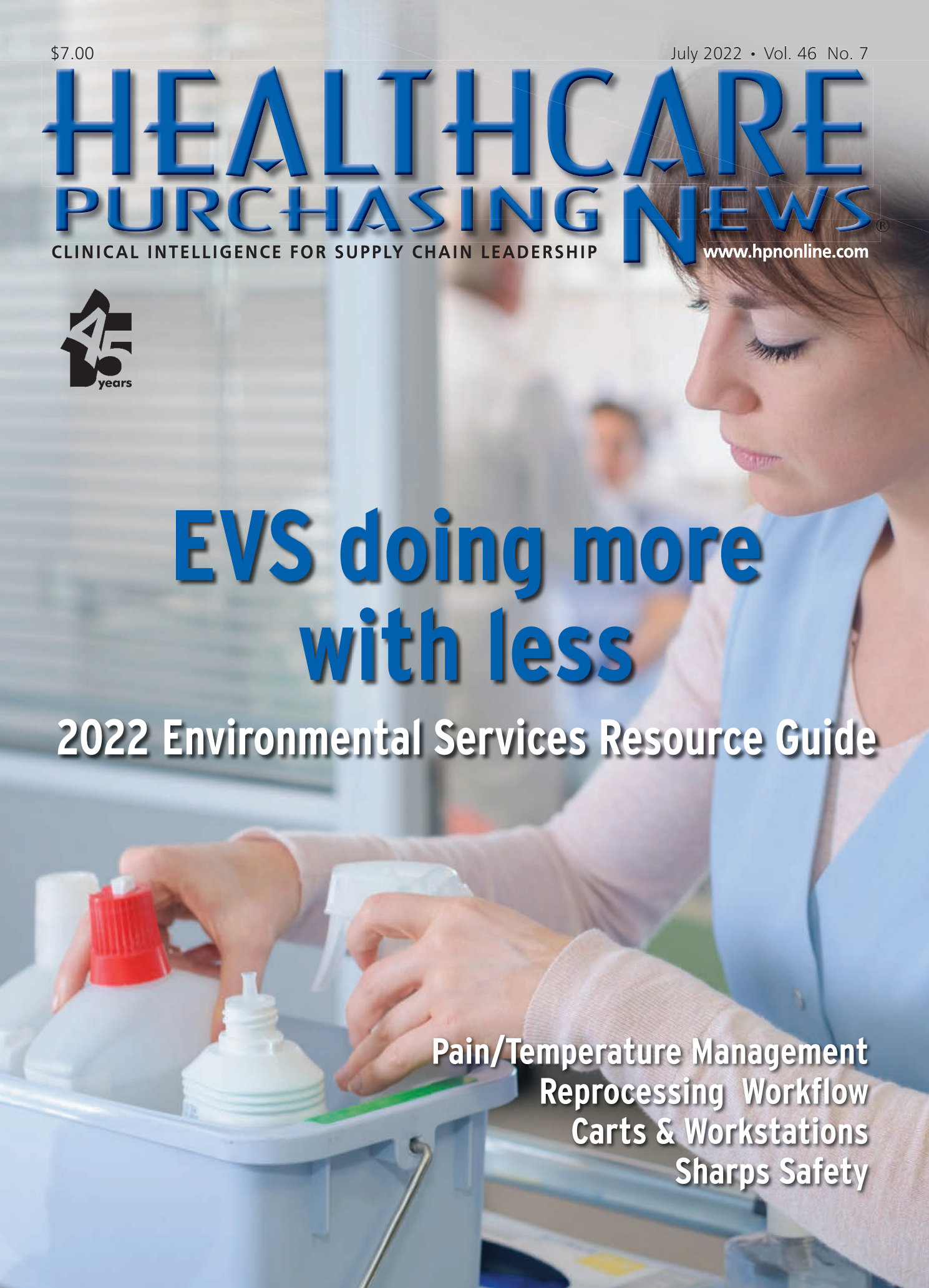

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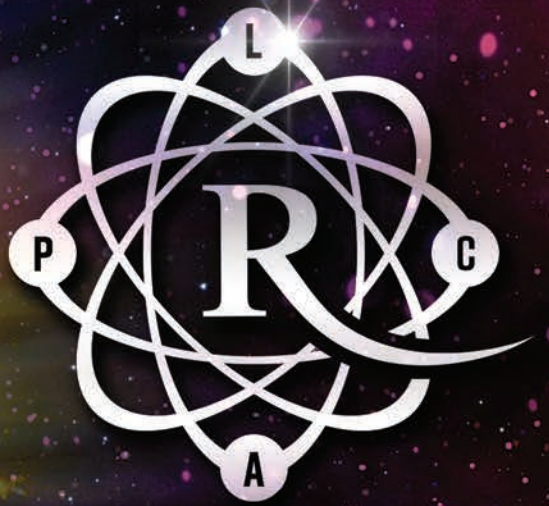

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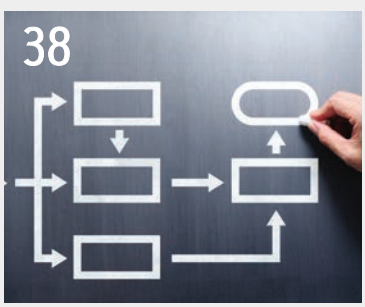

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Opportuning in

CHICAGO – Despite all the disruptions and problems the supply chain has endured throughout the pandemic, industry supply chain experts insist that this actually represents a great time to be in supply chain.

They may be mixed on whether the pandemic caused the tempest of current backorders, shortages and other supply chain woes experienced by the economy, or whether the pandemic merely brought to light underlying issues that have simmered under the cloak of organizational darkness for years.

Either way, the cast of industry experts who spoke at the Supply Chain Execution 2022 conference hosted by Reuters Events here in early June were extremely bullish on supply chain opportunities and the overall outlook of the industry and profession.

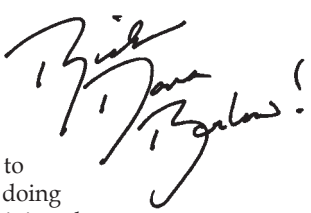
Other noteworthy observations from overarching themes:

- Companies are scaling back their pursuit of just-in-time (JIT) and LEAN management to cut costs and increase process efficiencies in favor of effective management of capacity limits and more local distribution hubs connected to retail centers that can move product faster through the chain to the customers.
- Meanwhile, speakers touted a heavier emphasis on the concept of fulfilment over the description of supply chain by moving solutions closer to the customer and/or streamlining customer service by working from the customer (and his/her increased demands/expectations) back. They stressed the need for speed and scale to deliver the seamless customer experience.
- Although several admitted a desire to return to the market dynamics of 2019, they acknowledged that as a pipe dream and instead will need to pivot from the present, armed with pandemic-gleaned experience added to their knowledge base and fortifying industry wisdom.
- Many speakers lamented the lack of and need for reliable data to help companies make more informed strategic and tactical decisions. This revelation seemed to deflate the long-held belief that industry was so far ahead of healthcare. Instead, supply chain operations in both areas struggle with a common denominator.
- Sustainability in nonhealthcare industries is here to stay, grow in importance and priority and largely will be driven by supply chain because they control packaging materials and procedures and transportation processes from manufacturers and distributors to retail outlets and consumers.
- Leaders from several logistical robotic companies agreed that robots won't ever completely replace humans in logistics, but they ultimately will require humans to program, maintain and repair them. Instead, robots will function more as "cobots" that handle or reinforce certain tasks even as technological development elevates some models closer to android/humanoid status.
- Eliciting murmurs in the audience, Louis DeJoy, Postmaster General and CEO, U.S. Postal Service, told the crowd of several hundred attendees he merely needs more financial investment and time to turn the USPS into a package company to complete with the likes of DHL, FedEx and UPS, but one that also happens to deliver mail.

Against that nonhealthcare industry backdrop, *Healthcare Purchasing News* salutes the five finalists for the 2022 Supply Chain Department of the Year recognition. This year's competition achieved a bit of internal history that will be highlighted and explained in this space next month when the winner is revealed.

As always, we feel it's important that these five teams are recognized and honored for their contributions.

- **Memorial Sloan Kettering Cancer Center, New York, NY**
- **OU Health, Oklahoma City, OK**
- **Parkview Health, Fort Wayne, IN**
- **Sutter Health, Sacramento, CA**
- **UHealth/University of Miami, Miami, FL**



We hope these five teams consider it a privilege to be nominated and to reach the finalist stage. We respect and salute their achievements and invite you to do the same for them and for all supply chain teams doing exemplary work – many of which may not be receiving the credit they deserve.

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Back Issue
U.S.: $17.60 **Canada/Mexico/Foreign A/O:** $22.00

CHANGE OF ADDRESS

Subscribers: For change of address, send your old and new addresses to *Healthcare Purchasing News*, 2477 Stickney Point Road, Suite 221B, Sarasota, FL 34231. Fax: (941) 927-9588, Email: *hpn-subscriptions@endeavorb2b.com*. Allow 4 to 6 weeks for correction. All other inquiries, call Tiffany Coffman at (941) 259-0842.

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Healthcare Purchasing News (ISSN: 1098-3716, print, ISSN: 2771-6716, online) is published monthly by Endeavor Business Media, 2477 Stickney Point Road, Suite 221B, Sarasota, FL 34231, Phone: (941) 927-9345, Fax: (941) 927-9588, *www.hpnonline.com*, Business hours: 8:00 a.m.-5:00 p.m. EST.

Office of publication: Periodicals Postage Paid at Nashville, TN 37209 and at additional mailing offices.

Postmaster: Send address changes to: *Omeda (Healthcare Purchasing News)*, PO Box 3257, Northbrook, IL 60065-3257.

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FAST STATS

Our U.S. healthcare workforce is anything but healthy. In addition, it is also shrinking in numbers. For a country still in the midst of a pandemic, these numbers are more than alarming according to a report from the Surgeon General.

3 MILLION

is a projected shortage of essential medical assistants,home health aides, and nursing assistants in the next 5 years.

140,000

is the projected shortage of physicians by 2033.

54%

of nurses and physicians, and up to 60% of medical students and residents, have suffered from burnout. The National Academies of Medicine (NAM) reported that burnout had reached "crisis" levels – in 2019, before COVID.

50%

of U.S. public health workers reported symptoms of at least one mental health condition, such as anxiety, depression, and increased levels of post-traumatic stress disorder (PTSD).

1.1 MILLION

new registered nurses are needed by the end of 2022 according to the U.S. Bureau of Labor Statistics. Over half a million registered nurses are expected to retire by the end of the year.

8 OUT OF 10

health workers reported in mid-2021 that they had experienced at least one type of workplace violence during the pandemic.

66%

of health workers reported being verbally threatened, and one-third of nurses reported an increase in violence.

New Surgeon General Advisory Sounds Alarm on Health Worker Burnout and Resignation. https://www.hhs.gov/about/news/2022/05/23/new-surgeon-general-advisory-sounds-alarm-on-health-worker-burnout-and-resignation.html Accessed on June 16, 2022.

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NEWSWIRE

SMI releases playbook to aid healthcare supply chain during tough times

The Strategic Marketplace Initiative (SMI), a non-profit, member-driven community of healthcare supply chain organizations, has released a new Resilience Maturity Model (RMM) and Playbook to help the industry be better prepared and mitigate risk for future potential disruptions.

This SMI RMM and Playbook were created by SMI members with guidance from Rob Handfield, Bank of America University Distinguished Professor of Supply Chain Management and Executive Director, Supply Chain Resource Cooperative, and students from North Carolina State University (NCSU). The RMM and Playbook can be downloaded, free of charge from the SMI website here.

As healthcare organizations look to stabilize and strengthen their supply chains for future disruptions, SMI members have created this framework based on four maturity levels including preparedness, responsiveness, resiliency, and collaborative immunity.

Although the model is designed as aspirational, the RMM provides structure to organizations so users can develop their own preparedness playbook now. This new resource also includes a scoring mechanism to measure current progress and to develop plans to achieve even higher levels of resilience over time.

Through data and interviews collected by the SMI team and NC State students, this new model encompasses the criticality, risk mitigation, workforce requirements, partnerships, data, and analytics required to achieve a collaborative, agile, and mature healthcare supply chain program for the future.

According to Nancy Anderson, SMI Associate Executive Director, "the SMI Playbook and Resilience Maturity Model is the result of work conducted over the last 14 months based on experiences and intelligence from SMI members which include healthcare providers and academic medical centers, as well as suppliers/manufacturers/distributors of healthcare products and services.

Team leaders Amanda Chawla, Chief Supply Chain Officer from Stanford Healthcare and Alan Mavis, Director, Integrated Delivery Networks from Baxter expertly guided the team of over 40 SMI members and collaborators to create a tool that will support healthcare organizations regardless of where they are on their resilience journey."

Visit SMI for the playbook https://www.smisupplychain.com/tools

Vizient forecasts tough decade ahead for hospital resources

Vizient, Inc. released its annual Impact of Change Forecast from its subsidiary Sg2, on June 7, 2022, projecting hospital resources will experience even greater strain due to a rise in patient acuity over the next decade that will outpace inpatient volume and impact patient length of stay.

Fueled in part by COVID and its lingering effects, healthcare organizations can potentially expect increased number of patients with more complex conditions creating capacity constraints that may require new strategies for patient care delivery.

The report forecasts adult inpatient volumes recovering from pre-pandemic numbers but growing only 2% over the next decade. However, fueled by an increase in chronic conditions, adult inpatient days are expected to increase 8% during that same time, with additional increases in tertiary inpatient days (17%). The shift of inpatient surgical volumes to outpatient is projected to soften to modest growth (4%) in procedures performed inpatient by the end of the decade.

Like the inpatient setting, 2021 outpatient activity remained below 2019 levels, though outpatient surgery fully recovered in the second half of the year. Over the next decade the Impact of Change forecast notes:

Outpatient volumes are projected to return to pre-pandemic levels in 2022 and then grow 16% over the next 10 years, three percentage points above population estimated growth. The aging population, increased survivorship and rise in chronic disease are the main drivers of growth.

The shuffle of surgical volumes across ambulatory sites will continue throughout the decade, with surgeries projected to grow 25% at ambulatory surgery centers and 18% at both hospital outpatient departments and physician offices. Increased payer scrutiny, cost saving measures, hospital-based capacity and resource constraints, combined with the rise in aging and chronic disease populations are driving this increased demand in outpatient surgeries.

The decline in emergency department (ED) visits experienced during the pandemic was sharp but is expected to plateau with a decline in demand projected at -2% over the next 10 years. ED visits will remain significantly below 2019 volumes as a result of lower acuity volumes shifting to alternative care sites including virtual triage. Additionally, as pandemic-era protocols decline, infectious diseases such as asthma, chronic lung disease, and cystic fibrosis are expected to return with a 3% increase this year in ED visits before decreasing 10% by 2032.

Build a resilient and agile healthcare supply chain

The past few years have served as a wake-up call for the healthcare industry as the world continues to wrestle with myriad supply chain challenges that are creating backorders, delaying deliveries, and fomenting shortages. More and more healthcare C-suite executives and supply chain leaders overseeing the flow of resources for clinicians to deliver patient care are starting to pursue transformational change in supply chain operations as incremental tweaks simply won't cut it.

Recent experiences emphasize the ongoing need for transformational change, Bill Kopitke, General Manager and Head of Healthcare for Amazon Business, observed. "Incremental changes may be evident, but they're clearly not enough as healthcare providers grapple with high operating costs, supply delays, supply backorders, and a lack of transparency that have facilities often operating in crisis mode."

Amazon Business advocates for more comprehensive and holistic change to address root causes of supply chain challenges providers continue to experience.

But Amazon Business' technology emphasis fused with traditional distribution capabilities represent more than just incremental change. It offers a strategic and tactical advantage to help healthcare organizations scale purchasing operations so they can focus on delivering quality care.

"We have a passion for fundamental change, working backwards from our customers to appreciate how they would prefer their purchasing experience to be," he said.

Amazon Business has been intentionally focusing on the purchasing experience with supplies outside of traditional negotiated contracts. This is often referenced as "non-contracted spend." What if you could have the benefits that negotiated agreements bring (e.g., standardization, competitive prices) but without the administrative burden and inflexibility?

When local challenges erupt from global, national, or regional supply chain crises, healthcare providers are forced to find the supplies they need, which is typically outside their existing contracted supplier relationships. This is a type of non-contract spend, which can be inefficient to source and distribute. It can also be more expensive given the crisis.

There are many other reasons why organizations purchase supplies and services outside of a negotiated contract, but often central supply chain departments do not proactively know how to manage it, according to Mr. Kopitke.

"Non-contract spend can be made by hundreds of employees at an organization through e-commerce, by phone, or at a retail location. These single transactions – when aggregated – can represent a vast total of spend, sometimes exceeding common categories that are proactively managed, like office, MRO, and IT peripherals. And yet we often don't look at non-contract spend like a category to be managed," Mr. Kopitke said.

Amazon Business has been building wider, easier access to the supplies healthcare organizations normally purchase but allowing administration to digitally guide and control the spend. Like its consumer site, it wants business buyers to be able to easily compare products, prices, delivery options, and quality ratings all in one place without requiring a traditional negotiated procurement agreement.

Two provider supply chain executives nearly 1,700 miles apart recognize the value of comprehensive and holistic change in helping them navigate through specific crises.

Ms. Régine Honoré Villain serves as Senior Vice President, Supply Chain Network and Chief Supply Chain Officer at Ochsner Health, New Orleans, and Mr. Patrick Murphy serves as Director, Supply Chain, Procurement and Systems at City of Hope National Medical Center, Duarte, CA. In this Executive Brief, we will review ways their organizations gained supply chain efficiencies with Amazon Business.

Ms. Villain and Mr. Murphy each use Amazon Business features to help them navigate through operational hurdles unique to each organization. For Ms. Villain, one use-case involved disaster relief in the aftermath of a hurricane; for Mr. Murphy, the issue involved proactively managing non-contract spend within his facility.

Horizon scanning

Whether it's helping Ochsner recover and restore operations and services to its patient population following a weather-related disaster or it's empowering City of Hope to track non-contract purchases to improve procurement and provide clinicians with needed products, Amazon Business works to ensure both can be achieved accurately, efficiently and as seamlessly as possible.

Looking ahead, Ms. Villain envisions further integrating Amazon Business within Ochsner's eProcurement system to deepen the operational partnership, reshape mindsets and enhance and optimize the way healthcare procurement progresses.

"I know that lots of people feel very comfortable doing things the way that they have always done it," she continued. "And certainly, that's not what Amazon Business is about. My challenge to all of us is to engage this conversation with Amazon Business and think about how we can improve the way that we're doing business today."

Mr. Murphy asks, "How do we change our thinking and the way we operate? That's just the way it is. This is the way we do healthcare. We have contract pricing, we have items, we have item masters. We have all these attributes that we have to keep in sync within multiple systems. It's complicated. Maybe it doesn't have to be.

"I envision betting on Amazon Business offering a one-stop shop where we go and reduce extra layers for our transactions," he added. "Moving forward, we're ready for those options and to be nimble, to follow and to work with Amazon Business to change how we do things. To simplify the process."

Mr. Kopitke shares that Amazon uses the word "simplify" within the company a lot.

"How do we innovate and simplify?" he posited. "I think healthcare has a lot of opportunity for simplification. We have a bigger mission to help bring down costs, improve transparency, and make purchasing easier for everyone involved."

"We want to have an invisible supply chain that enables organizations to get the supplies they need, when and where they need them, with minimal effort," he continued. "There's a lot of opportunities that we look forward to working on with our customers." HPN

Visit hpnonline.com/21270647 to learn what obstacles Ochsner and City of Hope faced and how Amazon Business helped.

Significant growth of telehealth and home care

The pandemic ushered in advances in digital infrastructure, remote monitoring and diagnostics, and payer reimbursement that have led to enduring care delivery changes to not only virtual visits but also home diagnostics, infusions, physical therapy and hospital at home services. Home care is also expected to gain traction over the next five years, including home evaluation and management visits at 19% growth, home hospice at 13% and home physical and occupational therapy at 10%.

Though telehealth levels have come down since the height of the pandemic, the future of virtual care is coming into sharp focus as the industry determines which service lines are best suited for it. Led by behavioral health, neurosciences and medicine, telehealth is expected to resume its climb and by 2032 account for 27% of all evaluation and management visits.

"Virtual health visits have a strong path forward over the next decade, particularly for specialties where frequent touchpoints support positive outcomes," McDowell said. "While scalability for care at home is difficult, care redesign efforts can leverage remote-patient monitoring and artificial intelligence to improve patient monitoring, drive operational efficiencies and lower costs by shifting patients to the home setting, when appropriate."

Tax-exempt hospitals exceedingly beneficial to their communities

A report by the American Hospital Association (AHA) states that two new analyses show that tax-exempt hospitals are exceeding their obligation to deliver benefits to their community.

The first analysis by the international accounting firm of Ernst & Young (EY) reported that tax-exempt hospitals and health systems delivered an impressive $9 in benefits back to their communities for every dollar's worth of federal tax exemption. In 2019, the estimated tax revenue forgone due to the tax-exempt status of non-profit hospitals is $12.4 billion. In comparison, the benefit tax-exempt hospitals provided to their communities, as reported on the Form 990 Schedule H, is estimated to be $110.9 billion, almost nine times greater than the value of tax revenue forgone.

The second analysis prepared and released by the American Hospital Association (AHA) using data from filings with the Internal Revenue Service (IRS) again showed that tax-exempt hospitals provided more than $110 billion in total benefits to their communities in filings for fiscal year 2019 (up from $105 billion in 2018). 2019 is the most recent year for which comprehensive data is available. The analysis shows that total community benefits were 13.9% of their hospitals' total expenses, nearly half of which was attributed to expenditures for financial assistance for patients and absorbing losses from Medicaid and other means-tested government program underpayments.

"For the past two and a half years, our nation has seen firsthand how America's hospitals and health systems have cared for their patients and provided essential services to their communities in times of an unprecedented public health crisis. In addition to providing critical care, hospitals and health systems of all sizes, types and locations deliver a wide range of tailored benefits, activities, services, programs and research to meet the varied health needs of those they serve," said AHA President and CEO Rick Pollack.

In return for being exempt from federal taxes, non-profit hospitals are required to serve their communities and seek input from members of their communities, particularly communities dealing with sustained hardships. Hospitals report publicly on community benefit activities, which include financial assistance for those in need, and a wide range of programs and services designed to meet the current and future health needs of all they serve. In addition, hospitals and health systems support emergency preparedness for all types of disasters; education and training for the next generation of caregivers; clinics for underserved communities; and a range of tailored programs to keep their communities healthy and productive.

Amazon thwarts counterfeit products in the supply chain

Amazon released its second Brand Protection Report, which highlights Amazon's commitment to the authenticity of goods sold in its store and to fighting bad actors so that customers can shop with confidence.

Amazon and its millions of selling partners—the vast majority of which are small and medium-sized businesses—serve hundreds of millions of customers worldwide. Customers expect that when they purchase an item in Amazon's store, sold either by Amazon or by one of its third-party selling partners, they will receive an authentic product.

In 2021, Amazon invested more than $900 million and had more than 12,000 people—including machine learning scientists, software developers, and expert investigators—who were dedicated to protecting customers, brands, selling partners, and their store from counterfeit, fraud, and other forms of abuse.

The second Amazon Brand Protection Report details a wide range of progress against three key areas: powerful and highly effective proactive efforts to protect Amazon's store; industry-leading tools enabling rights owners to partner with us to better protect their brands; and holding bad actors accountable. Here are some highlights from the report:

- Deterring and Stopping Bad Actors: Amazon stopped more than 2.5 million attempts to create fraudulent selling accounts, preventing these bad actors from publishing a single product for sale. This is down from more than 6 million attempts the prior year, thanks to robust seller and product vetting, along with efforts to hold bad actors accountable that are deterring them from attempting to sell on Amazon.
- Increasing Adoption of Brand Protection Tools: Brand Registry, which unlocks a suite of tools to build and protect a brand on Amazon, grew to include more than 700,000 active brands, an increase of 40% from the prior year. At the same time, the average number of valid notices of infringement submitted to Amazon by a brand in Brand Registry decreased by 25% from the prior year, as continued growth in the adoption and efficacy of automated brand protection tools continue to reduce the number of issues that brands are able to find and report.
- Holding Counterfeiters Accountable: Amazon's Counterfeit Crimes Unit (CCU) continued to focus on ensuring that counterfeiters are held accountable—stopping them from abusing Amazon's stores and those of other retailers across the industry. In 2021, Amazon's CCU:

Filed civil litigation against more than 170 counterfeiters in U.S. courts.

Sued or referred more than 600 criminals for investigation in the U.S., UK, EU, and China, an increase of more than 300% over 2020.

- Identifying and Seizing Counterfeits: Amazon identified, seized, and appropriately disposed of more than 3 million counterfeit products, preventing them from harming customers or being resold elsewhere in the retail supply chain. This includes counterfeits that were sent to Amazon's fulfillment centers and situations where Amazon worked with brands and law enforcement to find counterfeiters' warehouses and facilities, and get them shut down.
- Forging Public-Private Partnerships: Amazon published a blueprint for public and private sector partnership to stop counterfeiters, building on learning and

progress in protecting Amazon's store. This included the importance of information exchanges in the private sector to stop counterfeiters across retailers, partnering with customs to protect the borders, and the need for increasing resources for law enforcement to prosecute counterfeiters. That blueprint is driving productive dialogue and helping shape data sharing pilots and potential legislation.

Study confirms effectiveness of No Surprises Act

AHIP and Blue Cross Blue Shield Association (BCBSA) released a survey and analysis which found that in the first two months of 2022, the NSA prevented more than two million potential surprise medical bills across all commercially insured patients.

The analysis also found that should this trend hold, more than 12 million surprise bills will be avoided in 2022.

"The No Surprises Act ended the practice of surprise medical billing in most circumstances, providing relief for millions of patients who faced surprise medical bills they did not expect at prices they could not afford," said Matt Eyles, AHIP president and CEO. "Health insurance providers applaud the Administration and Congress for taking this important step. But more work needs to be done to ensure a broken bone doesn't break the bank."

Among other provisions, the NSA established a process for resolving disagreements on what a health plan will pay the out-of-network provider or facility, culminating in independent dispute resolution (IDR). Since taking effect at the beginning of 2022, a key question of interest to federal policymakers has been how many claims may be disputed through IDR each year and what impact that will have on the affordability of healthcare. The findings of the AHIP-BCBSA survey provide critical information which demonstrates how many patients and consumers have already benefited from the NSA and how important the current IDR process will be in establishing predictability in overall costs.

"There is no room for surprise medical bills in a healthcare system that puts people first," said Kim Keck, BCBSA president and CEO. "As recently as last year, an emergency visit to the hospital may have left patients on the hook for steep, surprise medical bills. The No Surprises Act has not only put an end to this loophole, but it has provided undeniable financial protection to millions of Americans."

Voters have also expressed support for protections against surprise medical bills. A recent poll conducted by Morning Consult on behalf of the Coalition Against Surprise Medical Billing (CASMB) found that 79% of voters are concerned that lawsuits from physician and hospital organizations could delay or overturn the patient protections included in the NSA.

Hospital and healthcare margins continue to struggle

Hospitals and health systems experienced a challenging April as they attempted to stabilize after the winter Omicron surge and amidst a new spike in COVID-19 cases, according to the latest *National Hospital Flash Report* from Kaufman Hall.

Following a brief rebound in March, hospitals and health systems experienced significant decreases in patient volumes and revenue, with expenses lessening only slightly in April.

The median Kaufman Hall Year-To-Date Operating Margin Index was -3.09% in March, which also marked the fourth straight month of negative actual operating margins this year. The median change in operating margin was down 38.1% from March, and down 76% from April 2021.

Patient volumes and days declined in April. Patient days were down by 5.7% compared to March and 1.8% compared to April 2021. Adjusted patient days dropped 6.5% from March to April but were up 1.8% compared to April 2021. Adjusted discharges decreased 3.3% from March and decreased 0.3% compared to April 2021.

"Hospital patients in 2022 are likely sicker, harder to discharge, and more expensive to treat than hospital patients in 2021," said Erik Swanson, a senior vice president of Data and Analytics with Kaufman Hall. "Fewer patients who are sicker and more expensive weigh heavily on hospitals' operating margins, putting a strain on both expenses and revenue."

Lower patient volume resulted in poor revenue performance in April, the analysis shows. Gross operating, inpatient, and outpatient revenues all dropped approximately 7% from March levels, however, all are up year-to-date compared with the same period in 2021—with gains of 6.6%, 5.3%, and 8.5%, respectively.

Expenses dropped 4.3% from March but remain high compared to 2020 and well above pre-pandemic levels. As in other areas of the economy, labor shortages and supply chain challenges contributed to expense levels. According to the analysis, expenses grew 8.3% since April 2021 and 9.6% year-to-date compared with the same period in 2021.

The National Hospital Flash Report draws on data from more than 900 hospitals. Data from the report come from Syntellis Performance Solutions.

Premier adds AI technology to long-term care facilities

PINC AI, the technology and services platform of Premier, Inc., announced it is extending its technological capabilities to long-term care (LTC) facilities, providing the same level of clinical surveillance used in the acute setting.

Paper records and low-tech methods of collecting data and coordinating patient care are still widely used in LTC facilities. It has become evident, particularly during the COVID-19 pandemic, that LTC facilities need robust, clean and actionable data in order to better prevent infections and provide high-quality care to their residents. In fact, due to the disproportionate impact of COVID-19, over one in five COVID-19 deaths occurred in a LTC facility since March 2020.

PINC AI clinical surveillance capabilities provide a comprehensive, real-time workflow solution for infection preventionists and clinical pharmacists. The technology can help detect, manage, control and alert to improper treatment of infection-related conditions during COVID-19 and beyond by enabling:

- Automated alerts, including COVID-specific alerts, for patients suspected or confirmed for infections.
- Automated flags on patient records to allow for robust tracking of patients in an outbreak group.
- Comprehensive documentation forms, including a custom set specific to COVID-19 and routine infections such as Methicillin-resistant Staphylococcus aureus (MRSA), Clostridium difficile (C. diff) and urinary tract infections (UTIs).
- Electronic submission of infections to the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN) system.

Infection prevention has never been more crucial in the LTC setting due to the emergence of COVID-19. Regulations have been issued that require routine screening and reporting of COVID-19 cases, and the Centers for Medicare & Medicaid Services (CMS) now requires reporting the data to NHSN.

Most LTC facilities do not have a centralized or dedicated infection prevention team, which, combined with the additional reporting requirements, increases the need for electronic health records (EHRs) and clinical surveillance technology to provide the data required to help prevent and control infection in at-risk populations.

PINC AI clinical surveillance technology designed for LTC is scheduled to be available beginning in October of 2022. HPN

Carts & workstations: Battling the evils of patient care inefficiencies

by Rick Dana Barlow

Photo credit: sudok1 and Yay Images | stock.adobe.com

Carts and workstations represent the equipment dynamic duo of clinical and operational productivity that enable and facilitate patient service – same healthcare time, same healthcare channel.

Which of the pair can be classified as the "sidekick" may depend on perceived functionality, routine responsibilities and simple opinion about usefulness.

Regardless, the equipment remains ubiquitous on nursing floors, in patient rooms and in clinical corridors and public hallways.

While these particular pieces of equipment have seen their share of design and functional advancements through the years, experts acknowledge ongoing opportunities for improvement.

Healthcare Purchasing News reached out to a group of cart and workstation manufacturers to offer their insights and observations about equipment dynamics in context of current events in healthcare, including the lingering COVID-19 pandemic. *HPN* posed questions about relevant and useful product attributes, benefits and features; what elements should be added to current models; what tends to be missing functionally; and what elements should be eliminated. Six executives from five companies accepted *HPN*'s challenge.

CARTS

Key attributes, benefits, features

When it comes to key features, keeping in mind the diversity of cart applications, two primary attributes lead the list.

First up is a vital factor which takes on additional emphasis in the pandemic era: Cleanability.

"The most important attribute to look for in any medical cart is a heavy-duty, easy-to-clean construction," insisted Dave Salus, Healthcare Market Manager, InterMetro Industries. "To make maintaining your cart easier, your choice should include easy-to-clean surfaces. Any cart with dips and crevices where dirt can sit will over time make your cleaning regimen less efficient. If you want to make the cleanliness of the cart a priority, it would also serve you well to invest in a cart with antimicrobial properties. Having antimicrobials built into the cart helps keep the cart cleaner, longer and helps maintain the cart's quality."

Dave Salus

Keep wear and tear in prime focus, Salus warned.

"It is also best to focus on carts that aren't going to dent or chip when they are in use," he continued. "Carts take a beating, and the design of the cart you chose should be capable of handling that harsh environment without immediately showing wear and tear. Carts with these attributes are easier to take care of and will save your team from unnecessary headaches in the long run."

The second? Configuration flexibility.

WORKSTATIONS

Key attributes, benefits, features

Just as with carts-, experts specify certain preferred features that represent a well-rounded workstation used by clinicians and nurses.

Dave Salus, Healthcare Market Manager, InterMetro Industries; Bradley Carlson, Product Manager, TouchPoint Medical; and Steve Torbett, Senior Product Manager, Acute & Point-of-Care Products, Capsa Healthcare, zero in on complementary attributes related to a single theme – ergonomics.

Salus cites configurability. "Having the freedom to build a workstation that is adjustable for every member of your team and that can be easily configured to their height is a game changer," he said. "Having a worksurface that can be adjusted to fit the height of the person working can help relieve strain and make working throughout the day easier."

For Carlson, this means improving runtimes, which translates to more time dedicated to direct patient care and away from indirect patient care pertaining to administrative processes.

Bradley Carlson

"Without question, the most important benefit of any mobile computing workstation is its ability to assist caregivers with and enable an improved level of patient care," he said. "This can only be achieved with lightweight, easy-to-maneuver, ergonomically friendly mobile workstations that offer superior runtimes. On average, nurses spend 35% of their time entering data and

CARTS

"There are a multitude of medical procedure cart applications, including Isolation carts, anesthesia carts, general supply carts, code response carts and more," noted Bradley Carlson, Product Manager, TouchPoint Medical. "Each of these carts serve specific purposes. Therefore, each type of medical cart will have unique features to enable it to perform its intended purpose to best address the required workflow. Therefore, I would say that when selecting a cart platform, the most important attribute would be a cart with highly configurable drawers and accessory options. This is critical in order to meet the end user and application needs."

Tim Ramcoobeer, Head of Outside Sales, H+H System, concurs.

Tim Ramcoobeer

"Hospitals, specifically inpatient pharmacies, are such dynamic, ever-changing environments," he said. "From drug shortages to procedural changes, there will always be the need to grow and adapt — the COVID-19 pandemic only reinforced this demand. These strenuous, albeit necessary, changes should absolutely be supported by your equipment such that efficiency and patient care isn't sacrificed in the process. One of the many ways we mitigate these changes is with our flexible dividers. The H+H Flexible Divider System allows users to quickly and easily remove, reposition or break dividers down to serve their new needs, without any compromise in efficiency."

Clinicians and nurses require such flexibility with this equipment, according to Joe Grabowski, Channel Sales Manager – Acute Care, Capsa Healthcare.

Joe Grabowski

"The most important cart storage attribute is an easy-to-use, easy-to-manage locking system with configuration flexibility," he indicated. "Nurses and clinicians need fast, easy, reliable access to the medications and supplies for their specific workflow. [Information Technology] needs security that is easy to manage, including remote management."

Every cart is designed for a different purpose, from surgical case carts to a pediatric cart, so clinicians and nurses have to determine the optimal cart for its serviceable purpose, emphasizes Ian Loper, Vice President, DSI. This is why his company designs its high-density storage carts with an integrated storage system for ultimate efficiency and flexibility. "With a wide variety of pull-out baskets, interchangeable compartments, low-profile tool-less adjustable shelves, catheter storage hangers, and angled trays with the option to upgrade with dust covers, custom labels, handles and casters is enough to meet the high standards in the acute care space," he added.

Carts: What should be added?

Experts envision several design and functional gaps that can be filled among carts today.

With the need for flexibility in cart design, one complementary attribute must work its way into existing and future models, according to H+H's Ramcoobeer. Adaptability.

"It became abundantly apparent in 2020 that our tools and equipment needed to serve a multitude of functions," he said. "Along with the introduction of COVID vaccines, came the need to shift valuable time and resources to new, unfamiliar processes. Sure, carts can be specific to serve specific functions such as code, narcotics, IT, etc., but when substantial workflow changes arise as we've seen in recent years, most carts aren't equipped to adapt and serve those new functions. This gap in efficiency manifests itself in many ways including loss of time, money and subsequent patient care."

Consequently, H+H System incorporates modularity to its mobility units, enabling end users to shift functionality to storing and transporting general inventory from doing the same with pharmacy trays, he added.

WORKSTATIONS

charting on mobile computing carts. The end goal would be to reduce this amount of time so that it can be spent on quality patient care.

"At a bare minimum, mobile workstation providers should be focused on making this charting time as pain-free and easy as possible," Carlson continued. "This can be achieved through the deployment of DC-optimized workstations that provide 25% more runtime, so that caregivers are not interrupted by the need to go plug in a cart to charge, and/or through the use of lightweight, nonpowered carts paired with medical grade AIO computers with swappable battery solutions as part of the AIO solution. Through the addition of an external power cord, such solutions can see 16+ hours of runtime and can be trickled charged via the power cord without caregivers needing to fuss over or worry about physically exchanging batteries or finding additional precious real-estate on the floor for battery chargers."

Steve Torbett

Ergonomics for easy, flexible use tops the chart for Capsa's Torbett.

"Adjustment of keyboards and displays is crucial to adapt to different users, for use in sitting or standing positions and for patient engagement," he indicated. "Fluid movement, including vertical height adjustment, tilt, swivel and reach, all play important roles in positioning the workstation, both for use by the clinician, and in some use cases, for showing information to patients. Good ergonomics encourage comfortable and convenient use, while preventing caregiver injury and strain."

Tim Ramcoobeer, Head of Outside Sales, H+H System, and Ian Loper, Vice President, DSI, concentrate on the final frontier.

"Space, being one of the most valuable commodities within the pharmacy, must be maximized whenever possible," Ramcoobeer noted. "Being able to have all the components necessary to support workflow, while keeping the overall footprint minimal, has become such a powerful feature that we are proud to offer with our FlexShelf line of products."

Ian Loper

Loper emphasizes the need for having a clear work surface. This means "stuff is not stored on the work surface but rather stored underneath the work surface in a cabinet or above the work surface in a space free and clear of the countertop," he said. "A workstation should have storage capacity incorporated into the overall design allowing for a more efficient, clutter-free, work environment."

Workstations: What should be added?

Still, experts agree that current workstations in use would benefit from a number of improvements.

Salus suggests solid surface countertops for one.

"By upgrading to a solid surface over a laminate you can make cleaning easier and help eliminate the chances of contamination," he noted. "Laminate cracks, exposing the wood, which absorbs moisture and any other stuff it comes in contact [with], making it unsanitary and impossible to clean – an infection control issue that can be avoided easily by upgrading to a more solid countertop option like stainless steel."

But DSI's Loper cautions about a universal option that can complicate lifecycle costing.

"It seems most of the workstations being used in SPDs today were originally designed for other markets, not specifically for use in hospitals," he observed. "The materials used are heavy in weight, using thicker-than-needed heavy gauge steel, and more importantly, do not have a complete range of accessories applicable for use in SPDs and or Biomedical applications. This often leads to sourcing different ac-

CARTS

TouchPoint Medical's Carlson recognizes that the long-term purchasing patterns for carts tends to affect easy updates and upgrades.

"Most procedure carts are capital purchases that are expected to last 7-to-10+ years, and we all know that things change," he observed. "Whether it's a change in workflow, a process, packaging sizes, or new technology, many carts do not offer the flexibility to be easily reconfigured to meet these changing needs over time. Improving on this much needed aspect of cart design would be a worthy undertaking."

One way to facilitate adaptability is labeling, according to DSI's Loper.

"Most carts are designed with pull-out drawers or doors but don't have a location on the handle for labeling the contents inside the drawer," he said. "It's kind of like kitchen cabinets at home where the drawers and doors are not labeled, but the cook inside the kitchen knows where everything is. In the hospital environment, the personnel using the carts change, so labeling to identify the contents are mission critical. Labeling the exterior of the drawer and/or door along with down to the compartment where the inventory is being stored. Time is everything and saving time can save lives, especially in the ED and OR."

Capsa's Grabowski points to integration and interconnectivity with technology as the next step.

"Trends have been towards aligning the use of technology to synchronize the medical support equipment across users and different areas of care," he indicated. "Make access easier, but with greater accountability. There are cart solutions in the market that utilize individual user codes or proximity cards with basic reports showing user access. These work well when initially implemented, but maintaining credentials and user groups becomes complicated, and access and/or reliability can become an issue. Managing the user database becomes more difficult with contract staff and frequent personnel changes. This can become a barrier to optimizing the proper application of storage carts. Features like this may also add to the IT department's workload."

In fact, Grabowski foresees storage carts working in conjunction with the hospital security systems instead of a standalone department application, particularly as Internet of Things (IoT) continues to develop.

"Facilities will only need to complete one New User Registration instead of multiple ones in multiple systems," he described. "When a new nurse starts, his or her ID badge will have the right level of access for everything they need to perform their duties – access to computer applications, electronic health records, entry doors, automated medication dispensing cabinets, and storage carts. Facilities can use this information to analyze and better understand movement and position of both personnel and capital assets to improve their workflows and level of patient care."

Through it all, however, InterMetro's Salus advises keeping the practical in mind – which extends well beyond aesthetics.

"The thing that needs to be improved in so many cart designs that I have seen is the ineffective, dated designs," he insisted. "So many carts, especially metal carts, are hard to move with a heavy build and sharp corners. They are vastly inefficient in providing the best possible storage and mobility, which is so essential to help maintain effective processes."

Carts: What tends to be missing?

As DSI's Loper reiterates the need for labeling, InterMetro's Salus emphasizes composition materials.

"One I would say is a highly necessary upgrade would be switching from a polymer-style cart," Salus advised. "These carts are easier to clean, light, and handle the wear and tear better than metal styles, while also being easier to use and maneuver."

TouchPoint Medical's Carlson stresses convenience and safety considerations because when safety is at risk, organizations should consider upgrading sooner rather than later. Carlson cites five areas, the first two of which concentrate on safety and the latter three focus on convenience.

WORKSTATIONS

cessories from different manufacturers creating a margin of challenge for presale design and after-sale in-service demands."

Cable management is always a challenge in workstation design, according to Capsa's Torbett.

"There is such variation in how workstations look in how they accommodate and hide cables and connections," he observed. "Hiding cables helps with easier cleaning for better infection control and prevention of liquid ingress. It also helps protect cables from damage or being disconnected, which can be a common reason for workstations becoming non-operational. It would be helpful if hardware manufacturers would improve cables, power bricks and options for how they connect to devices as it is a source of frustration for IT and users." Torbett cites as an example devices with power adapters integrated into the plug, which often cause obstructions when used on power strips.

Compatibility is key, H+H System's Ramcoobeer insists.

"Healthcare workstations would greatly benefit from the ability to be directly compatible with mobility units (carts)," he noted. "There is no doubt that 2020 thrust healthcare professionals into uncharted territory, forcing the adaptation of 'old' equipment to serve new functions. These vital, new functions provided a moment of clarity in that we realized the direct need for cross-compatibility amongst static and mobile units."

Configurability can be attractive, according to TouchPoint's Carlson.

"I would focus on making the mobile computing workstation a 'set it and forget it' custom solution personalized to each individual caregiver," he suggested. "Just imagine a mobile solution that through auto-recognition adjusts to your pre-set preferences – cart height, monitor height and brightness settings, lighting on the keyboard and cart worksurface that is exactly what you want and prefer and when you need it – even your choice of lighting hue and color, without adding any extra steps. The workstation might even be able to provide the ergonomically correct level of mobile assist power for pushing the mobile workstation based on the user's anthropomorphic data. This would help to eliminate, or at least take away, some of the drudgery that typically goes along with using a mobile workstation solution to allow caregivers to better focus on patient care and positive patient outcomes. And it would need to have at least 20 hours of uninterrupted runtime. I know, call me a dreamer, but there's where all good ideas start."

Workstations: What tends to be missing?

Features missing on workstations tend to mirror some of those missing on carts, too, sources say.

Salus homes in on cleanability and design. "Look for workstations that offer antimicrobial technology build-in. This addition is great at ensuring your workspace maintains its clean look and even keeps your workspace cleaner between cleanings," he added.

"Scalability, and the ease therein, seems to be a major obstacle most healthcare workstations fail to overcome," lamented Ramcoobeer. "As with carts, workflow and processes change, what seems to be weekly or daily. Modularity means scalability and current workstations miss this mark by not offering quick-change components that keep pace with frequent changes. Being able to scale a vital workspace up or down, easily and effectively, can be the difference between keeping up with capacity demands or suffering workflow inefficiencies."

Because the buying cycle for mobile computing workstations tends to be rather long, many facilities likely continue to use products from 5 to 10 years ago, Carlson surmises. "There have been many advances made over that time period in cart design and power systems," he continued. "I would suggest that if a facility is still using older models of AC-powered workstations with heavy battery solutions and inferior

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CARTS

1. Antimicrobial materials & surfaces: "If your current cart isn't infused with antimicrobial materials and surfaces this should be your No. 1 reason to upgrade. Antimicrobial surfaces improve infection control. This is important, not just because of COVID, but because of general patient care and safety. And to also offer peace of mind for end users that the equipment they are using is safe for them and their patients."
2. A broad range of security options: "Again, sticking with the safety theme. What type of security does your cart offer in the sense of protecting what's inside the cart? The right security for each application, from tamper evident seals offering quick visual security to mechanical locks to [radiofrequency identification] electronic locks with individual drawer access control. Your procedure carts need to be stocked and ready to go. These types of security features make sure that what's inside the cart — whether it's medication, PPE or other supplies — remains safe and secure and also make it easy to quickly assess the carts availability at a glance."
3. Full extension drawers with removable inserts: "Nothing is more frustrating or dangerous than when you can't access something that you need when you're in a critical situation. If your current carts don't provide full visual and physical access to drawer contents, it's time to upgrade. There are also removable drawer inserts to facilitate rapid restocking at the drawer level so that the cart is always ready for the next procedure.
4. High quality casters, including directional steering casters: "Casters are one of the most common break points on medical carts, so choosing a cart with high quality casters is essential. Directional steering casters increase the level and ease of mobility for end users."
5. An expandable worksurface: "Create additional organized task specific workspace when needed without increasing the footprint of the cart."

Both Capsa's Grabowski and H+H System's Ramcoobeer urge a move for carts toward connectivity rather than just serve as mechanical equipment.

For Grabowski, this translates to remote user management.

"Administrators want better security and better control over who is accessing the carts," he noted. "Clinicians want them to be easy to use. They want to get in, get what they need and get out. Upgrading to carts with remote user management can provide both. There are a variety of locking systems but the most common is a keypad with one code that everyone knows. This makes access easy but not very secure.

"Remote user management allows administrators to add and remove users remotely from a web browser," Grabowski continued. "The new user will have access wherever needed across the hospital instantly without the need to manually update carts. Deleting old users is just as easy, minimizing the security risks of theft and diversion from keys, old codes or badges around a facility."

An organization's cart should be able to interact seamlessly with the other components of the pharmacy — acting almost as an ecosystem, contributing to the overall pharmacy environment, according to Ramcoobeer. "

This lack of integration, seen with the majority of carts on the market, causes substantial workflow inefficiencies, leading to a loss of time, money and ultimately patient care," he said. "At H+H System, we believe the different areas of pharmacy storage should be able to work together, as to provide the most seamless workflow experience possible. This concept is immediately seen in the design of our FlexShelf line of products — bins from a FlexShelf storage tower containing heavy saline or IV fluids, for example, can be directly placed into one of our mobility units for quick access and easy distribution, saving both valuable time and effort."

Carts: What should be eliminated?

Given the chance to eliminate some feature, material or option on a cart model today, experts are neither obtuse nor reticent to suggest the possibilities.

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runtimes, that they should take a serious look at upgrading their fleet. There is a shortage of nursing resources in this country, so offering a best-in-class mobile workstation is not only the right thing to do for caregivers, it becomes a feature for attracting new, much needed employees."

The lack of ergonomic adjustability can lead to other challenges, according to Torbett.

"Many older workstations lack flexibility to support a broad set of configurations other than a traditional combination of monitor and keyboard," he observed. "There is increasing demand for the ability to mix and match different components using one common family of mounting solutions. Having the flexibility to mount just a display or all-in-one with touch screen, dual monitors, a laptop or tablets, helps to support a wider range of current and future use cases. In addition, mounting options for CPUs, and convenient access to scanners, printers and other devices and supplies need to be considered. Having more flexibility future-proofs the selection of workstation components so they can be moved and exchanged as clinical needs change."

Workstations: What should be eliminated?

As with carts, experts pinpoint with relative ease components they would cast away.

"Onsite assembly," Loper said. "Most workstations are too large to preassemble because they will not fit through the doorways and/or elevator in a hospital so the workstations are delivered knocked down. This requires onsite assembly in the final resting place of the workstation inside the department. Think IKEA but more intense, doing assembly work in a sterile environment. Not fun."

Torbett concurs. "The nicest thing to eliminate on fixed workstations would be the requirements associated with installing the workstation," he indicated. "Fixed workstations require planning to determine where to place the workstation and how to mount it properly. They require more cross-functional coordination to align plans and expectations. There is inherently less flexibility with stationary workstations than there is with carts, which are often preferred by IT as they are easier to swap out for maintenance and move out of the way without disrupting patient care areas. Non-powered carts are sometimes used as a compromise that offer mobile flexibility, while keeping costs lower so that one cart can be assigned to each room."

Salus points to the obvious: "Laminate. It has an old look and is less sanitary than other options on the market."

For Ramcoobeer, it's fixed, static technology. "It has become increasingly apparent that if a workspace and its components are not able to adapt to the needs of the user, workflow can be severely impacted," he said. "I believe there needs to be a transition away from fixed components in a workstation to a more modular design. Doing so allows healthcare professionals to spend substantially less time on non-clinical functions, transitioning the focus back to efficiency and patient care."

Although Carlson hints at a number of detractors that "actually rob time and attention from the primary focus of caregivers," he zooms in on one.

"I would focus on the reduction of swappable cart battery solutions marketed by a number of manufacturers," he noted. "Not only do they appear as an afterthought on most products, but they rob the nursing staff of precious time that they simply do not have to give. A nurse or a caregiver has a full plate already on every shift, every day/night, so requiring them to be the stewards of swappable battery systems in addition to their existing heavy workload is not a great option. The goal is to reduce the total number and time of tasks that nursing has outside of providing direct patient care, not to add to it." HPN

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For Salus, it's metal.

"Polymer has come a long way and today is as strong as or in some case stronger than steel," he insisted. "It also brings other advanced features that contribute to an overall improved design that can cater to healthcare needs. For starters, it can be mixed with an antimicrobial that makes the entire plastic antimicrobial, through and through. Unlike painted surfaces with antimicrobial, plastic-infused antimicrobial cannot wash off or scratch off, so it keeps the surfaces cleaner between cleanings for the life of the product."

Plastics also can take the edge off sharp corners, Salus emphasizes.

"Plastics can be molded to deliver softer corners, which are easier to clean, i.e., inside of drawers, and safer to the touch, i.e., exterior corners, like the cart body and drawers," he noted. "Metal starts as a flat sheet and is bent into shape, which the bending process inherently creates the sharp corners at the end of the bend and especially where two bends meet to form a corner. Plastics are also softer to the touch, unlike the less friendly feel of cold hard metal. Finally, polymers deliver a higher aesthetic, and you can trust that modern look to remain for the life of the cart, as there is no paint to chip, scratch or peel, and no rust to appear over time."

Carlson also recognizes the infection prevention benefits of proper molding.

"With the heightened focus on cleanability and infection control, eliminating unnecessary surface breaks and gaps, and other areas on carts that pose difficulty in the cleaning process, creating unnecessary additional work for caregivers whose time and energy should be focused on providing the highest levels of patient care," he said. "Always look for carts with smooth uninterpreted surface with easy-to-clean geometry and removable drawer inserts."

Ramcoobeer concurs that infection prevention considerations for carts must be top of mind today.

"In the wake of the COVID-19 pandemic, healthcare professionals find themselves faced with much more stringent cleaning protocols," he noted. "Along with increased cleaning, we are also seeing an increase in the deterioration of carts made from inferior, porous materials and plastics. There definitely needs to be a transition away from these materials to a more durable option such that structural and functional integrity is maintained even with the use of harsh chemicals."

Grabowski expresses concern for clutter.

"One feature that detracts from the aesthetics of a cart is the overuse of external accessories," he said. "A cart by itself has a clean look with supplies neatly organized within the drawers. Cart manufacturers strive to streamline workflow for clinicians but sometimes over-cater to their needs. Multiple external accessories are added to the sides of the cart, so clinicians have quick access to items without opening a drawer. Like most things, moderation is important. It optimizes workflow to mount one or two accessories and stock them with frequently used supplies, but commonly too many external accessories are used and then overfilled. The accessories extend the footprint of a cart, make it appear unorganized, hard to maneuver and difficult to clean. Reducing external accessories and getting supplies back in the drawers helps with the supply organization, the look of the product and perception of the quality of patient care."

Meanwhile, Loper yearns to kill casters in favor of something else.

"No matter the brand, casters over time will not function as intended," he said. "Think hover board. If we can remove the casters but still have the mobility of the cart, this will eliminate a lot of frustration for hospital personnel." HPN

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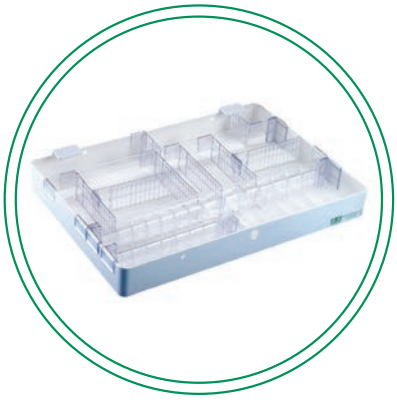

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CART & WORKSTATION SPOTLIGHTS

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H+H SYSTEM's FlexShelf line of products offer a high degree of cross-compatibility among the different unit types. One of the many areas this modular design can be seen is through our FlexModul bins. In addition to being subdivided to a user's specific needs, these bins can quickly be swapped between a workstation and a cart for easy distribution. This consistency is a valuable factor to drive, maintain and improve efficiency within the pharmacy and beyond.

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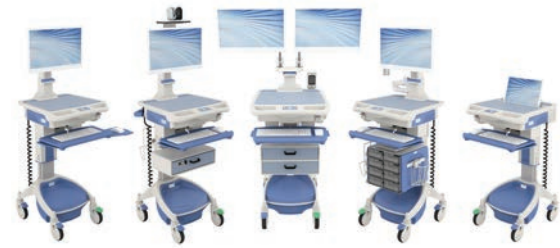

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Sharpening our focus

The sticking points of Sharps safety

by Scott Tomko

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Sharps safety in July of 2022 is just as important as ever.

The ways and means of ensuring it are continually enhancing, and the top healthcare companies are developing the best methods to keep moving forward.

However, in clinical settings, sharps injuries remain far too commonplace, especially in operating Rooms (OR).

The backbone of sharps safety rests on the practice of logical methods that are still far too overlooked.

Yet, overlook them, and you could be looking at a wound on your own hands, or, by your own hands.

A brief history

In November of 2000, the Needlestick Safety and Prevention Act was signed into law, increasing the requirements for safer medical devices, with an emphasis on sharps and needlesticks. This was done in direct response to the occupational exposure present in the healthcare industry to bloodborne pathogens.

Molly Moon, Director of Product Management for Medline Industries, states that, "sharps safety measures have increased dramatically since the Needlestick Safety and Prevention Act in 2000. This act aims to protect healthcare workers from needlesticks, and therefore exposure to bloodborne pathogens through various methods including the evaluation and selection of devices with safety mechanisms, personal protective equipment (PPE), education and training, regulations around disposal practices, and recordkeeping, among others. While this act has helped move sharps safety forward, until there are zero accidental needle sticks there is always room for improvement."

Molly Moon

A sharp twist: COVID-19

The COVID-19 pandemic has not made it any easier.

The strains of COVID-19 have taken their toll across the healthcare environment, and have had a direct, negative impact on sharps safety. In effect, the pandemic has essentially stagnated the progression of sharps across the industry.

Moon observes that, "our frontline workers were dealing with an unprecedented infection, an influx of very sick patients, supply shortages necessary for effective protection and treatment, and a psychological strain. Because of this, proper sharps use and disposal, understandably, wasn't everyone's top priority at all times. The pandemic has highlighted the need for not only safe products, but for safe products that are available and intuitive for clinicians to use. If you can't get the product or don't know how to use it, it doesn't matter how safe it is. This has shifted the conversation from not only product features, but also to product supply chain."

According to Kelly Kramer, Marketing Director at Cincinnati Surgical, "COVID-19 has put such a strain on basic necessity items and the medical industry as a whole, it has taken away the bandwidth to trial and therefore switch to new sharps safety opportunities."

Kelly Kramer

Cincinnati Surgical has been specializing in surgical blade manufacturing for more than 80 years and has come to develop a keen understanding of sharps safety in developing their products.

"Our focus as a blade manufacturer is on sharps injuries from blades," Kramer said. "There are two main causes of sharps injuries while using a blade: passing the scalpel, and removing the blade from the handle. We offer solutions for both. Training and adoption of these safety items are key to reducing sharps injuries. The easiest fix is to adopt the usage of blade removers and discontinue the practice of removing a blade from a scalpel handle with a hemostat.

"We offer retractable safety scalpels and a fully encapsulated blade management system that fits right on the handle a surgeon is used to using", Kramer continued. "We know that the weight and feel of an instrument are important, which is why we worked with our partner, Swann Morton,

Biogel® Delivers Möre

Glove breaches can expose healthcare workers to bloodborne pathogens and put patients at an increased risk of infection.[1]

Surgical gloves differ substantially when comparing in-use performance. In a US-based study across five facilities measuring in-use failure rates, non-Biogel gloves were at least 3.5 times as likely to fail as Biogel gloves.[2]

3.5x FEWER FAILURES

Fewer glove failures reduce the risk of exposure to pathogens and associated treatment costs while lowering glove waste and improving utilization.[1,3]

Biogel delivers more TÖTAL VALUE through lower cost-in-use and utilization savings.[1,3]

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to develop a safety blade called the KLEEN Blade Management System that maintains the weight and feel of a traditional blade and scalpel."

The CDC estimates that annually there are 385,000 needlesticks and other sharps-related injuries to healthcare personnel.[1] These injuries have been implicated in the transmission of more than 20 pathogens, including *hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).*

Fear of Needles

There cannot be many people out there who actually like the idea of getting stuck with a needle. In fact, many fear it, despite the benefits of why we are being injected.

In response, companies such as Pain Care Labs have developed their products with a focus on lessening this stigma; relatedly, they have regularly run campaigns on site to highlight their focus on reduced pain.

Amy Baxter

According to Amy Baxter, MD, CEO and Chief Medical Officer at Pain Care Labs, "we have had several hospital systems come to us to find ways to reduce the anxiety surrounding the injection as a means of reducing NSI (needle stick injury). Children's

Healthcare of Philadelphia brought us in to train staff on reducing anxiety of older children about vaccines, to reduce injury by addressing their unpredictability when frightened.

In regard to the direction the industry appears to be heading, Baxter states that, "IV access, and using techniques to reduce the need to re-stick will be helpful. For mass vaccination, needle-less injectors are certainly a huge direction in the field. In the past, the gas-propelled injectant hurt more, so the enthusiasm died down. Now pain is equivocal or better with some of the devices, and the convenience and safety of not having a needle to discard is moving groups to these interventions. Interestingly, since needle fear comes from the emotional recall of a previous injection experience, being approached with a device for a shot results in as much fear with or without a needle."

Baxter describes how Pain Care Labs products specialize in reducing that all too common fear which is associated with sharps and needles.

"Our devices reduce fear and pain using a specific pain-cancelling vibration frequency and ice. The Buzzy and Buzzy Pro are the size of a computer mouse, and can be placed directly on a muscle, port site, or fistula to numb the area. Because our devices are a fraction of the cost of numbing creams and work on contact, they have been really adopted as emergency departments and labs have had to spend their budget on PPE during the pandemic. In one study, Buzzy saved $13 per point of pain reduction compared to EMLA.

The Buzzy Pro from PainCareLabs

For vaccines, the shape of Buzzy allows patients to hold and control the pain relief about 1-2 inches distant from the injection site. When you don't feel a poke, you're less likely to jerk away. Buzzy Pro and our HealthcareXL are attached proximal to the site of injection, so patients can be

completely uninvolved while blood is collected or an injection is given. Giving the patients something to hold and a job to do can keep them from grabbing the nurse or the needle."

Waste Management

Things that we are sure to notice all over hospitals and healthcare facilities alike are the brightly colored bins used to dispose of regulated medical waste.

Sterilis Solutions is regularly working to remediate regulated medical waste, increase sharps safety, and aid hospitals in gaining control over their on-site waste management.

The company has developed and manufactured a solution that takes waste management to the next level. Their proprietary technology, known as the Remediator, converts regulated RMW into harmless, confetti-like material.

Each year healthcare facilities in the U.S. produce millions of tons of biohazardous medical waste. This waste is predominantly related to red sharps containers and biohazard red bags.

"Here at Sterilis, we are ushering in a new way forward for RMW disposal." said Andy Marshall, CEO of Sterilis Solutions. "The safety that it brings to healthcare workers is just one of the many ways the Remediator is changing the healthcare industry for the better."

On top of the exorbitant amounts of waste produced by these sharps containers and biohazard bags, RMW traditionally demands extensive waste hauling services. Such services are regulatory and liabilities to countless medical facilites.

The Remediator is a recycler, turning unsafe medical waste into a virgin-like plastic whuch is capable of being converted into a wide variety of new goods. Thus, it is truly giving new life to medical waste that would otherwise be filling landfills or being burnt in incinerators.

The Remediator from Sterilis Solutions

"We introduced the Remediator to not only help deal with the growing problem of RMW in our country, but also to further protect healthcare professionals," said Marshall. "They are the backbone of the healthcare facilities and initiatives that are crucial to our livelihood.

The Remediator is a game-changer because it virtually eliminates the risk of accidental needle sticks. With our machine, you are able to insert the whole sharps container right in the product. From there, the Remediator does the rest."

Keeping it neutral

The implementation of strict sharps saferty measures are vital to prevent injuries during perioperative care.

Practices such as double gloving, utilizing blunt suture needles, and establishing and using a safe or neutral zone will greatly aid in avoiding such injuries. Limiting hand-to-to hand passing of sharps will by itself eliminate one of the most common instances in which these injries occur.

The neutral zone is a designated area where sharps can be safely placed down

and retrieved by another person, avoiding such potentially danger contact.

According to Nina Morales, Marketing Associate at Viscot Medical, "More and more we have noticed facilities seeking solutions to enforce the hands-free passing technique. One of the most common causes of sharps injuries within the operating room is improper passing of sharps; an NIH study has proven that the hands-free technique can reduce these by half."[2]

AORN notes that a quarter of all suture needle injuries and over a half of scalpel injuries happen when a sharp instrument is being passed from one person to another; these staggering numbers are impossible to ignore.[3]

Morales continued, "sharps safety should be easy, intuitive, and- when possible-sustainable. We understand that adapting newer technologies and protocols can be challenging even if there is evidence that supports the change. The idea is to find devices that don't drastically alter what's already being done within the O.R. if possible. Reducing the amount of waste with a re-useable solution is a bonus."

One of Viscot's latest products is known as the Soffzone Neutral Zone, which is designed in a manner wherein it effectively serves as an invaluable 'safe spot' within an OR setting.

According to Morales, the Soffzone "solves many of the concerns around adapting a hands-free passing technique. The bright red color is something many clinicians already associate with sharps safety, as many needle counters and other sharps disposable items are already red, plus it is a highly visible color in the sea of blue and silver that is the O.R. The high visibility combined with the low profile makes passing sharps easy, and it enables an option for the clinicians to use their periphery vision, so they don't need to take their eyes off the surgical site. We've also made our neutral zone autoclavable, so it's re-useable and can be put right into every surgical kit."

The size of the Soffzone Neutral Zone make it ideal for a Mayo stand, a portable tray where surgical equipment and supplies are kept close to the patient being operated on.

Morales added that "the Soffzone is sized for the Mayo stand, creating a clear and obvious spot for the designated passing of sharps; the instruments in use are typically already on the MAYO, making the Soffzone a minimally invasive change to the current O.R. layout."

Holding things together

Air-Tite, a company with close to 100 years in developing syringes and needles, have developed a product that is built to enhance and ensure the safekeeping of needles.

Neil Garnache, President of Air-Tite, stated that, "the TSK Needle Holder helps prevent needle stick injuries by securing the hard-shell plastic capsules of cannulas and needles for safer loading and removal from the syringe. It also provides a tighter fit when fixing needles and cannula to the syringe. The weighted base and firm grip allows for a convenient, clean, and organized storage place for hypodermics during a treatment."

Garnache commented on the recent surges in needle demand, with particular emphasis on the impact caused by the pandemic.

"In general, we are seeing that the manufacturers of safety needles and syringes experienced very high demand, particularly during the early stages of international vaccination efforts. Combined with recent international shipping/logistics challenges, this has led to inventory shortfalls and higher prices. In some cases, this has caused some practices to use conventional/non-safety devices when they would normally choose to use a safety device.

"It seems that the industry did not have sufficient stock or capacity of the appropriate safety devices (i.e. syringes with small volumes and low dead space features, safety needles with appropriate gauge and length and low dead space performance) to support a global immunization campaign. While some progress in product design and production capacity has taken place, additional gap assessment and correction may be needed."

Advanced Medical Innovations specifically focuses in sharps safety products, such as MedMate, which continue to set standards for excellence in safe sharps management and injury prevention.

Mike Hoftman, President of Advanced Medical Innovation (AMI), commented that "due to the increase of very sick individuals with COVID over the last two years in hospitals, there was an increase of administering medication from vials into puncture ports for IV administration, which resulted in a high need for our newly patented product, MedMate.

"The MedMate provides a safe means to withdraw medication from a vial and inject it into a rubber port (IV line), without the need to use a standard hypodermic syringe and needle. In addition, it provides facilities with a cost saving opportunity, for, as opposed to using safety needles that need to be discarded after every injection, only one MedMate is required to complete a procedure.The MedMate is used for the complete procedure as many times as it is necessary."

Hoftman continued, "this is the main issue: if a practitioner gets pricked with a sharps in healthcare facilities and the sharps is contaminated with the patient's blood borne pathogen, there is a chance that the practitioner will get infected if the patient is infected. Therefore, it is critical for practitioners to use state of the art products and practice safety first."

AMI sharps safety products also include the Sharps Safety Station and Ultimate sharps Safety Station series of Needle Counter boxes, which include many safety features such as: Scalpel Blade remover single handed, Hypo syringe recapper exchanger with one hand, and parking places for the scalpel and syringe safely inside the boxes.

Keeping our focus sharp

According to the CDC, 36% of blood and body fluid (BBF) exposures occur in Inpatient units, and 29% in the Operating room; the percentage of personnel exposed to BBFs are nurses (42%) and physicians (30%).

Furthermore, 30% of estimated needlesticks and other sharps related injuries occur in the OR.[4]

Those working in our hospitals and healthcare facilities can never be careful enough, especially when it comes to the safe and effective management of sharps and needle sticks.

Sharp objects should always be removed from use when deemed necessary, and perioperative personnel must use sharps with the required safety-engineered devices, in addition to utilizing safety scalpels, syringes, and needles.

Moreover, personnel must carefully abide by and execute work practice controls when using sharps, including neutral zones, no touch technology, and the safe containment and disposal of all items.

We must keep our focus sharp, for the best safety practices are always in our hands. HPN

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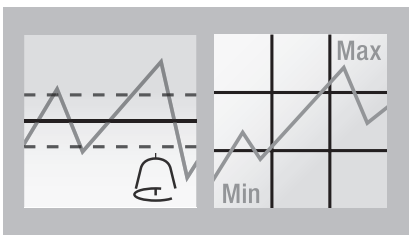

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EVS doing more with less

2022 Environmental Services Resource Guide

by Erin Brady

Environmental Services (EVS) teams in healthcare organizations play an increasingly important role in infection control. They must protect patients and staff from Healthcare-Associated Infections (HAIs) within a reasonable turnover time and with a declining workforce.

Healthcare Purchasing News asked industry professionals to bring to light some of these everyday challenges EVS workers face and comment on some of the products and resources that allow them to efficiently disinfect the healthcare environment.

Keeping your surface disinfecting options open

The challenges currently being faced by EVS teams in healthcare facilities mirror a struggle felt industry-wide, according to Jaimee Rosenthal, Healthcare Markets Director, GOJO Industries. "How can they complete the critical tasks required in healthcare settings with a shrinking labor pool? EVS teams face the daunting challenge of keeping both public and patient care spaces free of illness-causing germs with fewer resources and a dizzying array of product options to choose from. Product manufacturers can help by bringing healthcare facilities options that allow EVS teams to work more efficiently and effectively."

Jaimee Rosenthal

She emphasized, "Achieving a high sustainability rating or profile on surface disinfection products often comes at the expense of something else – typically either efficacy, safety rating, surface compatibility… or a mix of all of these. In today's world, it is more important than ever to provide options that are as SAFE as they are EFFECTIVE to help minimize healthcare's impact on the environment and the people in it."

GOJO recently launched its new surface disinfecting wipes portfolio, which achieve a Category IV EPA safety profile rating and are FDA Food Code Compliant. They are ethyl alcohol-based and kill 99.9% of bacteria and viruses including the ESKAPE pathogens, COVID-19 and drug-resistant bacteria in under two minutes, according to company literature.[1]

"From an Environmental Protection Agency (EPA) perspective, products that achieve a Category IV rating represent those with the lowest toxicity rating and, correspondingly, the highest safety profile a product can achieve. But it's also important to understand a product's impact on the user ("Do I have to now wipe this surface down in case a patient's food might come into contact with it?") and to the surface being disinfected ("Will this damage or degrade my equipment?")," said Rosenthal.

Healthcare facilities have long realized the critical role surface disinfection plays in their infection prevention programs, she continued. "With the industry experiencing extensive labor shortages, wipes are an essential tool in your cleaning arsenal."

Very few products have proven to be effective against biofilm, said Brian Spada, Area Vice President Mid-Atlantic/Southeast, EvaClean Infection Prevention Solutions by EarthSafe. "There is a large spike in demand for cleaning/disinfecting products with a sporicidal and neutral pH which can be used for daily and terminal clean to proactively defend against the aforementioned dangerous pathogens. Electrostatic technology has become in very high demand especially in the healthcare setting since they can mitigate cross contamination and cover three times the surface area in half the time."

Brian Spada

His colleague, Rich Prinz, Global Vice President of Sales, EvaClean Infection Prevention Solutions by EarthSafe, notes how Environmental Service Departments in healthcare facilities are experiencing high turnover rates that are plagued by labor shortages. "Today, electrostatic sprayers have revolutionized cleaning by providing the power to accomplish more in less time with less labor."

Rich Prinz

Doe Kley, BS, RN, CIC, MPH, T-CHEST, Senior Infection Preventionist, Clorox Healthcare said, "While it is an important time to reassess the protocols in place, a sanitary environment is key to infection prevention and control efforts. Healthcare

facilities still need continued diligence as it relates to cleaning and disinfection given it plays an imperative role as part of a holistic strategy to help keep patients, visitors, and staff healthy and safe from other pathogens that are easily transmitted via surfaces."


Doe Kley

Healthcare facilities have and will continue to be challenged with preventing the spread of pathogens that contribute to healthcare-associated infections (HAIs) like *Clostridioides difficile (C. diff)*, especially with the rise of antibiotic resistant pathogens, such as drug-*resistant Candida auris* (*C. auris*), Kley continued. "Both *C. diff* and *C. auris* can survive on surfaces for prolonged periods and frequent routes of transmission include contact with contaminated environmental surfaces such as medical equipment, fomites and person-to-person. Moving forward, it is also important for everyone in healthcare to continue playing a role in cleaning and disinfecting."

Everyone should contribute to infection prevention efforts, Kley said. "While EVS are required to clean given areas once a day, all staff such as nurses should clean and disinfect their workspaces including high-touch surfaces such as telephones and printer control panels. Nurses should also wipe-down high-touch surfaces in patient rooms such as doorknobs, bed rails, bed tables and control panels of medical equipment at least once per shift. All clinical staff should also clean and disinfect any patient care equipment they are responsible for after each use. To do so effectively, it is important to ensure everyone uses the right product for the right occasion as different areas in a hospital may have different cleaning and disinfecting needs based on the location and transmission risks. Given the high traffic in hospitals, a sanitary environment is key to infection prevention and control efforts and to achieve this, it will mean continued collaboration among disciplines, IPs, and EVS professionals."

Hygiene going digital

The COVID-19 pandemic emphasized the importance of ensuring proper hygiene compliance to help prevent the spread of illness, and evidence suggests that these heightened hygiene expectations are here to stay, according to Raquel Carbonari, North America Regional Brand Activation Director at Tork, an Essity Brand.


Raquel Carbonari

"Securing proper training for healthcare practitioners and EVS professionals can help departments deal with high rates of turnover," she said. Tork designed Tork Clean Hands Training and Tork Clean Hospital Training with the goal in mind to make hand hygiene and cleaning environmental surfaces training more efficient, engaging and accessible at no cost.

"Virtual trainings allow for best practice sharing anytime, therefore contributing to better patient health outcomes," Carbonari emphasized. Tork's trainings utilize virtual reality (VR) to enhance results. Trainees can practice the World Health Organization's (WHO) 5 moments for hand hygiene using their own hands.

Digital tools help EVS teams understand when and where there are cleaning needs in a facility, Carbonari said. "So many of our processes today have become digitized. Think back to 20 years ago, would it seem possible that patients would be filling out paperwork or checking into appointments on their mobile devices? Not only does digitalization make these processes much faster, but it supplies a steady stream of data from which healthcare professionals like IP technicians can make informed decisions."

While not 'new,' automated hand hygiene monitoring systems, like the PURELL SMARTLINK technologies, are becoming more readily accepted said Rosenthal, GOJO. The SMARTLINK Activity Monitoring System provides data collection in facilities 24/7. The system informs hospitals of their hand hygiene performance so they can take action as needed.

"As healthcare facilities are renewing focus on basic patient safety and public health efforts like hand hygiene, ensuring that the right products are in the right places is important. Hand sanitizers and soaps that are efficacious, proven to maintain skin health and are preferred by healthcare workers are needed to support compliance-building efforts. Simply put, if healthcare workers don't like the products, they won't use them – and then what's the point? PURELL offers a healthcare hand sanitizer that is efficacious at the lowest dose. This helps busy healthcare workers move between tasks more quickly, which is critical," Rosenthal said.

Her colleague, Megan DiGiorgio, MSN, RN, CIC, FAPIC, Senior Clinical Manager, GOJO, expressed that quality improvement initiatives were placed on hold during the pandemic. "It's still probably unclear the extent to which patient safety and quality have suffered. Be that as it may, quality metrics like hand hygiene are essential during times of both stability and crisis."


Megan DiGiorgio

The goal of any quality metric is to obtain reliable data to improve patient safety, yet hospitals relying on direct observation of hand hygiene alone are likely insufficiently allocating and deploying valuable resources, DiGiorgio continued. "The challenges of direct observation have been described at length, including capturing only a small portion of hand hygiene opportunities and the Hawthorne effect. Quality, safety and infection prevention leaders all readily acknowledge that a gap exists between reported compliance rates and hand hygiene behaviors taking place on a 24/7 basis and are questioning whether this gold standard is sufficient to manage risk in the wake of the growing burden of healthcare-associated infections (HAIs)."

Need to vent

Emerging pathogens and pandemics have expanded infection prevention and control program responsibilities requiring additional preparedness efforts and implementation strategies as recommendations have continuously evolved, according to Karen Hoffmann RN, MS, CIC, FAPIC, FSHEA, an infection preventionist consultant for the Vidashield UV24 from Nuvo Surgical. "The COVID-19 pandemic created a demand particularly surrounding products that could decrease aerosol exposure by increasing ventilation as droplet aerosol was recognized as the primary route of transmission."


Karen Hoffmann

The COVID-19 pandemic has affected IPC programs as efforts were diverted to focus on pandemic management, she continued. "MRSA and central line-associated bloodstream HAI incidence significantly increased during the pandemic, while other HAIs remained relatively stable. Air contamination is now being recognized as a significant risk for cross-transmission. Current HVAC systems do not adequately address the aerosol route of transmission. Installing upper room germicidal ultraviolet irradiation (UVGI) for example the Vidashield UV 24 system that are an HVAC adjunct to provide continuous improved ventilation is an overdue need."

COVID-19 exposed the weakness in infection prevention and control pandemic preparedness and stimulated many environmental solutions, Hoffmann emphasized. "The emergence of respiratory diseases, i.e., severe acute respiratory syndrome (SARS) epidemic in 2003, H1N1 influenza epidemic in 2011, and COVID-19 in 2020 has cemented the significance of providing adequate ventilation in healthcare facilities. There are three recommended environmental control measures fans, room air HVAC units and upper room ultraviolet germicidal irradiation (UVGI) to improve ventilation."

The cheapest intervention is using fans with outside air which in healthcare is problematic because of a lack of filtration, she continued. "Room HEPA units with are economical but have several limitations including, being noisy so are often turned off or blocked, and since these units generally sit on the floor or are mounted to wall draw air in a directional airflow that can increase exposure and may likely do little to improve air exchange rates. UVGI, for example the Vidashield UV24 system has overcome these problems by pulling air directionally up to the ceiling and returning 99.7% purification. Initial installation costs of UVGI are higher than fans and most room HEPA units, but as an HVAC adjunct provides continuous 24/7 air filtration."

Preparation matters

Sarah Simmons

As a result of the pandemic, the conversations about UV disinfection for healthcare facilities have changed significantly, according to Sarah Simmons, DrPH, CIC, FAPIC, Xenex Senior Director of Science. "People have a deeper understanding of the importance of a properly disinfected environment and the imperative to reduce the levels of pathogens in the patient environment."

Witt Copeland

Her colleague, Witt Copeland, Senior Director of Sales, said, "As a former EVS Director, I'm familiar with the challenges faced by EVS teams who need to disinfect rooms thoroughly yet quickly, even when staffing is tight. The LightStrike UV robot is proven to destroy pathogens that are missed and/or survive liquid chemical cleaning, which reduces the risk of germs being transmitted to hospital employees or patients."

Another positive that came out of the pandemic was the creation of the Environmental Protection Agency (EPA) Emerging Viral Pathogens Program (EVP), said Sharon Ward-Fore, BS, MS, MT(ASCP), CIC, FAPIC, Metrex. "The emerging viral pathogen claim allows disinfectant companies to make claims against harder-to-kill pathogens in the event of an outbreak. Companies can apply for this claim before an outbreak occurs using previous EPA-approved kill claims. When the emerging viral pathogen guidance is triggered, the disinfectants approved by the EPA for this claim are then able to make off-label claims for the new pathogen responsible for the outbreak. The emerging viral pathogen claim helps us know which disinfectants will work against new pathogens in a timely manner without being delayed by needing to obtain and test the outbreak strain. This is how we prepare for the next pandemic." HPN

Sharon Ward-Fore

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1. Covers 3x to 5x more surface area than two of the leading competitive surface disinfecting wipes. Based on 5 PURELL Surface Wipes vs 5 of each of the leading competitive wipes and two-minute dry time. GOJO Development Lab, 2945R1R1; LIMS #: P21-0084-001. | | 33668 (5/2022)

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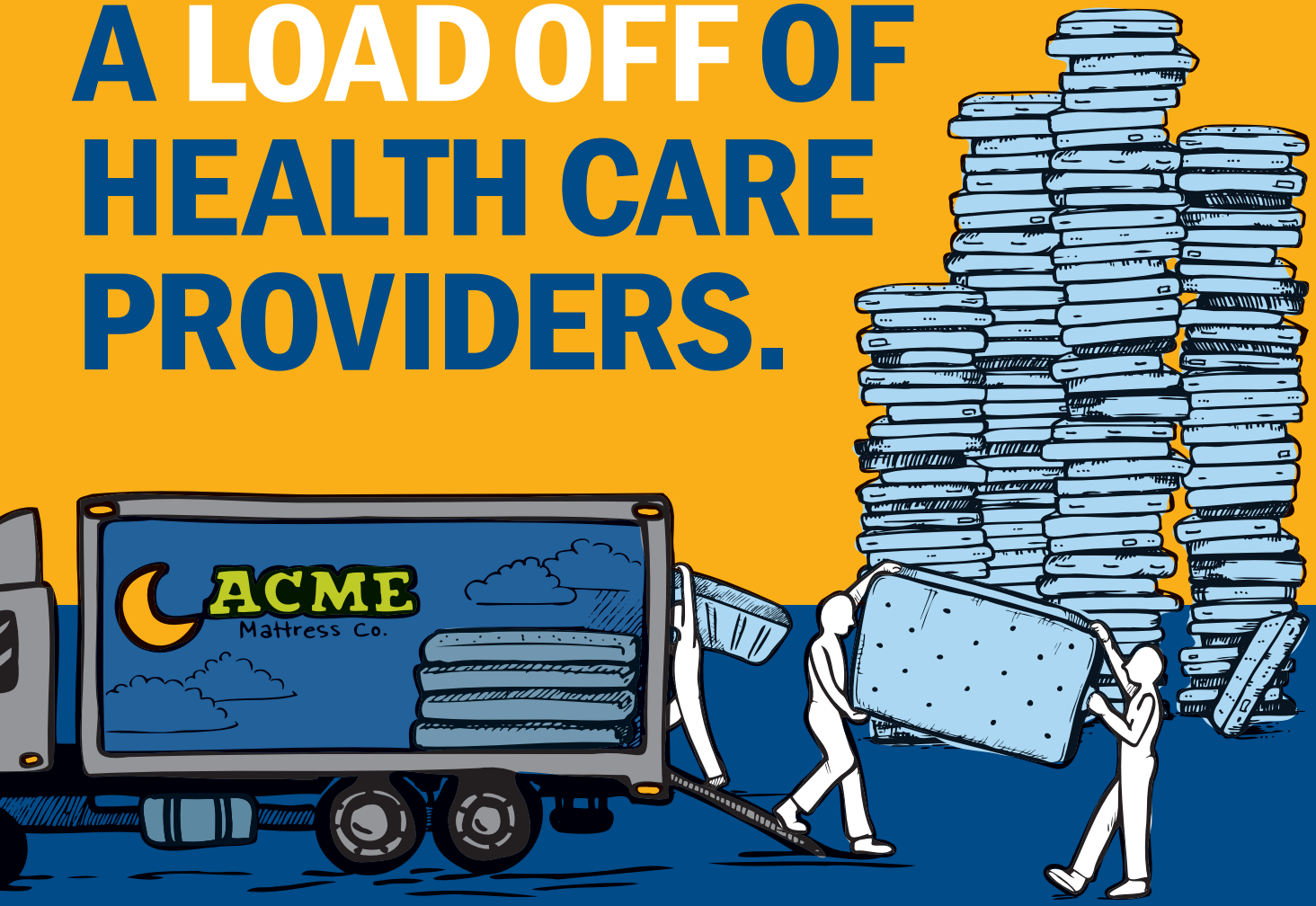

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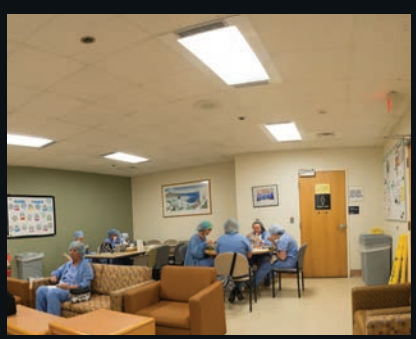

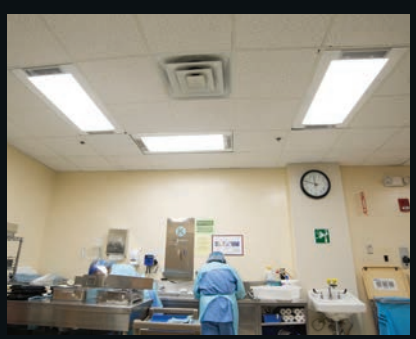

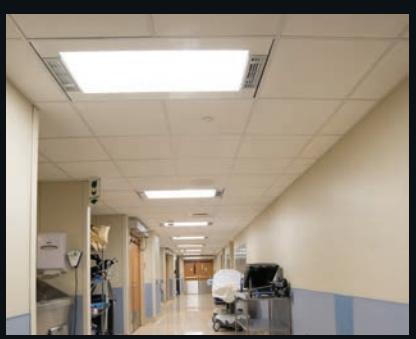

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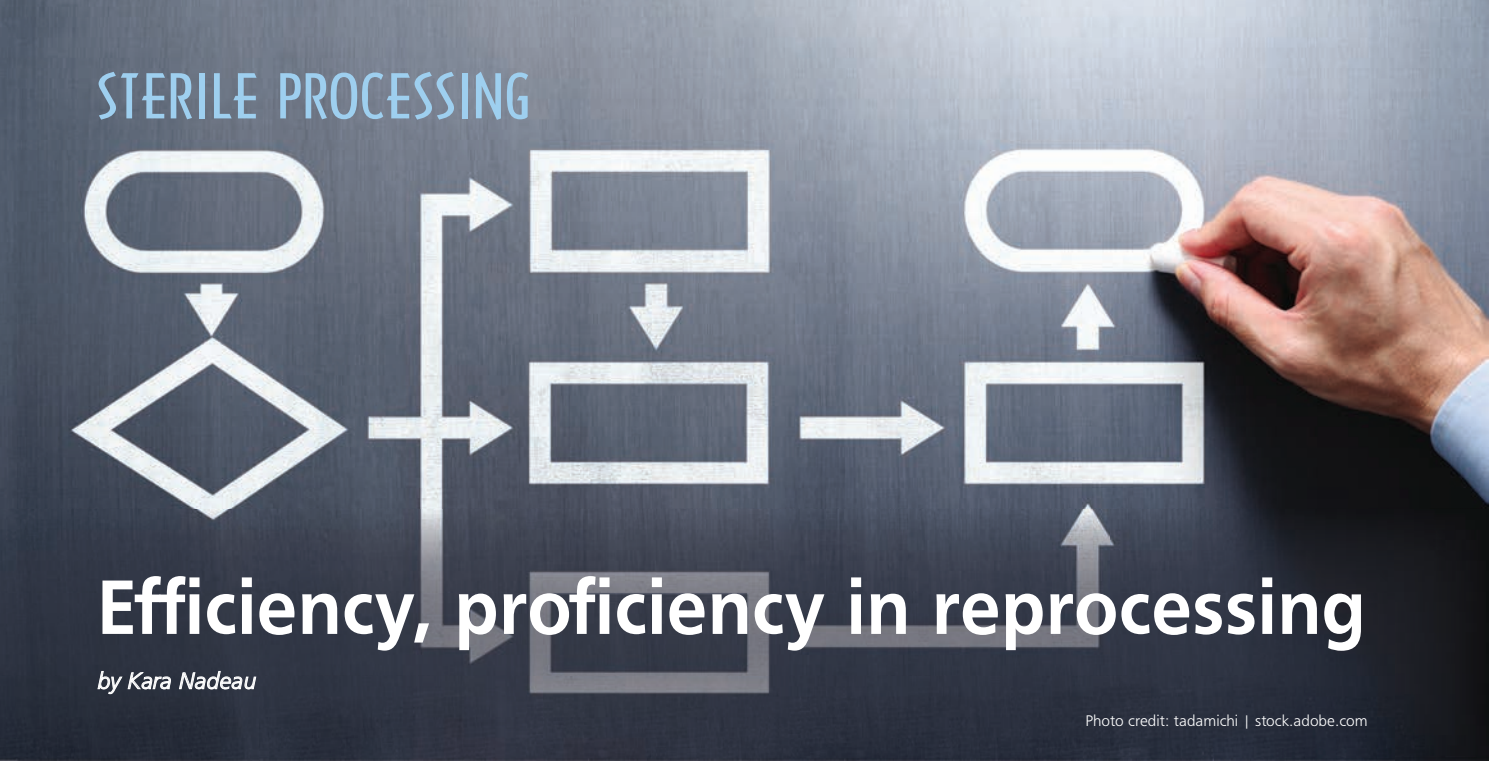


Efficiency, proficiency in reprocessing

by Kara Nadeau

Photo credit: tadamichi | stock.adobe.com

There is no rest for the weary in healthcare. This expression applies not only to frontline healthcare workers but also those responsible for patient care and safety behind the scenes, in this case, Central Service/Sterile Processing & Distribution (CS/SPD) department professionals.

While pandemic-related stops and starts for elective surgeries have been highlighted all over the U.S. media, researchers from Stanford Medicine have found rates for almost every major category of surgical procedure have quickly rebounded to 2019 levels.[1]

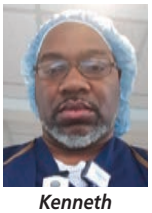
At the same time, most CS/SPD departments continue to struggle with staffing shortages and high turnover rates. In many departments, a small core group of individuals responsible for reprocessing high volumes of instruments and devices are constantly pressured to train new technicians.

How can CS/SPD department teams do more with less; maintaining or even improving the quality and safety of instrument and device reprocessing? And what about the latest elephant in the room – finding resources to comply with the recently released ANSI/AAMI ST91:2021, Flexible and semi-rigid endoscope processing in health care facilities, which impacts sterile processing workflows?

CS/SPD department professionals share ways they have improved workflows despite the current challenges, and suppliers comment on equipment, supplies and solutions that can support workflow improvement initiatives.

The power of people

Kenneth Campbell, CRCST, CIS, CER, CHL, Lean Six Sigma Black Belt, joined Berkshire Medical Center in Pittsfield, Mass. as Director of Sterile Processing in early 2021 to find the department's workflows had been significantly impacted by staffing shortages.



Kenneth Campbell

In a geographic region with no sterile processing schools or other forms of formal CS/SPD education, Campbell had eight open positions to fill, for which only one certified technician applied but quickly backed out because of a higher paying opportunity elsewhere.

With 30 years in the CS/SPD field, 18 of which was spent in the military, Campbell has been through the ranks of technician, lead, manager, supervisor, assistant director and now director. He understands the importance of establishing a career path for his team members where they can strive to get to the next level and have an incentive to help train others.

As a result, Campbell has gone far beyond filling vacant positions to building a stable, educated, and motivated team who could grow in the organization and in the profession. He established a CS/SPD career track for the medical center: Tech 1 (someone without certification), Tech 2 (certified technician), Tech 3 (has additional certifications), Tech 4 (CS/SPD lead).

"With this career track in place, team members can see that with more responsibility comes more money. They can visualize their worth, where they want to go and how to get there," said Campbell.

This strategy has enabled Campbell to retain experienced CS/SPD professionals who now have the incentive to train entry-level technicians, many of whom Campbell has recruited internally from other departments in the medical center. This includes kitchen and Environmental Services (EVS) staff members with no prior sterile processing experience but the desire for change and the opportunity to grow professionally.

Educating team members on best practices from the very beginning and continuously reinforcing the standards helps drive quality, safety and efficiency, according to Campbell. He has started by educating staff on the basics of cleaning, stressing how steps skipped on the "dirty side" result in double work for staff on the "clean side."

To help his team comply, Campbell has posted materials depicting standard workflows that break down each step of each process in each distinct area throughout the department. Although standards are important, Campbell acknowledges the importance of encouraging team members to speak up when something is not working and don't be afraid to say, "Let's do it differently." He states:

"Getting everyone involved and showing how their ideas are valued and efforts are being noticed is what takes a department to the next level of success. Every department, not just the CS/SPD, needs that level of engagement so employees feel they are part of the team and have ownership of their work."

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Navigating the challenges

Because staffing shortages are the number one issue CS/SPDs face today that directly impacts reprocessing workflows, John Kimsey, VP Operations, Instrument Processing, STERIS, explains how departments have established a new work assignment to alleviate the labor burden.


John Kimsey

"To maximize output of every single SPD technician, we found that utilizing a 'Navigator' assignment in decontamination and assembly helps minimize the time staff need to leave their workstations, increases their productivity, and improves the reprocessing workflow," said Kimsey. "The Navigator manages the instrument flow throughout the room bringing the prioritized work to the technician at the sink or assembly table and then takes it to the washer or sterilizer. By leveraging one person to manage the room's flow, the rest of the team stays focused on their work."

Simple, standardized communication

The central goal of CS/SPD operations is to support safe and effective patient care. In its Position Statement on Patient Safety, the Association of periOperative Registered Nurses (AORN) calls out the following components as vital to a safe perioperative environment: Effective communication, effective cleaning and care of instruments, developing and testing system improvements, and measuring effects and outcomes over time.[2]

Lynn Burbank, DNP, MSN, RN, CFER, CIC, Senior Manager Infection Prevention, Medical and Scientific Affairs, Olympus Corporation of the Americas, says effective communication should be standardized and simple for all users and recommends CS/SPD teams use a tool such as Situation, Background, Assessment and Recommendation (SBAR).


Lynn Burbank

Researchers have found SBAR to be "a reliable and validated communication tool that has shown to reduce adverse events in a hospital setting, improve communication among healthcare providers and promote patient safety.[3]

"This method of communication has been widely accepted for the handoff of patients from one provider to another and can be an effective tool for conveying processing steps," said Burbank. She describes how SBAR can be used to optimize safety, quality and efficiency in a CS/SPD department:

- Situation explains when the procedure was completed, if/when precleaning was performed and what occurred after the procedure
- Background provides context on the device and patient information, along with data regarding any problems that occurred with the device during the procedure
- Assessment explains the condition of the device
- Recommendation identifies the next step in managing the device

Process standardization

The more a CS/SPD team can standardize its operations and ensure compliance, the better product they will produce with fewer errors, says Kimsey. He recommends teams document how the task should be completed, ensure staff are educated and trained to complete the task, create leadership routines that ensure and measure compliance, and provide visual tools and real-time instructions to eliminate reliance on memory.

"I often talk to Leadership Routines as foundational to any successful SPD and the same is true here," he said. "If you take the time to standardize and train your staff, you should also implement Leadership Routines that include regular observations and rounds of staff to ensure they are following the standard work and create a culture of adherence."

Kimsey says BLUEfin instructions for use (IFU) compliance software for decontamination is one example of bringing standard work and IFU requirements to the technician in real time. Another is the STERIS SPM Surgical Asset Tracking Software Guided Workflow functionality, which allows a CS/SPD team to breakdown complex IFUs into manageable checklists and instructions that technicians follow step by step to ensure they complete each step correctly.

"Both solutions require education and an investment in processes as well as people," Kimsey added. "I cannot overstate the importance of taking the time to invest in your staff, provide them the training they need, and then provide positive support and feedback. So many SPDs do not even have an Educator let alone time to invest in their staff that it is no surprise our industry has such a high turnover rate that directly impacts our ability to provide the required quality product."

Cross-functional collaboration

Because sterile processing workflows extend outside the department and into procedural areas, cross-functional collaboration with clinical teams is often critical to boosting efficacy, safety and efficiency.

Case in point: The CS/SPD team at Silver Cross Hospital in New Lenox, Ill., engaged in cross-functional collaboration with its clinical customers in an effort to improve the point of use (POU) cleaning workflow. The hospital established a multifunctional, multi-departmental team to tackle POU instrument processing to standardize the return of instrumentation from the OR and other departments to the CS/SPD after use.

Sterile Processing Manager Jim Tyrell described the initiative:


Jim Tyrell

"SPD's customers were divided into 'regular instrument users' vs. 'one-off occasional' users. The rare/occasional instrument users or units were provided with bins, instructions, PPE and individual enzymatic spray to comply with AAMI requirements for proper instrument care at point of use. Regular use departments, like OR and Labor and Delivery, were provided all these items for proper instrument care at POU ahead of time in specific areas needed.

"We have instituted quality monitoring and feedback to the departments just-in-time to be sure all departments comply with the AAMI standards. All these efforts have helped streamline throughput and work processing workflows," Tyrell added.

Tyrell notes how his department is also involved in a collaborative effort to address another issue that impacts sterile processing workflows – late loaner tray deliveries.

"Not uncommon in many SPDs, late loaner deliveries put stress on afternoon staffing and capacity to get priority items processed on -time for the next day's cases," said Tyrell. "Silver Cross is partnering with our loaner processing vendor, Casechek, to reinforce cutoff times and to notify vendors using on-time data where vendors are failing to comply. This continues to be a work in progress."

Minimizing waste

The key challenge for any workflow is identifying and eliminating waste, according to Jeff Paquet, President & CEO, Mobile Medical International Corporation Solutions.


Jeff Paquet

"At any point of the day when work has piled up or that a piece of equipment doesn't have a load in it, it means there is probably waste in the workflow," said Paquet. "Wasted time, non-value-added activity, and wasted movement

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cause inefficiencies, quality problems, and add cost. Many times, a bottleneck at a piece of equipment isn't the result of equipment capacity, but how the workflow is managed up and downstream of the piece of equipment."

Paquet believes there must be a paradigm shift in the CS/SPD departments to begin viewing themselves as manufacturing departments. He recommends CS/SPD leaders learn about Lean Manufacturing principals, noting how they can start by reaching out to their state's Manufacturing Extension organization "for assistance with reimagining their workflow and identifying activities that will have significant positive impacts in a very short period of time."

When asked how a CS/SPD department can measure improvements in waste reduction, Paquet offers the following:

"The foundation of Lean is based on identifying and employing useful metrics that are then used to improve processes. This is linked together in the Plan Do Check Act (PDCA) cycle that ensures improvements are continuously happening. A key principle of Lean is empowering the voices of the people doing the work to transform and improve the processes."

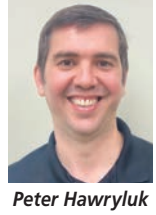
With regards to Lean methodology, Kimsey says CS/SPD teams can benefit from Error Proofing, or Poka-Yoke in Japanese Lean terms, which focuses on creating processes or tasks that eliminate the possibility of making a mistake or error.

"Using Guided Workflows within the SPM Tracking Software is an example of this within scope reprocessing," said Kimsey. "The workflows are preprogrammed to follow the standardized and required steps to correctly reprocess the scope and thus guide the staff member through the process one step at a time."

Reprocessing timing

Sometimes the question is not what to reprocess or how to reprocess but when to reprocess.

Peter Hawryluk, Account Executive, MedVantage, points to the challenge of having a universal expiration date that determines when scopes will need to be reprocessed, stating:



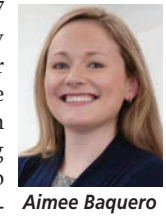
Peter Hawryluk

"Sterile Processing Departments can improve their procedures by correctly and accurately identifying the lot numbers. We see throughout the industry many facilities still using stamp guns which can smear or fall off in the sterilizer preventing the technicians from knowing when the tray has been sterilized. With our SteriDate system, the lot numbers will be automatically calculated, and labels will not fall off with our permanent adhesive label. Additionally, the SteriDate System removes handwritten labels and trays. By doing so, the SteriDate system removes human error. This makes it most appropriate for regulatory agencies."

A lesson in missing instrumentation

During the height of the COVID-19 pandemic when surgical volumes decreased, the CS/SPD department team at Rush University Medical Center in Chicago took the opportunity to search through storage spaces and instrument piles to find missing instruments. While this work lowered the number of missing instruments from 2,800 to just over 1,700, the team lacked a workflow to keep the missing numbers from increasing as cases resumed.

In January 2021, with the missing count back on the rise to 2,437 items, Rush University Medical Center's Director of SPD/HLD Aimee Baquero, partnered with the STERIS consulting team to find a solution to what she terms, "the missing instrument nightmare." She describes the process:



Aimee Baquero

"We started with a plan that reviewed our layout, capacity, staffing, workflows, utilization data and resources. With the help of the OR leadership, we cleaned up our SPM Surgical Asset Tracking Software database by removing obsolete items and quickly reduced the missing count by 31%."

"We still needed to find a process to keep instruments in their trays," Baquero continued. "Like many facilities that do complex cases with multiple set-ups, there are challenges with getting all the instruments placed back in their trays. Asking the OR to make changes to their complex processes was not reasonable when we had opportunities for improvement in SPD."

Baquero notes how her department was filled with extra instruments: Storage rooms with old instrumentation, stuffed cabinets and drawers, and an instrument wall that was "exploding at the seams." Her team, in collaboration with the OR, removed items that were overstocked, obsolete and damaged, donating unneeded items, labeling the instruments they kept and establishing a reordering system.

Next, they developed a "chipping" process at receipt of the case cart in decontamination:

1. The CS/SPD Navigator scans the cart into the SPM database, breaks down the cart, and places "chips" of the same color/series into every tray corresponding to that OR case
2. The "chips" are left in the sets through decontamination into assembly and grouped together after being washed
3. The assembly Navigator passes trays to the team, keeping trays grouped according to their "chips"
4. When staff are assembling the trays and encounter a missing item, they simply look into the trays with the corresponding "chips" to find the missing item

"To ensure staff fully understood the process and were able to easily follow it, we created a detailed standard work with visual aids and all staff are trained to these workflows," said Baquero. "Our ordering process was also standardized, and our new workflows allow for easy tracking through the approval and receiving processes."

"Changing to this workflow seemed a little too easy and we were concerned that we would not see a big change to our missing instrument woes," Baquero continued. "But, as of March 2022, we have seen an 88% reduction in missing instruments and are planning for further reductions throughout the year."

Baquero attributes most of the success of this process change to standardization and their leadership team holding staff accountable to the processes.

Rush University Medical Center in Chicago has outsourced its entire CS/SPD department to STERIS, with Baquero now serving as Director Clinical Operations at STERIS Instrument Management Services.

The challenge of robotics

Silver Cross Hospital is one of the highest volume facilities for Davinci procedures in the Chicagoland area. Tyrell comments on how robotic surgery poses its own unique challenges to CS/SPD workflows, stating:

"Davinci robotic arms require multiple extra steps to process them per the IFU. We took a closer look at the process and noticed backlogs in decontam. Our compacity for ultrasonic washing was holding up our process so we purchased a new ultrasonic (Getinge Triton) to grow our capacity in that area to remove the bottleneck."

"Growth in robotics also created growth in the need for low temperature sterilization capacity," he added. "We looked at our options and decided to diversify our modalities in low temp and complement our ASP Sterrad 100nx sterilizers with a Stryker VP4 low temp sterilizer. Most of our Davinci lenses now flow through our VP4 sterilizer along with other miscellaneous items which has removed our backlog in the low temp sterilizer area."

The Critical Role of Sterile Supply Management During COVID

By John Jorge, CSD/SPD Director at St. Francis Hospital and Medical Center

It is no secret that hospitals around the world are under extreme pressure to maintain a safe and sterile environment while managing a rapid influx of patients during the COVID-19 pandemic. These efforts have put pressure on both hospital staff and supplies. Many hospitals are facing significant backlogs as they scrambled to provide treatment to COVID patients as efficiently as possible while also ensuring that they address the needs of other patients.

For many hospital managers, this unprecedented scenario highlights areas where hospital operations are often at risk – including workflows and procedures related to sterilization. As these challenges continue, there is growing evidence that hospitals that took steps to integrate a sterile reprocessing management solution before the pandemic are better positioned to maintain top-level patient care.

Staying safe and organized with T-DOC by Getinge

When the pandemic hit, hospitals were thrown into a world of chaos as we worked to treat patients and keep staff members safe. I heard many stories from colleagues at other hospitals who quickly ran out of sterilized products that resulted in procedure delays and significant disruptions in workflows. Hospital teams often had to scramble to find the products they needed. Thanks to our asset tracking system called T-DOC 2000, St. Francis Hospital and Medical Center was able to stay ahead during these challenging times.

Installed in 2001, T-DOC 2000 provides access to full traceability of instruments and other goods the operating room needs. The system also documents all the sterile processing steps necessary to ensure regulatory compliance and quality assurance. The T-DOC solution seamlessly integrates into our existing scheduling, materials management and finance systems. With this capability in place, when the pandemic hit, the automatic prioritization feature made it possible to identify and triage the instruments that need to be processed to prevent scheduling and operating room delays. T-DOC also integrates with our materials management system, which helps reduce the risk of backorders and replenish instruments that are needed for upcoming procedures. Our T-DOC system continues to manage these needs even as we see rapid exponential growth in patient admissions.

T-DOC 2000 ensures full traceability of instruments and other surgical assets.

Addressing problems before they happen

Keeping washers and sterilizers running at optimal levels is imperative during regular times and even more so during times of crisis. A second resource called Getinge Online provides digital support to manage workflows and address problems before they arise. Through this online platform we can access extensive real-time information on our Getinge washers and sterilizers, 24/7 from any location. The system also sends an alert text message if there is an equipment error or when an important process is complete. If there is an issue, I can go back through the last 30 printouts to confirm and address the problem. I am also able to communicate with members of the Getinge service team and stop or start any instrument sterilization procedure, all from my phone. The service also provides detailed analytics that help assess the performance of Getinge equipment as well as related throughput, productivity, and ensure compliance and regulatory requirements.

Sterilization in a post-pandemic world

As we begin to recover from the pandemic, the importance of efficient workflows and high-level sterilization remains top of mind for physicians and hospital decision makers. Systems like T-DOC that allow for integrated use and real-time monitoring can help ensure departments have the tools they need to better support patients by reducing surgery delays while ensuring patient and physician safety. Without these solutions, we would not be able to provide patients with the care they need.

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Let's talk about ANSI/AAMI ST91:2021

There was much excitement across the industry when the long-awaited updates to ANSI/AAMI ST91:2021, Flexible and semi-rigid endoscope processing in health care facilities were released in March 2022. We asked CS/SPD professionals and suppliers for their thoughts on the impact of these changes to CS/SPD departments that reprocess a high volume of scopes, and advice on how to proceed with implementation.

Debra S. Burns, BS, CRCST, CIS, CHL, LBBP, Certified HSPA Instructor, Sterile Supply Consultant, Aesculap

"The updates to ST91 address new guidelines for cleaning, verification, drying, storing and patient safety and may require major process changes and possibly major purchases. A way to manage the change is to review the updates and evaluate the resources available to move toward compliance.

"A good place to start in managing change in sterile processing is with a comprehensive and quality training program. For example, the more challenging updates involve the high-risk scopes having different processing requirements, cleaning verification and sterilization. Enhancing the visual inspection can add quality to the current cleaning processes. As the guidelines state, endoscopes should be inspected with lighted magnification along with the cleaning verification testing.

"A recommendation for implementing and managing the changes is to prioritize the changes high on the list. ST91 does not state how soon the changes need to be adopted, but it would be best practice to have an implementation plan to provide to the surveyor in the event a visit is conducted before the changes are made."

Kenneth Campbell, Director of Sterile Processing, Berkshire Medical Center

"There is certainly a lot of controversy around the changes. You must admit that 10 minutes is a long time to be standing somewhere blowing out a scope. With regards to the guidance on using only two sinks now - one for cleaning, one for rinsing – today's departments are not set up that way. As for sterilizing scopes versus high level disinfection, many hospitals are not in a position to send down scopes to be sterilized so what they you do? There is a lot of conversation going on around that right now.

"The reality is that a department can't do it all at once. Something I heard said at the 2022 HSPA Annual Conference has stuck with me, and I now say it to my team, 'While we want a perfect department let's start with a perfect day with no mistakes today and we will worry about tomorrow, tomorrow.' By doing so, each day will get a little easier."

Peter Hawryluk, Account Executive, MedVantage

"Departments should develop guidelines and protocols with their staff to ensure that all work adheres to the necessary requirements. Specifically, accurate dates for hang time should always be cross checked to make sure that the hospital standards are being met."

Jeff Paquet, President & CEO, Mobile Medical International Corporation Solutions

"Based on our review and understanding of the standard, CS/SPD are being pushed away from manual processing, and toward high-level disinfection and sterilization of endoscopes. This means more use of low temperature sterilizers."

Eric S. Smith, CFER, Infection Prevention & Control Specialist, Medical & Scientific Affairs, Olympus Corporation of the Americas

"For facilities that follow AAMI standards, the ST91 updates may add time to the reprocessing procedure for leak testing, drying time and cleaning verification depending on endoscope risk. Scopes that fall under the classification of delayed reprocessing will require additional steps before the normal processing cycle with which staff may not be accustomed. CS/SPD departments should make trial reprocessing runs based on the new standards to determine how the updates may impact their specific facilities.

"CS/SPD departments will need to figure out whether existing equipment and processes are sufficient to meet the new standards. A facility, for instance, may need more drying equipment to incorporate the additional reprocessing time or new equipment to track reprocessing and storage steps. Facilities may need to schedule more time between procedures to account for the longer reprocessing requirements."

Measuring workflow improvements

Tracking and measuring progress in CS/SPD workflow can help drive continuous improvement. Showing how an initiative delivered results in efficiency, quality and/or safety can also help a CS/SPD team gain leadership support for additional investments in the department.

Kimsey categorizes measurements into three categories: Outcome Measurements, Process Measurements and Waste Measurements. He says all of these can be used to measure improvements and create a continuous improvement culture.

"Outcome Measurements are the easiest and most common in that they measure the quality of the final product or service," said Kimsey. "For most SPDs, this is the quality of the instruments sent to the OR and/or the service provided. While customer facing quality should always be measured, it is a reactive measurement that is often too late. It is much better to build in proactive measurements that help catch the issue before it reaches the Customer."

Kimsey describes Process Measurements as those that focus on the process steps and how well a CS/SPD team performs and adheres to them. Examples of Process Measurements include compliance to standard work through audits and observations, dirty instruments caught in assembly, instrument backlog in assembly, and missing instruments.

"The concept is that if you control and improve the internal process, the outcome or product produced will be better," Kimsey explained. "Another way to look at Process Measurements is to measure how well the internal product is 'handed off' between each step of the process. This includes how well the OR hands-off the dirty tray to SPD and how well decontamination hands-off the tray to assembly."

According to Kimsey, Waste Measurements are the hardest and least used. They focus on measuring what Lean refers to as "wasted activity."

"This includes measuring rework, returned unused items, phone calls, special deliveries, or anything that is not according to plan," said Kimsey. "A fun way to look at this is to envision the perfect SPD and then measure what's happening that shouldn't!" HPN

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PRO TIP: DON'T FORGET TO STICK OUT YOUR TONGUE.

Another important thing to know is that Key Surgical now has more weights and sizes of double-bonded, SMS sterilization wrap than ever before. With sizes starting at 18" x 18" and up to 54" x 54" and weights from 100 to 600, wrapping the various size trays in SPD (making sure to always leave the 'tongue' out) will be easier said *and* done.

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July 2022

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LEARNING OBJECTIVES

1. *Describe the types and material properties of sterilization wraps*
2. *Name five functional factors to consider that impact wrap performance*
3. *Discuss process-related variables that can impact sterilization wrap conversion*

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SELF-STUDY SERIES

Sterilization wrap

Facts to help optimize selection and use

by Jamie Zarembinski

Today is a hectic wrap day in the sterile processing department. Here's the scene; the surgical schedule shows that loaned sets are coming in for several cases, but they have arrived late and require a quick turnaround. The department also received a bunch of batteries that will need to be reprocessed. On top of all this, the operating rooms are calling again about pinholes, rips and tears they have discovered on their wrapped sets, which have caused the entire contents of the packs to be unusable. Needless to say, the plan to find a new sterilization wrap vendor could not have come at a better time!

The wrap selection process

Choosing a new wrap is simple, right? Just get some samples from the vendors, wrap and reprocess some typically challenging items, then send them to the OR for evaluation. But is this everything that needs to be considered before choosing the optimal wrap for a particular healthcare system? The Association for the Advancement of Medical Instrumentation doesn't think so. AAMI recommends a systematic process using a multidisciplinary team of individuals, and includes a review of:

- Product performance
- FDA clearance and legal status
- Expert opinions
- Standards and guidelines
- Contribution to patient safety
- Compatibility, safety, and environmental impact
- Results of documented product trials, if applicable[1]

Furthermore, AAMI recommends that the trials performed at each facility confirm the applicability of the chosen new product to that facility's needs and desired results. For example, if the change in wrap vendor is being driven by moisture events (wet packs) the trial would include appropriate testing demonstrating the impact the new wrap has on moisture events in that facility.

Wrap options

Choosing a new wrap begins by reviewing all available wrap materials. *Reusable woven wrap* consists of many threads interwoven to make a tight weave. One example is muslin sterilization wrap, a lightweight, loose weave, high-thread-count woven cotton fabric. The loose weave gives muslin a lot of flexibility, and the high fiber count enhances its durability. These reusable sheets are both puncture and cut-resistant, benefits that helped them become the sterilization wrap standard of care for many years. Today's woven wraps are typically composed of several types of fiber, such as cotton, polyester, and carbon fiber, to create a water-resistant yet pliable sheet.

If reusable woven wrap is being considered, AAMI recommends that facilities have a means to track the number of launderings and sterilization cycles each piece of wrap has undergone. Facilities should also have procedures in place for inspecting and mending wraps, and these procedures should be consistent with the wrap manufacturer's instructions for use. In addition, it's important to investigate whether the selected woven wraps have a set limit to the number of times they can be laundered and/or sterilized and remain effective.

The variety of materials used in woven wraps requires an assessment of their compatibility with the sterilization processes being used in each facility. Not every woven wrap material can be used for every sterilization process. For example, cellulose wrap materials cannot undergo vaporized hydrogen peroxide sterilization cycles. The wrap's instructions for use will indicate any compatibility limitations and should be followed to assure effective processes.

Single-use nonwoven wraps are the most common sterilization wraps used in the United States. Nonwoven wraps are formed by laying down fibers or filaments over each other and then applying pressure. The fibers create intricate crisscrossed layers, which creates a tortuous pathway that provides a microbial barrier. Fiber-based nonwoven wraps use cellulose fibers obtained from plants. Cellulose fiber-based wraps offer good durability and puncture resistance, and excellent moisture absorption and wicking. Modern fiber wraps combine cellulose

material with synthetic binders and small amounts of polyethylene terephthalate fibers. This increases the material's malleability without compromising the bacterial barrier or moisture absorbent properties.

Synthetic nonwoven wraps using synthetic filaments are the most common sterilization wrap in use. The wraps are created by melting a plastic and spinning the molten liquid to create filaments. When a continuous filament is made and deposited it is referred to as spunbond. When the filament is finer and noncontinuous, the process is called meltblown. Typically, sterilization wrap is composed of three to four spunbond and meltblown layers of polypropylene (a type of polyolefin). These wraps are durable, moisture repellent, and chemically resistant.

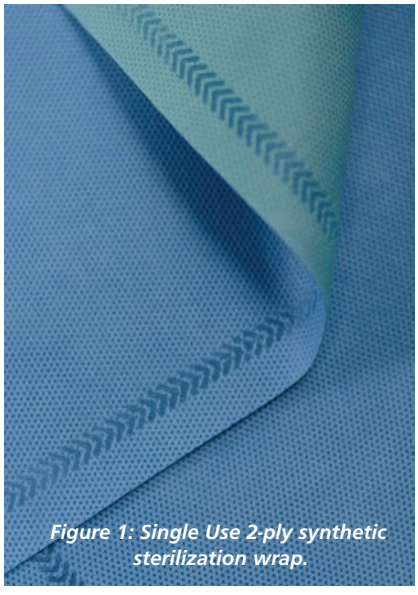

Figure 1: Single Use 2-ply synthetic sterilization wrap.

Functional factors impacting performance

There are a number of factors to consider before choosing between a woven reusable wrap and a nonwoven single-use wrap. Moreover, it may actually be necessary to select more than one type, size, and weight of sterilization wrap to address all the needs in a particular facility.

The way in which a sterilization wrap is used in a sterile processing department dictates the performance requirements that are needed. There are five key factors to consider when determining sterilization wrap performance needs for your facility.

Size. Sterilization wrap must be appropriately sized to properly enclose specialty trays, general instrument trays, bowls, and bulky or unusually shaped medical devices for sterilization. The wrap should be large enough to be loosely folded to provide a barrier to environmental contamination but should not be so loose that it could snag or buckle and create an opportunity for contamination. Wrap that is too large creates extra folds or bulky areas that may make sterilant penetration difficult. Wrap that is too small can buckle and reveal open pathways leading directly to the pack's contents.

Strength. Wrap must be strong enough to hold the devices without tearing. Each type of wrap is rated for specific item weights. This is particularly true for nonwoven wraps. Items that weigh more than the wrap's rated weight could cause extra stress on corners that results in tearing. Compare your facility's wrapped item weights against the weight ratings of the wraps under consideration to ensure that a solution is available for all wrapped items.

It's also important to keep this in mind: the higher the weight rating, the thicker the wrap. Thickness combined with the water repellency of a dual-layer wrap can lead to unwanted moisture events when lightweight items are wrapped with thicker wraps. Be sure to follow each wrap product's instructions for use.

Compatibility. The sterilization wrap must be compatible and validated for the sterilization processes used at the facility. Each wrap's instructions for use should include a list of sterilization processes and cycle parameters for which it has been validated. It may be necessary to have more than one wrap type, weight rating, and size to accommodate all sterilization processes.

Malleability. Sterilization wraps must be flexible enough to conform to the shapes of the items being wrapped, but also be rigid enough to prevent snags and abrasions. A wrap's malleability is also especially important for aseptic opening. Aseptically opening a pack requires surgical staff to pull the various folds away from the sterile items without touching them. Malleable wraps can achieve this because they easily drape away from the pack contents when pulled. Wraps with poor malleability can be difficult to unwrap and may retain shape memory after sterilization and storage, both of which complicate aseptic opening of the wrapped item.

Moisture absorption properties. This fifth performance factor is a bit of a double-edged sword. On the one hand, good moisture absorption and wicking help distribute condensate during steam sterilization and promote drying. On the other hand, these same properties can be a negative if a sterile pack is exposed to humidity during storage since they may increase microbial migration into absorbent materials.

Wraps with moisture-repellent natures do not absorb moisture during storage, but they tend to allow pooling of condensate and can be challenging to dry after steam sterilization. This challenge can be easily overcome by following all instructions for use, ensuring good steam quality, and using wicking materials within the wrapped items.

Process factors impacting successful use

There are a few process-related considerations to review when selecting new sterilization wraps. Though they are not directly related to the wrap's performance, failure to address these could lead to a poor conversion experience.

Prep and pack processes. The department's set preparation and wrapping techniques should be reviewed for compliance to manufacturer's written instructions for use. The review should include confirming weight ratings and sterilization parameters and assessing the department's wrap folding techniques. In general, wraps should be folded loosely to prevent stress on corners and edges. However, wraps should not be so loose that they easily catch on other items, which can cause tears, punctures, or premature opening of the pack. There are several recommended methods for wrapping items. Refer to each wrap's instructions for use and to guidelines such as the ANSI/AAMI ST79 Comprehensive guide to steam sterilization and sterility assurance in health care facilities for specific details. Procedures should be updated, training provided, and competency verified before converting to any new wrap.

Wrap accessories. Items such as tray corner protectors, absorbent/wicking towels, tray liners, instrument organizers, tray pouches and other accessories are used within wrapped items to help protect wrap from damage or to encourage condensate drainage and drying during steam sterilization. It's important to assure that these accessories are validated for use with the new wrap. This is especially important when going to a new wrap material that has different moisture absorbing and wicking properties.

Handling and transport techniques. All wrapped packages should be touched as little as possible. Wrapped items should always be lifted from the bottom and placed onto the sterilizer racks. They should not be pushed or pulled across surfaces, since

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

surface burrs/irregularities can catch and cut the wrap. Items used to carry or protect wrapped packages from damage, such as trays and shelf liners, should also be reviewed for compatibility with the new wrap.

Storage methods. Ensure that wrapped items are not stacked or positioned in a way that could create punctures or tears. Storage shelves should be free of burrs and snag points. Shelf liners may help protect wrapped packages from damage.

Wrap inspection. Sterile processing and operating room staff should be trained on how to properly inspect wraps. Before wrapping and after sterile packs have been moved to the sterile field, each sheet of wrap should be inspected for holes, tears, abrasions, and cuts. Some sterilization wraps now recommend the use of light-boxes for inspection in sterile processing departments. Others recommend holding the wrap up against a light source such as an inspection light or ceiling light.

The ability to see holes in a wrap depends on several factors. One study looked at the ability of OR staff to detect holes within the thickest single-use polypropylene two-ply sterilization wrap available. Holes ranging in sizes from 1.1 to 10 mm were evaluated. The study demonstrated that only the 10 mm hole could be consistently detected by OR staff.[2] A similar study evaluated a medium-weight wrap with hole diameters between 0.86 and 5.0 mm. The results indicated that holes of 2.5mm and higher were readily detectable by the naked eye.[3] However, both studies concluded that the ability to detect holes was not related to experience, the OR light source, or inspection time, and others have suggested that the pattern on these specific wraps may have contributed to the inability to find holes.

In the real world, wrap damage is rarely due to the manufacturing process. Instead, it is more likely to be due to an event that occurred during transport, handling or storage. The tables below summarize some types of damage and their causes for the two primary categories of wrap products.

Assure a positive sterilization wrap conversion

Pin holes, rips, and tears in wrapped surgical sets create havoc in the OR and cause more work and critique for the sterile processing department. Changing wrap products may solve the problem, but only if all functional, process, and human factors are taken into consideration before making the selections. Rather than being reactive, the evaluation and selection process should be systematic and should meet the needs of both the surgical and sterile processing departments. This will lead to a successful conversion experience. HPN

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Jamie Zarembinski is the clinical educator for sterile processing at Key Surgical. She speaks on sterile processing topics at medical facilities and educational seminars around the United States, while also working with sterile processing staff to develop and implement best sterile processing practices. In 2018 Jamie was the recipient of

Table 1: Common damage found on woven sterilization wrap

Damage Description	Cause
Straight-line cut with clean edges	Knife cut from opening shipping packaging with a box knife
Snag cut: Straight line or many smaller cuts or holes in a straight line. Ragged edges	Tray pulled or pushed on rough surfaces
Pressure hole less than 2 mm, typically along tray edges	Dropped packages, or from packages stacked on top of the wrapped tray
Triangular snag hole with loose fibers on the edge	From being pushed or pulled against a bur on a sterilizer cart or rack surface
Puncture hole penetrates package and has ragged edge with fibers	Typically, from instruments within the tray puncturing the wrap
Small pin hole that may or may not go through both sheets	Loosening fibers due to repeated laundering
A fuzzy surface or fuzzy perimeter with a hole in the middle	Caused by repeated pulling and pushing over a hard surface. If frequent enough, it can create a hole.
Staining and discoloration	Minerals within steam or water supply such as copper or iron. Use of bleach or other unapproved cleaning agent

Table 2: Common damage found on nonwoven sterilization wrap

Damage Description	Cause
Straight-line cut with clean edges	Knife cut from opening shipping packaging with a box knife
Straight line cut with compressed edges, typically found at bottom tray edges or top tray edges	Heavy wrapped package is moved along a smooth hard surface Heavy package is stacked on top of the wrapped package
Snag cut: Straight line or many smaller cuts or holes in a straight line. Ragged edges	Tray pulled or pushed on rough surfaces
Pressure hole less than 2 mm, typically along tray edges	Dropped packages, or from packages stacked on top of the wrapped tray
Triangular snag hole with loose fibers on the edge	From being pushed or pulled against a bur on a sterilizer cart or rack surface
Puncture hole penetrates package and has ragged edge with fibers	Typically, from instruments within the tray puncturing the wrap
Small pin hole that may or may not go through both sheets	Manufacturing defect or physical damage from a sharp instrument
Large round or irregular hole with hard melted edges.	Contact with a hot instrument or light bulb
A fuzzy surface or fuzzy perimeter with a hole in the middle	Caused by repeated pulling and pushing over a hard surface, if frequent enough, it can create a hole.

the Robert Hilbolt Award for outstanding healthcare professional in the sterile processing industry from the Michigan Society of Healthcare Central Service Professionals (MSHCSP). She has completed CRCS, CHL and CER certifications through the Healthcare Sterile Processing Association and is currently working towards becoming an HSPA Certified Instrument Specialist.

CONTINUING EDUCATION TEST • JULY 2022

Sterilization wrap: Facts to help optimize selection and use

Circle the one correct answer:

1. **According to AAMI, what should be reviewed when evaluating a new sterilization wrap?**
   A. Product performance
   B. FDA clearance and legal status
   C. Standards and guidelines
   D. All of the above
2. **Which type of sterilization wrap is composed of spunbond and meltblown fibers?**
   A. Egyptian cotton
   B. Reusable woven
   C. Crepe paper
   D. Synthetic nonwoven
3. **Which performance factor is rated using the content's weight?**
   A. Size
   B. Strength
   C. Malleability
   D. Absorption/wicking
4. **A large wrap can be used for any tray because it can be folded over as many times as necessary.**
   A. True
   B. False
5. **What can happen when lightweight instruments are wrapped with a sterilization wrap for heavy items?**
   A. Moisture events
   B. Faster sterilization
   C. Instrumentation overheats
   D. Wrap softens during sterilization
6. **Which practice can lead to wrap tears during storage?**
   A. Placing items on a sterilization rack
   B. Using transfer trays
   C. Touching wrapped packs before they are cooled
   D. Stacking wrapped sets in storage
7. **When should sterilization wrap be inspected?**
   A. Before it is used
   B. After sterile packs have been moved
   C. It does not need to be inspected
   D. Both A and B
8. **All accessories used to protect corners and wick condensate must be replaced when there is a change in the wrap manufacturer.**
   A. True
   B. False
9. **What causes a straight-line cut with compressed edges?**
   A. A heavy package was stacked on top of the wrapped pack
   B. The wrapped item was pulled along a flat surface
   C. The pack was pulled by a burr
   D. An instrument poked through the wrap
10. **What should be developed when using reusable woven wraps?**
    A. A recycling program
    B. A means to track the number of launderings and sterilizations
    C. A way to count threads
    D. A way to measure the wrap's thickness

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The approval number for this lesson is **STERIS-HPN 220306**.

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Heavy trays, towels and moisture (Part 2)

by Stephen Kovach

Q "For our heavy pans (e.g., total pans), we have always placed a surgical towel under them for protection and to reduce wetness in the trays. We also noticed stains on the towels. Why is that?"

A If you recall last month's Part 1 article, we addressed how to solve moisture management and surgical towel issues. This month, we'll focus on staining problems found on the towels.

Stains

An article in *IAHCSMM Communique* called "Troubleshooting Instrument Stains" states, "To test for rust or stains resulting from the sterilization process, place a white sheet across the sterilizer rack, and process the load in the normal manner. Then, determine if the towel sheet contains stains or debris. If either is present, it is most likely coming from the steam lines and/or chamber walls."[1]

In January 2018, the Medical Center rescheduled some surgical procedures after discovering discoloration on white tray liners in some of their sterilization packages. The facility found zero evidence of patient harm and is rescheduling the surgical procedures, "out of an abundance of caution," the statement added.2

A study conducted by Dr. Charles Gerba, Ph.D. (professor of microbiology at the University of Arizona) and his colleagues, with support from Kimberly-Clark Corp., (Irving, TX) was published in *American Journal of Infection Control* (October 2013). They found 93 percent of laundered towels/reusable hospital cleaning towels—used to clean rooms—contained bacteria (microbial contamination) that could cause healthcare-associated infections (HAI). Although most hospitals have stringent disinfecting practices in place to combat HAIs, this study showed they do not sufficiently remove all viable bacteria, including:

- *E. coli*
- Total coliforms– (bacteria that indicates fecal matter)
- *Klebsiella*– (causes pneumonia, UTIs, and other infections.

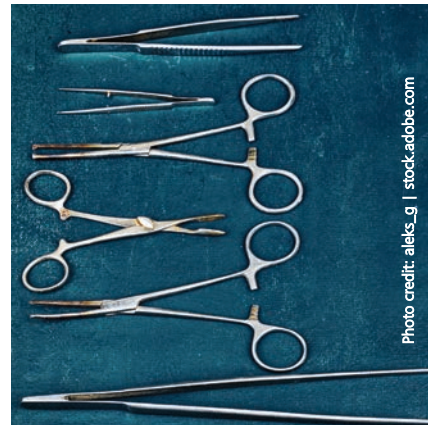
As a result, an estimated 1.7 million HAI cases are reported annually in the U.S of the total number of soak buckets containing disinfectant, 67 percent contained viable bacteria, including spore-forming bacteria and coliform bacteria.[3]

Experience has shown that most staining and spotting problems (regardless of if on an instrument or tray liner) are more geographical in nature, due to such factors as:

- Water pH
- Detergent residue
- Boiler compounds in water lines
- Certain chemicals incompatible with stainless steel on instruments/surgical trays.

Any stain/color needs to be investigated. However, some experts have stated–out of all the concerns–one must look at the water and steam quality, which are generally the main sources of stains/colors. It is the reaction during the steam process that makes these "stains/colors" appear because they were not there before they were sterilized. Thus, suggesting water and steam quality.

Think about this. My friend, Richard Schule (personal communication, many times) has said, "If it is in your water or steam (poor quality), it will appear or react with your equipment or medical device and can cause poor outcomes."



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Make sure if you are using a surgical towel, it is not causing issues associated with staining or infections. Also, make sure the IFU for that towel states it can be used to line a surgical tray or a sterilizer cart. If not, I would not use them.

As noted, protection is a main reason. Many times, auditing the practice reveals tearing is a *human factors issue* (both by staff in the reprocessing area and by the user), as surgical trays are taken out of case carts or any shelfing unit. Staff should lift but they drag and pull, and these actions cause snags, tearing, and holes in the sterile barrier. Sometimes, regardless of the products used to prevent these breaks in the sterile barrier, it is a training issue and doing our due diligence is the only way to reduce these concerns. No product can totally prevent these concerns when staff do not do the right process in transportation of sterile barriers and removing them from a location.

You can use corner protectors to reduce tearing and line your wire sterile shelfing with a shelf liner, just a few suggestions to reduce tearing.

My suggestion—work with a manufacturer that designs products for lining surgical trays and sterilizing carts and can help audit your practice. I personally frown upon using surgical towels as a liner because that is not their original intended use. **HPN**

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HSPA VIEWPOINT

Emergency preparedness

Is your SPD ready for the unexpected?

by David Taylor III, MSN, RN, CNOR

Emergency preparedness and a well-rehearsed, coordinated response have never been more important to the health, safety and security of our healthcare organizations, communities or nation. If nothing else, the pandemic proved that healthcare organizations have more work to do on emergency planning.

The American College of Emergency Physicians (ACEP) found that 93% of physicians surveyed do not believe their emergency departments are fully prepared for the influx of patients that follows a disaster or mass casualty incident. Even basic care is compromised, with 90% of physician respondents indicating they do not have access to critical medicine, and nearly 40% stating that patients have been negatively affected as a result. Generally absent from the literature is sterile processing department (SPD) preparedness, not just during a crisis but in day-to-day operations. An SPD emergency could mean several hundred trays down at the start of a new day, a need to reprocess the same several instrument sets to support heavy caseloads, equipment failures, supply shortages, water leaks, temperature or humidity breaches—and the list goes on. When a catastrophic event occurs on top of those other common challenges, it can be a recipe for disaster.

Both natural or manmade disasters of varying degrees can occur daily in the U.S. and can include mass shootings, bombings and terrorism attacks; biohazard-related incidents; civil disturbances; chemical, industrial and hazardous materials emergencies; cybersecurity breaches; disease outbreaks; fires; mass casualty incidents; smoke exposure; utility disruptions, and natural disasters **(see Figure 1).** Specific to the SPD, leaders should also prepare for the following emergencies: loss of airflow or temperature and/or humidity control issues; flooding (sprinkler or plumbing malfunction); structural integrity issues, and supply chain disruptions, to name just a few **(see Figure 2).**

Figure 1:
Potential community and facility emergencies and their implications

Disaster	Possible Implications
Active shooters, mass shootings and bombings Terrorist event	Reduced or inability to reprocess instrumentation or equipment or department shutdown. Staff evacuation
Biohazardous material leak or exposure	
Civil disturbances	
Chemical, industrial and hazardous materials emergencies	
Cybersecurity	
Disease outbreaks Epidemics, pandemics and endemics	
Fires and/or smoke	Reduced or inability to reprocess instrumentation or equipment or department shutdown. Staff evacuation. Partial or complete department contamination
Natural disasters (drought, earthquakes, floods, hail, hurricanes, tornadoes, volcanic eruptions, wildfires, winter storms)	
Utility disruptions (electrical, water, steam and natural gas outages)	Partial or complete department contamination

Figure 2: Other potential SPD-related emergencies

Disaster	Possible Implications
Loss of airflow or temperature and/or humidity control issues	Partial or complete department contamination
Flooding, Source: sprinkler or plumbing malfunction	Reduced or inability to reprocess instrumentation or equipment or department shutdown. Staff evacuation. Partial or complete department contamination
Structural integrity	
Supply chain disruption	Reduced or inability to reprocess or department shutdown

What if disaster strikes your facility?

Every disaster poses its own problems, and each disaster may have multiple implications for the department. One disaster may lead to another, for example, amplifying the impact on the department. To mitigate these challenges, SP leaders should incorporate disaster planning into their staff training and orientation processes and manage the disasters promptly and proactively.

It is imperative that SP leaders play an active role in emergency preparedness and that they work to answer the following essential questions:

- Is the organization a standalone hospital, or part of an integrated system where policies and procedures need to be standardized?
- Will the organization increase, curtail or eliminate surgery and other procedures pending disaster support needs?
- Will the facility receive interim help from a sister facility, other healthcare organization or vendor(s)? If such support is available, SP leaders should then consider the support's proximity to the organization and the timing of that support; whether the support will include the provision of mobile operations or perhaps even transportation, housing and meals (if needed); and any financial implications.
- Who is the emergency coordinator for the department, service line or organization (and who is their backup should they be unavailable)? If the department lacks an emergency coordinator, who should be contacted first if disaster strikes?
- What process should be followed in an emergency—and do all employees know the process? How is prioritization of manpower, equipment and supplies determined and are there checklists employees can follow to ensure proper response to the emergency?
- Which emergency events must be reported (i.e., equipment malfunctions/failures, impact the disaster event may have on other units)?
- Is there an emergency response number employees can call if they become overwhelmed or require other forms of support?
- Are any SP employees serving in the National Guard? If so, how will the department manage if those employees must leave the facility to respond to an emergency outside the facility?

Conclusion

Many healthcare organizations are not well prepared for disasters, and this lack of preparedness threatens communities and our nation's response capabilities. Emergency events can create confusion and chaos; however, effective management of these incidents is possible when senior and departmental leadership proactively plan for emergencies, targeted employee training and timely, detail-focused disaster response.

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Managing pain, temperature two sides of the same coin?

Technique, technology can make a difference

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Call them the kinfolk of patient physiology joined at the hip. Clinicians and medical experts regard temperature as one of the primary vital signs, while pain represents one of the primary indicators of health and wellness. With pain, temperature generally escalates; higher temperatures can lead to rising pain.

Because a high fever may cause pain you have to break the fever. To manage aching joints and muscles, however, you may apply heat. To operate on the body safely and with minimal-to-no pain you manage the body temperature and anesthetize or numb nerves and tissue. To help the body heal you manage temperature and relieve pain through medicinal or technological means.

Pain also can affect the other vital signs besides body temperature, causing fluctuations in pulse rate, respiration rate and blood pressure.

When caring for critical and surgical patients the management of pain and temperature fit like hand-in-glove. There's something synergistic, if not complementary, between the two.

"Pain is complex," Scott Augustine, M.D., CEO and Chief Technology Officer (CTO), Augustine Surgical Inc., told *Healthcare Purchasing News*. "It can be physical or psychological, or it can be general discomfort that is interpreted as pain. There is no question that someone that is cold is in more discomfort and will rate their pain as higher than someone with a normal body temperature. As a result, cold patients require more pain medication and spend a longer time in recovery."

Scott Augustine

Jessica Mathieson, Vice President and General Manager of Acute Care, Stryker Corp., makes the connection, too.

Jessica Mathieson

"In low-acuity situations, temperature management can bring patients comfort and mitigate pain by bringing the body back to a normothermic state," she said. "In some cases, localized temperature management is most directly related to pain, as you can be using cooling or warming as a form of therapy to directly mitigate pain in the affected area. For high-acuity cases where targeted temperature management is utilized, patients are frequently unconscious and temperature management is focused on improving patient outcomes post-treatment. Pain during treatment is limited by consciousness, but post-treatment pain is mitigated by impacting positive patient outcomes."

But managing pain and/or managing temperature doesn't necessarily gravitate toward medications and pharmaceuticals, such as acetaminophen, analgesics, ibuprofen, opioids and other pain killers. Holistically, the tasks span the gamut between the clinicians – nurse and physician, products, staff and system as well as the patient.

Clinicians and patients have a variety of non-pharmaceutical options when it comes to managing pain. Over-the-counter (OTC) and prescription devices, therapies and technologies to relieve chronic or post-surgical pain can include wearable heat pads and patches and sensors, transcutaneous electrical nerve stimulation (TENS) devices, radiofrequency ablation and radiofrequency catheter ablation devices, spinal cord devices that deliver electrical impulses and stimulation and devices that emit infrared light as alternatives to meds.

For temperature, clinicians and patients also can choose from a variety of OTC and prescription devices, therapies and technologies that start with non-contact and direct-contact external thermometers to warming and cooling devices as well as core/whole-body temperature control and localized temperature control devices that can be used during the entire perioperative process – from patient room to surgical suite to recovery and the transport in between and post-discharge. These devices and technologies also involve a variety of blankets, gel pads, packs, central venous catheters.

Clinical experts know that managing pain and temperature extends well beyond patient comfort and convenience. The mere act of maintaining a patient's normothermia, defined as the normal core body temperature, during surgical procedures, can prevent a number of dangerous complications, according to experts at Gentherm Medical, which actively promotes patient temperature management as part of its "Right Now" campaign.

Failure to manage patient temperature properly can lead to increased risks for such complications as adverse myocardial

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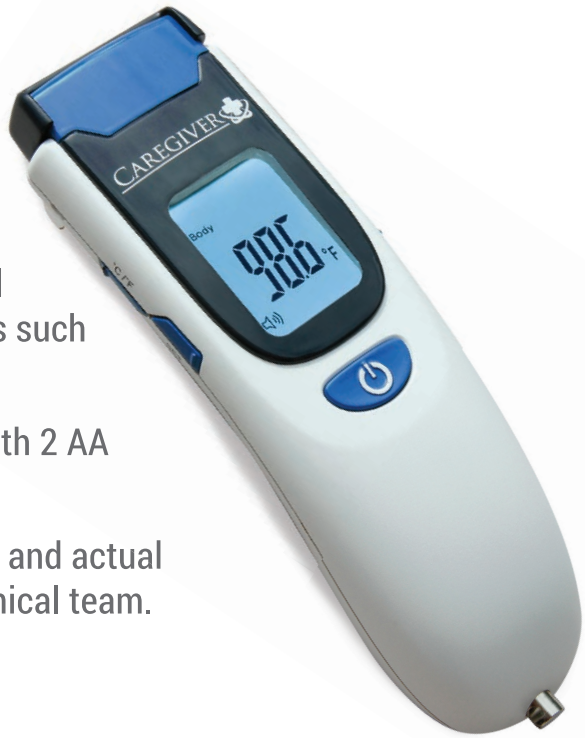

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Diros Technology Inc.	https://dirostech.com/
O&M Halyard	https://products.halyardhealth.com/patient-care-supplies/heat-cold-therapy.html
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O&M Halyard	https://products.halyardhealth.com/surgical-solutions/temperature-management.html
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Smiths Medical, an ICU Medical company	https://www.smiths-medical.com/en-us/products
Stryker Corp.	https://www.stryker.com/us/en/portfolios/medical-surgical-equipment/temperature-management.html
Thermomedics Inc.	https://www.thermomedics.com/
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outcomes, surgical site infections, increased blood loss, impaired wound healing, lengthened hospital stays and recovery time and increased transfusion requirements, states Gentherm Medical, which also translates to additional charges on billing and higher surgical expenses overall.

Product demand challenges

"Temperature management devices need to be accurate, repeatable, easy to use and readily available at all levels of diagnosis in the clinical environment," said Ron Benincasa, Vice President, Sales and Marketing, Thermomedics Inc. "Whether for constant monitoring function as part of a multi-vital signs instrument or for routine interval measurements in the ER, the exam room, or at the bedside, modern thermometers must provide fast, credible readings with no patient discomfort and limited dependence on clinician technique, thus ensuring that trending is reliable."

Ron Benincasa

Stryker's Mathieson stresses the volatility of demand and supply for temperature management techniques and technologies.

"Demand in the market for temperature management (TM) can be somewhat volatile based on accepted practices and recommendations," she noted. "For example, as new studies come to market and new disease states like COVID introduce large patient populations in need of TM devices, demand increases. In 2020, we saw rapid demand growth for TM devices and disposables, which could help to control patient fevers that were unmanageable through medication alone. In addition, in more recent months, hospitals are seeing high-acuity patients from Cardiac to Neuro ICUs who are also in need of temperature management, but from a more precise and controlled device. The market needs accessible and versatile TM products throughout the continuum of care."

But patient temperature management decision-making extends beyond device availability.

"TM encompasses both low acuity warming and cooling to achieve normothermia, in addition to more critical Targeted Temperature Management protocols, which require the caregiver to start treatment quickly and manage temperature precisely," Mathieson explained. "Finding a device which offers multiple modes, disposables and safety features to meet both needs can be a challenge for hospitals. In addition, infection prevention is at the top of caregivers' minds more than ever, which makes it important that any TM device is safe in highly critical environments."

A simultaneous multi-faceted technique would be welcome, according to Sarah Ford, RN, CCRN-A, Lead Clinical Advisor, Medical Division, Gentherm Medical.

"In the perioperative area temperature is one of many factors in preventing adverse outcomes," Ford said. "There is a need for temperature control combined with pressure reduction and moisture diversion away from the skin. A way to monitor skin temp, change patient temperature and reduce pressure at the same time with the same device would be impressive. In the ER and critical care, portability and data collection/transmission are being requested with increasing frequency."

Augustine Surgical's Scott Augustine points to a lower-tech issue at stake.

"The current demand challenges for temperature management devices [involve] the unavailability of disposable blankets," Augustine said. "Our customers report that many forced-air products have been backordered for some time due to supply chain issues. When unavailability is added to forced-air warming's other drawbacks – moderate effectiveness, increased implant infection risks, increased disposal costs and much

bigger carbon footprint – many hospitals are switching to reusable products such as HotDog Patient Warming. While this has created production challenges for us, we have been able to meet the increased demand."

Ecolab acknowledges the supply chain disruptions in components, raw materials and procedure volume changes since COVID-19 emerged, too, according to Ryan Cushman, Assistant Marketing Manager, Healthcare, Surgical Solutions.

"Supply chain disruptions have been felt across nearly every industry and patient temperature management [medical] devices have not been exceptions," Cushman said. "Managing inventories and mitigating backorders for products that are involved in life-saving procedures elevates the pressure and urgency for our teams.

"Since the COVID-19 pandemic really started making an impact in early 2020, procedure volume has declined and to date, has not completely rebounded to pre-pandemic levels," he continued. "In addition, hospitals have had to reallocate resources and trim budgets as they have seen reduced revenue-generating elective procedures. Business development plans and budgets have had to make big adjustments for these market shifts."

Necessary device, process improvements

Devices and products used to manage pain and temperature may have undergone considerable advancements and development over the years, but clinical experts acknowledge more room for continued improvement.

"The medical community's response to the COVID pandemic resulted in new importance of temperature screening at the hospital and clinic/office level, and this demand for quick and easy measurement unfortunately spawned the proliferation of many limited-capability thermometers which, at best, were focused on consumer/retail applications and low-acuity situations," he noted. "It's important to understand that performance at the true professional level is only offered by instruments which have been clinically documented and approved for use in high-acuity medical environments."

Augustine, an anesthesiologist and inventor, concentrates on the physical application and procedure.

"The single biggest improvement in patient temperature management devices is warming simultaneously from above and below" he said. "Warming effectiveness is directly proportional to the amount of skin surface in contact with the heat. Warming from above only, for example with a forced-air blanket, results in failing to reach normothermia (therapeutic failure) in 30% ti 50% of surgeries. In contrast, warming from above and below simultaneously, results in less than 4% therapeutic failure."

Gentherm Medical's Ford cites footprint. "Decreasing the size of patient temperature management devices and making them portable would be how I would improve existing patient temperature management devices," she noted.

Stryker's Mathieson, however, focuses on facilitation and quality. "Temperature management devices and products need to be easy to use and safe," she said. "Temperature management devices continue to improve in accuracy and precision, which helps to prevent patient instability linked to post-therapy complications – but the ease of use of these devices and the safety of the water and air quality could use improvement."

Seven years ago, the Food and Drug Administration began notifying the healthcare industry about the aerosolization of microbes from water-based devices and the linkage to patient infections, according to Mathieson.

"Since 2015, several additional notifications have gone out – as recently as 2021 – but many devices are not meeting the higher disinfection standards which guarantee the devices are safe enough for use, even in the OR,"

she continued. "Achieving this high-level disinfection is key for patient and caregiver safety but reducing frequency and simplifying the process would greatly benefit nurses in the current staffing environment."

Looking forward

As healthcare organizations evaluate and invest in pain and temperature management devices and technologies, Benincasa, Augustine, Cushman and Ford offer relevant and useful tips for supply chain to consider.

"When your organization is considering upgrading your temperature management devices, be sure that the instrument is designed specifically for professional clinical use, covered by a strong warranty and easy-to-access technical support; offers accessories such as wall-mounts, basket-mounts, calibration checkers, security tethers (where needed) and other items which will help maintain process utilization and strengthen performance," Thermomedics' Benincasa advised.

Augustine insists on assessing the patient's condition while on the surgical table.

"The majority of hospitals still use forced-air warming blankets, which result in 30% to 50% failure to reach normothermia," he said. "Hypothermic patients, especially if they are shivering, experience significantly more pain and general discomfort than normothermic patients. I invented Bair Hugger forced-air warming 35 years ago specifically to address the issue of significant postoperative discomfort due to hypothermia. To achieve surgical normothermia, the clear solution is to warm from above and below simultaneously."

Ecolab's Cushman echoes the importance of maintaining normothermia for surgical patients.

"Many organizations don't recognize the value of the improvements made in irrigation fluid temperature and volume tracking during invasive procedures," he noted. "Maintaining patient normothermia has been linked to improved patient outcomes. Negative patient outcomes can be tremendously costly for healthcare organizations."

Ford recommends portability. "Continuous therapy with a portable device – especially for perioperative warming – is missing at most facilities," she said. "This ability to have your patients warm and comfortable as they are preparing for surgery, having surgery and recovering from surgery would improve outcomes and improve patient satisfaction."

Mathieson expresses concern about device and equipment age, cautioning how that can affect quality outcomes.

"Many facilities maintain temperature management technology that is decades old," she noted. "This older technology often has outdated algorithms that check in on patient temperature a couple of times per hour, rather than every few seconds – which limits their ability to precisely control patient temperature and increases the likelihood for a patient temperature overshoot. In addition, older temperature management technology also often has limited disposables which are not insulated, easy to clean or self-sealing. Newer disposables help with heat transfer to control patient temperature more precisely and improve clinical efficiency through ease of use and by reducing water spills and limiting pad replacement due to patient bioburden."

Mathieson encourages hospitals that are not seeing the precision or control they need to look to new devices for improved precision.

"Hospitals that are struggling with nurse turnover and staff shortages should consider upgrading to new TM technology for newer easy-to-use technology that will improve efficiency in the TM treatment process," she recommended. "Lastly, hospitals that are renewing focus on wound care and infection prevention should consider newer technology that does not aerosolize microbes and promotes skin integrity through the use of non-adhesive disposables." HPN

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Ecolab Hush Slush 2.0

The newest offering in patient temperature management products is the Ecolab Hush Slush 2.0. This device is primarily used in open heart and transplant procedures. It is engineered to make velvety soft surgical slush that may aid in minimizing damage to sensitive organs or tissues. It comes with a built-in fluid warmer for surgical site irrigation and improvements to speed and safety over the previous generation of Ecolab ORS slush machines. Healthcare organizations more than ever need improved products they can rely on for the safety of their patients.

Altrix Temperature Management System from Stryker

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Are suppliers, vendors fit for a value-based procurement future?

From 'skin in the game' to shared reward, options abound

by Brian Mangan, MSc, FCIPS, and Randy V Bradley, Ph.D., CPHIMS, FHIMSS

In the first article exploring value-based procurement (VBP), we took a healthcare provider perspective where we focused on the need for procurement functions to foster collaboration across the supply chain to address the healthcare challenges in a post-COVID-19 world. *[Editor's Note: See "Value-based procurement: What's in it for provider supply chains?" September 2021 Healthcare Purchasing News, https://www.hpnonline.com/sourcing-logistics/article/21234509/valuebased-procurement-whats-in-it-for-provider-supply-chains.]* More specifically, we advocated for simplicity over complexity, transparency over opaqueness, strategic over transactional relationships, and leadership within and outside the supply chain function intent on developing long-term, value-added partnerships with suppliers and vendors.

From the provider perspective, we suggested that "value-based" approaches are being considered across multiple jurisdictions from Europe to the Middle East as they pursue finding ways to deliver environmentally sustainable and cost-effective healthcare against a backdrop of increasing demand. We expect value-based programs of some form to be the norm going forward, and we expect there to be increasing external and internal pressure on health systems and suppliers to comply.

This month, we consider VBP from the perspective of a supplier and vendor. By definition, suppliers manufacture products and may have direct contact with customers; vendors, however, do not manufacture products but only distribute and sell products directly to customers. We draw upon our own global experiences in support of VBP programs. By way of this, we offer insights gleaned from conversations with a leading multinational medical device and technology manufacturer. We identify common issues and opportunities as it relates to manufacturers taking the lead to develop and promote value-based solutions.

Business models changing

A well-regarded notion in the arena of change management is that effectiveness and success are predicated on a "felt-need," which is the realization that a change is necessary.[1,2] If there was ever a more concrete motivator for change, it would have to be the maelstrom of activity that healthcare systems faced in 2020. The global impact and prevalence

of the COVID-19 pandemic sent, and continues to send more than two years later, shock waves throughout the global supply chain. No entity was insulated. Suppliers and health systems alike must consider how their existing structures and business models will cope with a changing environment. They must also consider what change(s) is/are necessary as they replenish their stockpiles, rebuild and redeploy a depleted and exhausted workforce, and reintroduce themselves to a healthcare marketplace that has different expectations and needs as a result of COVID-19.

Preparing for the future

As we slowly begin to emerge from the fog of COVID-19, we envisage that healthcare ecosystems in 2031 will be characterized by:

- **Increased demand and limited capacity** – With aging populations, late-stage disease detection and diagnosis, and more complex comorbidities as result of the long-lasting impact of COVID-19, healthcare systems will continue to experience increased strain on their resources and demand for services. There is pinned up demand with an estimated reduction in use of healthcare services of up to 70% during COVID-19.[3]
- **Fewer healthcare workers** – The COVID-19 pandemic exacerbated the shortage of healthcare professionals. In some regions of the world (e.g., Canada, the United Kingdom), COVID-19 exposed limitations with respect to pay, progression, reward, and migration of healthcare workers from developing countries. This resulted in a thin workforce being stretched beyond its means. Furthermore, healthcare employment rates were lower than the previous year-to-date numbers. The psychological toll COVID-19 had on healthcare workers has caused many to reconsider their current and future aspirations of being a healthcare professional.[4,5]
- **Digitally transformed** – With technological advances in the form of artificial intelligence (AI) systems to aid diagnosis, greater use of robotic-assisted surgery devices, and the widespread and rash adoption of telehealth solutions, healthcare delivery will look quite different in the future. Hospital-at-home programs, currently viewed as a luxury and sustained competitive advantage will be commonplace. The unanticipated shift from in-person to virtual healthcare for diagnostics, assessments, and evaluation and management is here to stay. This will require health systems to reconsider their operation model and suppliers to redesign their distribution channels in preparation for direct-to-consumer/patient arrangements.
- **Increase use of day case/outpatient and minimally invasive surgery** – Greater alignment and use of community-based services will be needed to support the continued focus on day cases. This is partly driven by the belief that minimally invasive surgery is a conduit for decreased postoperative complications for common procedures and overall cost reductions.[6]
- **Increased federal intervention and regulation on "Big Medtech" and Healthcare sector** – Pressure to provide environmentally sustainable healthcare that removes waste from the system and acts responsibly in providing affordable healthcare continues to mount.
- **Free market forces** – Increased competition and challenges for healthcare providers to reduce costs demanded by payers, while also managing expectations of a more educated patient/consumer, with all stakeholders expecting improved health outcomes and lower costs.

So what does this mean for suppliers? For one, it means VBP must be a reality and baked into the way they do business with providers.

Reality-based strategic VBP for the win: As the value agenda emerges, group purchasing organizations (GPOs) are recognizing the limitations of price based practices in supporting healthcare. After all, one thing COVID-19 taught health systems and suppliers is that getting the best product price or having the best-priced product, respectively, is necessary but insufficient. This is especially true when – and if – clinicians cannot get the product when needed. It is also true even when the product is available, but it does not sufficiently meet the needs of the clinician or patient.

As a result, it is our view that the demand will transition from procurement of "products" to "solutions," whereby consumables/devices are provided as part of a total package. Here, suppliers will be paid not for products but for procedures and outcomes – i.e., value-based procurement arrangements based on clinical evidence. Considering, the strained relationships between providers and suppliers as result of supply shortages, communication breakdowns and broken promises during the pandemic,[7] crossing the chasm from transactional relationships to more strategic relationships needed for value-based procurement will be a daunting task. However, we believe the need and desire for greater supply chain resiliency will serve as the impetus to help providers and suppliers repair their damaged relationships.[8]

A number of organizations have been considering value-based approaches, and we caught up with one to see how they are advocating for VBP and advancing the conversation. BD (Becton Dickinson and Company) is a global medical device company with an interest in the development of VBP across the markets they serve as a means of delivering improved healthcare outcomes and lower cost. However, one of the common challenges they have encountered is that "Value" is ill-defined by health systems, particularly by procurers who struggle in many cases to recognize the difference between Economic Valuation versus Value (i.e., what does it cost versus what does it provide and avoid [negative effects]).

Two steps to provide value

To advance true value-based arrangements, requires commitment by both buyer and supplier or vendor to change, albeit suppliers may be in a better position to lead the way, as BD is seeking to do, by taking responsibility for demonstrating value. Our view is that this will include adopting an evidence-based approach, that clearly articulates and justifies the value proposition in terms of a measurable improvement in patient outcomes, increased efficiency and a reduction in the total cost of care. Suppliers then need to commit to work in partnership with the health system to ensure the benefits are realized.

This will require suppliers to:

Build in value – Don't market theoretical value – In supporting existing clients looking to build value propositions for health systems, currently there

is a common practice of trying to "market value out" of existing mainstream products, and we aim to offer some guidance as to the need and some steps to consider how to build value into product development.

Instead of "forcing" a solution onto a provider to address a pain point, for which the product might not be intended to address, for the sake of a "win", providers have an opportunity to use the articulated pains point as a "demand/market pull" signal to drive their R&D. This has potential to result in a product that addresses specific needs associated with clinical, and likely financial, value for the health system, thus generating the needed sales that offset the R&D costs of the product. This type of win benefits both key stakeholders.

Contract for value – Contracting for value will increase with greater use of legal frameworks to provide assurance and incentivize performance. To date, contractual agreements have been largely simple structures based on the box standard provision of products. Transitioning to value will require suppliers to be able to "put their money where their mouth is" – but the rewards will be longer term partnership/security of business and the potential to increase profits, but not merely through gain sharing agreements.

3 steps in path forward

Change the game: One way to operationalize contracting for value is to no longer view shared risk and shared reward as mutually exclusive. This would require partners to move from a "skin in the game" to a "skins game" mindset like in golf, wherein both parties win and each does well. To do this, suppliers must strive for more balanced arrangements that encompass both shared risks and rewards. This way suppliers and providers win and lose together, rather than there almost always being one loser and one winner. This type of arrangement incentivizes both sides to work in the best interest of the other because it also benefits them.

Suppliers that initiate shared risks and rewards agreements, instead of relying on providers to proffer them, separate themselves from a competitor. This could potentially be an attractive proposition for GPOs and national aggregation entities to entertain more offerings from the given supplier. Because this approach is intended to drive cost reduction to the overall system of care, it's not as focused on driving down the cost per unit. For GPOs, this has the potential to yield higher contract administration fees (CAFs) due to greater spend via the contract mechanism. The burden will essentially shift to the GPOs to educate their member organizations about these types of contracting mechanisms to avoid off-contract purchases that would jeopardize the ultimate goal.

Create vertical integration strategies: A possible consequence of the move to outcomes-based healthcare provision is an increased use of vertical integration through the medical device industry to provide the required skills and entrepreneurship of the SME sector to provide holistic and innovative solutions. This entails transitioning away from the provision standalone products to providing comprehensive solutions. But given a supplier's core competency in product development, it will likely need to partner with smaller, more entrepreneurial entities to develop comprehensive solutions. An example of this is the automotive sector, in which a manufacturer's plant is geographically surrounded by its Tier 2 and 3 suppliers. These suppliers provide materials and components based on their areas of specializations that are coupled with the core of the automobile (the product from the manufacturer) to put forth a cohesive and comprehensive solution.

Address incentive misalignment: This is not as simple as changing the reward system; it is also about revamping the culture of the sales and marketing function. Suppliers must reward and incentivize their workforce to create and deploy value for providers. Currently, suppliers incentivize personnel to focus on short-term goals (e.g., quarterly/annual sales targets) that are not intended to drive value for providers. Short-term or short-sighted incentive models put the brakes on the adoption of strategic value based and run counter to win-win relationships. Value creation for both buyers and suppliers is more likely be manifest over a 3- to 5-year horizon. Therefore, the incentive mechanisms need to be aligned to ultimate goals to ensure sales personnel are motivated to work in the best interest of providers. In the end, suppliers and their personnel will be rewarded with greater business and revenue security, while providers experience the product performance needed to thwart untoward healthcare outcomes.

As the world hopefully begins to transition to a new era of healthcare post COVID-19, supply chains and all actors involved will need to have the agility to adapt to a new normal. The recommendations here should provide some insight into the challenges and opportunities that remain for suppliers as they take the lead to work with health systems to establish value-based procurement frameworks with mutual objectives for long-term win-win relations that yield high-quality outcomes and sustainable cost-effective care for all citizens. **HPN**

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Supply chain delivers hospital-level care at home

by Karen Conway, Vice President, Healthcare Value, GHX

The idea of providing hospital-level acute care in a patient's home is not new. It was first piloted in 1996 at the Johns Hopkins University School of Medicine, which later trademarked the term "Hospital at Home." What is new is recognition that supply chain (in its broadest manifestation) is integral to the success of such programs, which have been shown to lower the total cost of care, while reducing readmissions and increasing patient satisfaction.[1]

Veteran supply chain executive Mark Scagliarini says he joined Medically Home because it sees supply chain as a strategic enabler. Medically Home works directly with hospitals and health systems to co-operate an inpatient service line in the home.

For the past three years, Scagliarini has led Rapid Response Services for Medically Home, which coordinates the provision of all things that a patient needs in order to receive high-acuity care safely at home: clinical personnel, equipment, medicine, meals, etc. In his role, Scagliarini spends 80 percent of his time sourcing and contracting with those organizations that provide the necessary resources in the home (See Figure 1).

Medically Home enables participating health systems to stand up a medical command center whereby a hospital's own doctors and nurses can direct the care of its virtual hospital patients. This includes use of a technology platform and coordination of the the associated processes, workflows and logistics. In addition to shipping a standard supply box of products needed for every at-home admission, Scagliarini's team makes sure there is a pool of properly trained and licensed resources able to provide care on demand in a patient's home.

Figure 1: Acute Supply Chain Services
Reprinted courtesy of Medically Home 2022

This is a switch for many organizations servicing the non-acute market. For example, most mobile x-ray companies are used to working with long-term care facilities, which schedule their tests well in advance. While the virtual care team works proactively on care plans, just like in the acute setting, a patient's condition can change rapidly, demanding a response within hours if not minutes and sometimes requiring them to navigate unique aspects of a patient's home, such as stairs or snow-covered pathways. Being able to communicate the need directly and immediately with the virtual care team is a great comfort for home health nurses who otherwise may not know if a message is delivered or received in a timely manner.

The contracted service provider is often responsible for bringing their own supplies (to ensure familiarity and proper training), while other times, Medically Home seeks to use products that are already under contract with the hospital or health system. According to Mark, it's a complex logistical puzzle. A nurse cannot just run to the supply closet if he or she shows up to perform a test or procedure and a critical supply is missing. Medically Home also has a process for handling biohazard and sharps waste: a waste container is provided on site and is picked up upon patient discharge from the program or as needed. Caring for patients in their homes can provide further insight into a patient's non-clinical needs, which can have as much or even more of an impact on a patient's health and well-being. Medically Home supports the social determinants of health with services such as delivering nutritious meals or providing housecleaning services.

One of the biggest challenges for any organization operating in multiple states– be it a health system or a company like Medically Home – is the variation in state regulations, such as those governing pharmacies. Ideally, hospital pharmacists want to handle the medications for all inpatients, regardless of where they are being treated, but some state regulations prohibit inpatient pharmacies from delivering to the home. States also have varying regulations around what paramedics are licensed to do or the level of training required for certain advanced practice providers, such as nurse practitioners.

Much like telemedicine, providing hospital level care in patients' homes took off during the pandemic, freeing up much needed bed capacity in the hospital. Expansion was made possible by waivers from the Centers for Medicare and Medicaid Services granted under the nation's public health emergency (PHE) status. In May, the Biden Administration said it would give a minimum 60-days notice before ending the PHE (and in turn the waivers). As I write this, that means the waivers are good at least until August. Meanwhile, a bipartisan bill working its way through Congress- the Hospital Inpatient Services Modernization Act- would further extend the waivers for another two years. HPN

Endnotes

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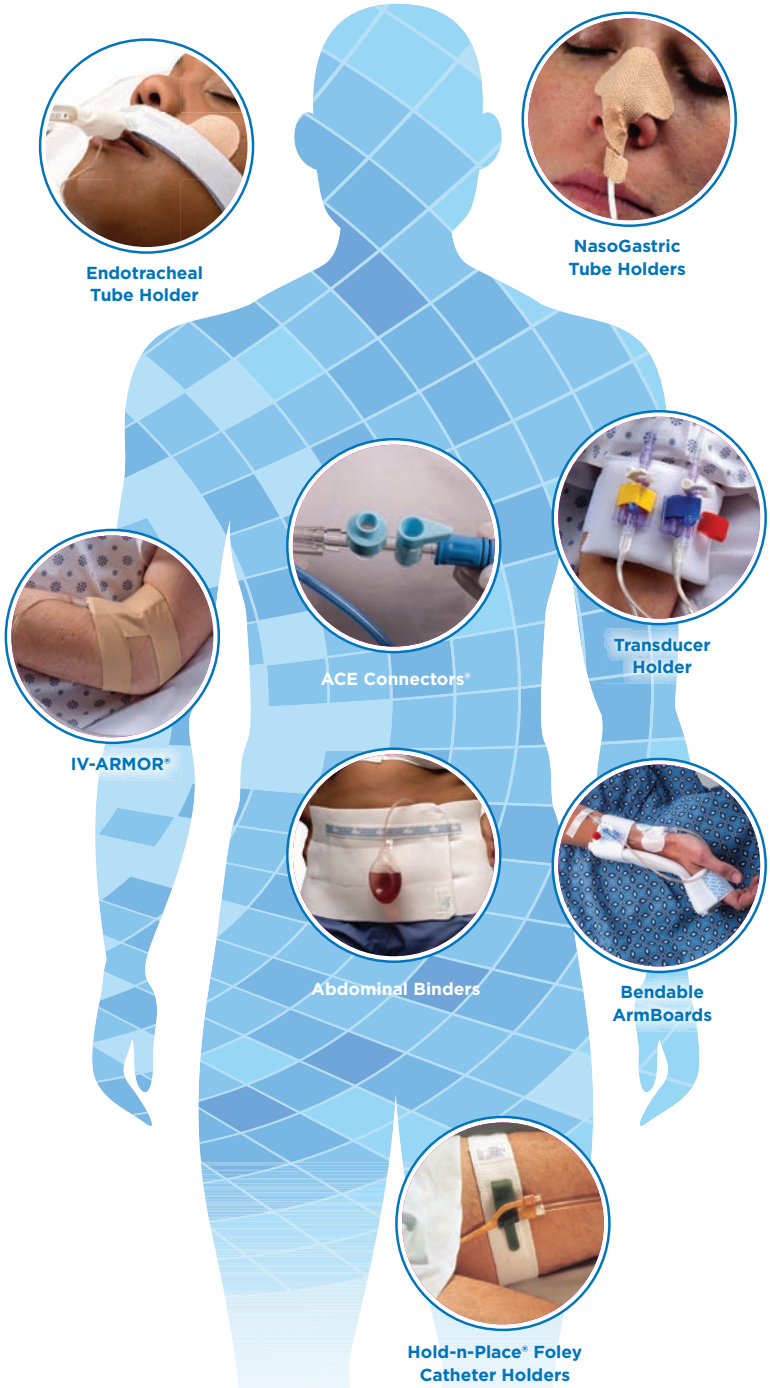

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