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A: Studies show that each staffed bed produces more than 30 pounds of waste per day. Included in that total are thermometer probe covers, broken probes/cables, and discarded thermometers.

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Q: What does 100% reduction in operating costs mean?

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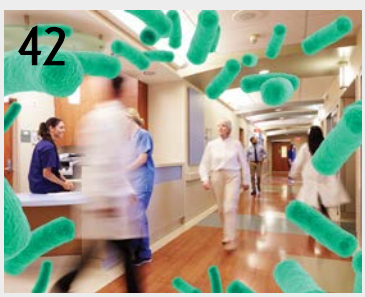

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BUYLINE

Musk it?

Rick Dana Barlow
Senior Editor

Believe and say what you want about mercurial and serial entrepreneur Elon Musk but a major comment he made late last year should pique the interest of open-minded healthcare supply chain leaders and professionals.

No, the decision doesn't involve Musk being Twitter-mated by the social media company, which he finally closed on at press time for a mere $44 billion after months of back-and-forth wrangling with company executives.

If you remember, Musk attracted scores of media attention by signing a deal to buy Twitter but then backed away when he found flies in the ointment. He questioned the reliability and validity of participation numbers, claiming that those numbers may have been artificially inflated by spambots and fake accounts. Social media sites use "clicks" and "visits" as justification for advertising rates charged to companies that want access to consumer eyeballs first and cash-filled wallets next.

A seasoned healthcare supply chain pro never would have signed on any dotted line – whether a letter of intent or an actual contract – without thoroughly looking under the hood and spotting the questionable data elements. After all, seasoned supply chain pros know the importance of accurate and reliable data and how valuable it is to an enterprise.

Last fall, the Executive Director of the United Nations World Food Programme threw down a verbal gauntlet against some of the world's wealthiest individuals, an auspicious list that includes Musk.

To combat world hunger, the U.N. agency leader crowed that on a "one-time basis" billionaires should donate "$6 billion to help 42 million people that are literally going to die if we don't reach them. It's not complicated."

On the surface, throwing lots of money at a challenge or problem – if you have enough of it to spare and are willing to share – isn't complicated. Neither is the social justice-motivated chutzpah and hubris of this … *ahem* … request. Some might mutter the indignantly elitist response, "Well! I never …" or "Of all the nerve!"

But pish-tosh! Musk's bourgeois yet proletarian response was near pitch perfect and worthy of an expense management expert's "atta boy" pat on the back.

Musk, who now owns Twitter as well as The Boring Co., Space X and Tesla, responded in a Tweet: "IF WFP can describe on this Twitter thread exactly how $6B will solve world hunger, I will sell Tesla stock right now and do it. But it must be open-source accounting, so the public sees precisely how the money is spent."

This is your cue to place your palms together in front of your face, strum your fingers against one another and laugh maniacally like Batman's arch-nemesis the Joker.

The Associated Press reported that "in 2020, the agency received $8.4 billion in donations, which it says was $5.3 billion short of its requirements."

The U.N. agency executive then tap danced in his reply to Musk on Twitter, offered to meet with him to discuss the issue further and admitted that $6 billion will not solve world hunger, "but it WILL prevent geopolitical instability, mass migration and save 42 million people on the brink of starvation. An unprecedented crisis and a perfect storm due to Covid/conflict/climate crises."

Like a bulldog, Musk then replied, "Please publish your current & proposed spending in detail so people can see exactly where money goes. Sunlight is a wonderful thing."

Healthcare supply chain pros undoubtedly should cackle at this "tweetversation." What Musk refers to as sunlight merely represents a metaphor for transparency.

Imagine healthcare supply chain pros using similar logic to push back against product price and service fee increases or "savings" generated in risk-sharing agreements that are split with clinicians. If you're looking to change employers rapidly you also might use this tactic when the CEO or CFO demands that Supply Chain cut 25% from its budget for the fiscal year … ending in four months.

Supply chain, whether business, government or charity, remains a demanding numbers game, whether crisis-entrenched or nominally operating. Yet, while the line between "Musking it" and risking it may be dotted, it's important for Supply Chain not to fall through the cracks.

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Trifecta of illnesses could lie in near future

The County of San Diego Health and Human Services Agency is sounding the alarm about a triple threat of illnesses that could have a severe impact on people's lives and the county's medical resources this fall and winter.

Local health providers are seeing an early spike in flu and respiratory syncytial virus (RSV) cases, and while COVID-19 cases are currently trending down in the region, a triple whammy of all three viruses circulating at the same time could lead to strains on the already overburdened medical system.

"As we see a sharp increase of flu and RSV cases, I am urging San Diegans to do their part to prevent the spread of illnesses," said Wilma J. Wooten, M.D., M.P.H., County public health officer. "While there's no vaccine for RSV, ample vaccinations are available for the flu and COVID-19. These vaccines take two weeks to become fully effective, so people should get both shots as soon as possible."

Read on: https://hpnonline.com/21285700

Study shows COVID-19 variants weaker than originals

In a recent study that represents the largest to date to examine the severity of the SARS-CoV-2 Omicron BA.2 subvariant (the strain making a re-emergence this fall), a team led by investigators at Massachusetts General Hospital (MGH) determined that the BA.2 subvariant is less severe than the previous Delta variant and less severe to an even greater extent than the original Omicron variant.

This pattern revealed in the JAMA Network Open study suggests that the severity of SARS-Cov-2 may be diminishing.

To provide an accurate assessment of the severity of SARS-Cov-2 variants above and beyond previous studies, the researchers used a method called entropy balancing to account for potential confounding factors such as prior infections, vaccinations, treatments, and comorbidities. The team applied this method to data leveraged from the Mass General Brigham's electronic health record system that's linked to a COVID-19 vaccine registry.

Of 102,315 confirmed COVID-19 cases from March 3, 2020 to June 20, 2022, there were 20,770 labeled as Delta variants, 52,605 labeled as Omicron B.1.1.529 variants (the original Omicron variant), and 28,940 labeled as Omicron BA.2 subvariants.

Read on: https://hpnonline.com/21285317

Gloomy outlook on the general state of nurses

As patient volumes return to pre-pandemic levels, nurse turnover has doubled and half report feelings of burnout, according to a new report from Vizient, Inc. and Vaya Workforce. In addition, researchers found that while contract labor utilization continues to surge, the amount of time nurses are able to spend with patients dropped earlier this year to its lowest level since before the pandemic.

Employment data spanning April 2019-June 2022 from the Vizient Operational Data Base (ODB), which contains data from 650 healthcare facilities representing over 164,000 nurses show a 20% increase in nurse overtime hours. The ODB also shows overtime doubling during that same period from approximately 4% to 8% for licensed nursing staff. Taken together with a 2022 benchmark from Safe and Reliable Healthcare of more than 26,000 nurses finding 50% have feelings of burnout, the report serves as a wakeup call for healthcare leaders.

"Workforce challenges are top of mind for nearly every hospital and health system leader right now, especially when it comes to nurses. We're seeing data that patients are staying in the hospital half a day longer on average than pre-pandemic levels. Combine that with fewer nurses and more patients, and the challenges compound," said Eric Burch, RN, MBA, FACHE, executive principal at Vizient and former nurse executive. "What the data tells us is the need for a balanced approach to integrating traditionally short-term stopgaps into long-term strategies, like contract labor and flexible scheduling. Investing too little in these strategies leads to prolonged burnout and turnover, while investing too heavily strains already-struggling financial margins."

Read on: https://hpnonline.com/21286142

Entering final quarter, healthcare providers in rough financial shape

Just a few months remain in what is shaping up to be one of the worst financial years for hospitals and health systems. As the third quarter came to a close, hospitals, health systems, and physician practices had an unfavorable mix of volumes, revenues, and expenses that continued the year-long trend of negative margins, according to data from Kaufman Hall.

"Health systems are starting to get a clear picture of what service lines have a positive effect on their margins and which ones are weighing them down," said Matthew Bates, managing director and Physician Enterprise service line lead with Kaufman Hall. "Without a positive margin there is no mission. Health systems must think carefully and strategically about what areas of care they invest in for the future."

The median year-to-date operating margin index for hospitals was -0.1% in September, for a ninth straight month of negative actual operating margins, according to findings in the latest National Hospital Flash Report.

According to the latest Physician Flash Report, the median investment/subsidy per provider full-time equivalent (FTE) reached $227,282 in Q3 2022, slightly up from the second quarter and returning physician practices to a trend of increasing investments/subsidies after a temporary decrease in Q2. Investment/subsidies remain well above where they were at this time last year, with Q3 2021 median investment/subsidies per provider FTE of $190,608.

Read on: https://hpnonline.com/21286034

FAST STATS

Women's Health

Attention ladies and….ladies. The following stats concern the health, or lack thereof, of women in America:

14.4% **of women aged 18 and over were in fair or poor health (2020).**

19.8% **of women aged 18 and over had four or more drinks in 1 day at least once in the past year**

49.3% **of women aged 18 and over met the 2008 federal physical activity guidelines for aerobic activity through leisure-time aerobic activity.**

11.0% **of women aged 18 and over currently smoke cigarettes (2020).**

41.8% **of women aged 20 and over are obese (2015-2018).**

9.5% **of females under age 65 are without health insurance coverage.**

https://www.cdc.gov/nchs/fastats/womens-health.htm

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What are the top challenges vexing the OR and surgical suites?

They span Supply Chain, Sterile Processing, Infection Prevention, IT, Environmental Services

by Rick Dana Barlow

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Akarawut Lohacharoenvanich
Dreamstime.com

When determining the top challenges in the operating room or surgical suite, you might point to the cost of labor or the acquisition and ongoing maintenance of expensive high-tech equipment. You'd likely be right for a number of healthcare organizations.

Others might refer to surgical complications or post-operative infections or even recording and maintaining the mountains of information either on computer or on paper. You'd likely be right again for many other healthcare organizations.

As a result, *Healthcare Purchasing News* sought to corral the options and focus on day-to-day administrative, clinical and support service operations as related to supply chain and the expansive array of services overseen by that department. *HPN* specified more than 25 options and reached out to more than a dozen executives at clinical and operational product and service companies to gauge their insights on the overarching marketplace. *HPN* encouraged experts to select as many as they believe apply based on what they observe among provider organizations and further invited them to list and rank their top five choices to tackle right away.

While individual responses and rankings may have run the gamut, the overall top six remained consistent across the board as all but two selections earned at least one vote with the top choice near unanimous. *HPN* lists the top 24 below in order of their ranking tallies. If more than one generated the same number of votes the choices were listed alphabetically.

What irks ORs the most? Inventory management issues.

1. Restocking and inventory access remains problematic such that circulating nurses scramble to obtain what surgeons need – sometimes during procedures.
2. Turnover time remains too long due to OR set-up and stocking.
3. Inability to track product consumption/usage patterns for billing, budgeting, economic service line evaluation, etc.
4. Ineffective, poor or no relationship with Supply Chain to help with product evaluations, contracting, supplier relations, etc.
5. Bad/erroneous data and/or lack of product data standards cause/contribute to decision-making problems.
6. Physician preference items add to inventory and procedural costs.
7. Devices, instruments break down/malfunction due to improper maintenance, repair, service.
8. Lack of integration, if not interconnectivity or interoperability, between electronic imaging, surgical and patient information components.
9. The surgical suite remains a hotbed and magnet for healthcare-acquired infections – including superbugs – that may be linked to improperly reprocessed devices and instruments.
10. Product recalls cause delays due to lack of preparation.
11. Turnover time remains too long due to cleaning, disinfecting and sterilizing room post-procedure.
12. Too much clutter on floor, such as equipment, power cords, storage and tools in too small a space as square footage remains lacking.
13. Based on material composition, floors and walls easily attract dirt, dust, grime and other infectious organisms that compromise sterility.
14. Electronic access to real-time patient imaging and other health information lacking or simply unavailable.
15. Lack of using wall space effectively and efficiently beyond plug-ins to outlets – either for imaging, storage or workspace equipment.
16. Surgeon demands, personalities conflict with each other and nurses.
17. Floors and walls may be cleaned and disinfected with mops, wipes and other products that are not changed with each room, thereby transferring and/or failing to kill infectious organisms from room to room.
18. Manufacturer/vendor product/sales rep and other third-party access to OR for device/instrument coaching and "patient safety" may be distracting.
19. Nursing demands, personalities conflict with each other.
20. The operating table is manual and outdated, making it difficult to maneuver or simply unstable for the patient and staff.

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21. Regardless of mounting, surgical lighting is cumbersome, difficult to maneuver and may not provide adequate illumination.
22. Surgeons may operate in the wrong area or on the wrong organs due to health record problems, lack of visible skin markers or simple distraction/not paying attention.
23. The surgical suite remains a hotbed and magnet for healthcare-acquired infections – including superbugs – that may be linked to improper surgical techniques.
24. Turnover time remains too long due to procedural/patient complications.

Several executives ventured off the grid, homing in on even more refined areas.

Jennifer Nageotte, Partner, Diamond Storage Solutions, embraces standardization, emphasizing that "planning out thoughtful OR organization and streamlining/repeating throughout the entire system so each room is set up the same way" was important.

Karen Ward, MAOM, RN, CNOR, Clinical Specialist, Gloves & Antiseptics, Mölnlycke Health Care, pushes deeper into the area of standardization, citing the existence of "too many products of similar function leading to stock availability challenges, picking confusion, wasted storage space."

For John Freund, Founder and CEO, Jump Technologies, product and service usage reigns and needs to be reined in.

"The lack of attention to accurately recording the waste and consumption of materials during a case is preventing hospitals from understanding what cases are actually costing them and is adding to the overall cost of a case as clinical staff does not know what supplies will actually be used in a case," he indicated.

The "lack of integration, if not interconnectivity or interoperability, between preference card systems, Instrument tracking systems and surgical and patient information systems," remains a key area of concern, according to Angela Carranza, CST, Lean Certified, Manager of Clinical Resources, Medline Industries.

Cory Turner, CMRP, Senior Director, Healthcare Strategy, Tecsys Inc., agrees, noting that "manual clinical documentation takes clinical time and is error prone." HPN

Setting priorities to overcome top OR challenges in surgical suites

by Rick Dana Barlow

Back in the days of yore the surgical suite, then more commonly known as the "operating room" as minimally invasive and other more advanced electronic technology had yet to emerge, largely served as a hospital's engine generating significant revenue even as it also functioned as a leading cost center.

Now decades later in the tech-savvy "Information Age," the OR – or surgical suite – shares that role with a variety of other departments and specialties, including diagnostic imaging, interventional radiology, clinical laboratory and outpatient services.

Regardless of an increasing number of surgical procedures migrating to outpatient settings, the OR still churns a considerable amount of business even as it faces more cost challenges. In a surgical-suite-as-character-study, *Healthcare Purchasing News* sought to explore and highlight the key challenges the OR faces today – and likely tomorrow.

HPN reached out to more than a dozen clinical and support service company executives for their insights on what events and issues challenge ORs and surgical suites. *HPN* provided them with a list of 25 options with the opportunity to choose more than one and to specify their own relevant option if not listed already. *HPN* categorized the challenges beyond the clinical, financial and operational (which includes administrative) and concentrated on access, attitudes/behaviors/collaboration, convenience/efficiency, safety and sterility.

You can find the main list on page 8 and useful tips on setting priorities for the easiest and fastest to tackle for quick wins at https://hpnonline.com/21286570.

HPN also asked executive responders to identify the top five of their picks, rank them and explain their reasoning.

David Karchner, Senior Director of Marketing, North America, Operating Room, Enterprise Patient Monitoring, Government Solutions, Draeger Inc.

1. **Too much clutter on floor, such as equipment, power cords, storage and tools in too small a space as square footage remains lacking.** "Space is often at a premium in U.S. operating rooms (OR), and with the continued advancements in technology, these challenges will continue. This is one of the reasons that Draeger continues to evolve our solutions for our customers. For instance, in the OR, we are now offering 'Care-Centered Workplaces,' where we combine OR lights, OR booms, anesthesia monitors, anesthesia machines and IT systems under one solution. We've made similar advancements to our solutions in the NICU and ICU. While we may not be able to make an OR physically larger, Draeger believes our expertise in the OR from both a technology and professional services standpoint can help our customers achieve the workflow efficiency they desire."
2. **Lack of integration, if not interconnectivity or interoperability, between electronic imaging, surgical and patient information components.** "There is a lot of opportunity to improve integration and interoperability in the OR with the goal of reducing integration costs, increasing patient safety, and improving clinical processes. There are some promising movements with

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Angela Carranza

Tom Redding

IEEE 11073 SDC standards where many vendors are working together to assist our shared customers in realizing the benefits of interoperability."

3. **Turnover time remains too long due to cleaning, disinfecting and sterilizing room post-procedure.** "With hospital acquired infections (HAI) impacting reimbursement rates, hospitals are looking to their vendor partners for assistance in limiting this financial risk. Vendors can help mitigate this risk by introducing a new or modified design, like what Draeger introduced with our Perseus A500 anesthesia device, which offers smoother surfaces and improved cable management for cleaning efficiency. Another strategy for vendors to help mitigate this risk is creating more flexible use of a device, as we did with the Infinity Acute Care System (IACS) patient monitor, where the same IACS monitor stays with the patient from the time they enter the hospital until they are discharged. Our Infinity M540 is utilized as a Pre-op, transport, OR, and PACU monitor. While different, these two strategies can aid hospitals with their infection control efforts."
4. **Restocking and inventory access remains problematic such that circulating nurses scramble to obtain what surgeons need – sometimes during procedures.** "Scrambling for inventory can be a stressful experience, not just for the surgeons, but also for nurses, anesthesia techs, and the Biomed/HTM team. In addition, infection control risk may be introduced by exiting and re-entering the OR. We as vendors can help by standardizing our accessories and consumables across product lines. This is something Draeger introduced many years ago in order to simplify the ordering and use process."

Angela Carranza, CST, Lean Certified, Manager of Clinical Resources, Medline Industries

1. **Other – Lack of integration between preference card systems, instrument-tracking systems and surgical and patient information systems**. "Perioperative teams often each use a different operating system, but they usually aren't integrated with one another. This lack of integration limits predictive ordering and each system impacts another. For example, if preference cards aren't updated in all systems, it increases the risk of necessary supplies going unordered. In the perioperative setting – all systems need to flow in order for the OR business to be a success, so this means streamlined communication, ordering, activity from the supply docking area, sterile processing department and up to the OR suite(s)."
2. **Physician preference items add to inventory and procedural costs**. "Hospitals continue to experience an increase in operating expenses so understandably, leaders are focusing on cost savings initiative. Some physician preference items can be expensive, but I caution leaders to take a closer look at product substitutes and to conduct a process analysis before eliminating it."
3. **Turnover time remains too long due to OR setup and stocking.** "Turnover time has been impacted by a triple threat of challenges, including the staffing shortage, supply chain challenges and process changes during the pandemic. Medline has seen an increase in customers coming to our clinical resource teams about OR turnover challenges they're experiencing within their organization. Some procedures require a longer turnover time and we're working with customers on how they can get their OR teams more efficient."
4. **Ineffective, poor or no relationship with Supply Chain to help with product evaluations, contracting, supplier relations, etc**. "This is an area of opportunity we continue to see. Effective communication between supply chain and clinical partners and understanding each other's needs is essential for achieving success and driving cultural changes that empower teams. We are seeing more value analysis teams pulling in a clinical team member help keep patient care at the forefront of their decision-making process."
5. **Inability to track product consumption/usage patterns for billing, budgeting, economic service line evaluation, etc.** "ORs generate a lot of revenue for hospitals, but there's a greater need for teams to understand total procedural costs. Utilizing a preference card system that's integrated with all electronic systems can help teams understand true costs and provide recommendations for mitigating them."

Tom Redding, Senior Managing Director, Healthcare Services, St. Onge Co.

1. **Inability to track product consumption/usage patterns for billing, budgeting, economic service line evaluation, etc.** "Tracking demand is a foundational and fundamental requirement for a well-functioning supply chain. Without it, all we have is guesswork based on experience and judgment. Too often, there is a significant amount of revenue leakage as a result of not tracking product usage to each procedure. It can also lead to potential challenges with recall management if the product is not properly tracked to the procedure. Additionally, product standardization is minimized if there isn't a clear understanding of product use and demand patterns."
2. **Bad/erroneous data and/or lack of product data standards cause/contribute to decision-making problems.** "With the continued introduction of new products into the market, the supply chain and clinical teams will need to have 'good' product and market data to properly evaluate the potential benefit for their organization and patient population. As more specialized products are introduced, supply chain and clinical teams will need to further evaluate if the product specialization enhances patient care or creates the potential risk of using the product incorrectly and/or inappropriately."
3. **Ineffective, poor or no relationship with Supply Chain to help with product evaluations, contracting, supplier relations, etc.** "Supply chain continues to take on a broader role with product evaluations, contracting and supplier relations through their integration of clinical team members into the decision-making progress. It is imperative to have a cross-functional team that supports all of the stakeholders to ensure decisions made are in the best interest of delivering patient care and financially for the organization."

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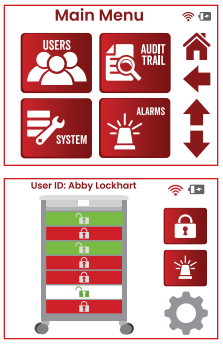

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Ash Crowe

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4. **Product recalls cause delays due to lack of preparation.** "Product recall management starts with a clear understanding on what is stocked throughout the hospital and having visibility of these products in real-time. Unfortunately, some hospitals and health systems are not well-equipped with the right tools, processes and resources to effectively manage recalled products. Without strong processes in place, hospitals and health systems are potentially putting their patients at risk."
5. **Restocking and inventory access remains problematic such that circulating nurses scramble to obtain what surgeons need – sometimes during procedures.** "Creating a streamlined inventory deployment strategy starts with understanding what products are used where and how often throughout the operating rooms and procedural areas. Too often, the inventory deployment strategy is created based on each person's experience and judgment and of course they are wrong most of the time. Hospitals and health systems will need to evaluate where best to store each product to minimize delays when retrieving products during a procedure. There is a balancing act between the cost of the product, critically to patient care and time to retrieve the product when it is needed."

Ash Crowe, Senior Project Manager, St. Onge Co.

1. **Restocking and inventory access remains problematic such that circulating nurses scramble to obtain what surgeons need – sometimes during procedures.** "Preference cards moved from hand-written cards to databases without much increased sophistication to help truly improve the process. In most cases the items brought into a OR prior to the case are based on historical data, not updated frequently, instead utilizing real time information on what the physicians are using now to predict what will be needed tomorrow based on the case, complexity, and patient characteristics."
2. **Bad/erroneous data and/or lack of product data standards cause/contribute to decision-making problems.** "As systems grow more complex and the number of products continue to increase, it is becoming increasingly important to invest in clean data and quality data standards that make sure that all items can be easily found, documented, and billed appropriately."
3. **Physician preference items add to inventory and procedural costs.** "As new physician preference items come in, there is a more complex parallel effort that needs to be done to reduce (and hopefully remove) some of the items which are no longer being used as frequently."
4. **Inability to track product consumption/usage patterns for billing, budgeting, economic service line evaluation, etc.** "Accurate tracking of consumption is important not just for the billing and budgeting but so that we can know more about what was used in the case and more accurately have the correct items in the room the next time that type of case occurs."
5. **Devices, instruments break down/malfunction due to improper maintenance, repair, service.** "Just as it's important to track the supplies and trays used in a case, accurate tracking of equipment and individual instruments used in cases would allow for more items to be proactively maintained instead of waiting for items to break in order for them to be fixed."

Rick May, MD, Senior Principal, Advisory Solutions, Vizient

1. **Other – Incomplete patient information.** "Surgeons are often making decisions on which supplies and/or equipment to use based on incomplete patient information. To make the best possible choices, surgeons need current information regarding the patient's history, medical conditions (current and past), surgical history, patient-specific risks, functional status, etc. All of these are important in making appropriate equipment, supply, and surgical technique decisions."
2. **Lack of integration, if not interconnectivity or interoperability, between electronic imaging, surgical and patient information components.** "Lack of integration results in incomplete patient information, and this contributes to suboptimal decision-making. When surgeons have easy access to MRIs, X-rays, CT scans, lab results, consult information and a detailed patient history at the time of surgery, they are more empowered to have successful outcomes."
3. **Bad/erroneous data and/or lack of product data standards cause/contribute to decision-making problems.** "Surgeons are often required to make multiple, complex patient-care decisions on the fly at the time of surgery based on incomplete information. This deficit is often due to a lack of consistent, evidence-based data around the indications for certain supplies and/or equipment and also the long-term results associated with specific supply decisions."
4. **Ineffective, poor or no relationship with Supply Chain to help with product evaluations, contracting, supplier relations, etc.** "In general, surgeons have a limited understanding about the entire supply chain process. They tend of focus on just getting the supplies and equipment that they think will work best for their patients without much regard for how it gets into their hands or how much things cost. Regular communication between supply chain leaders and surgeons would help both sides understand the other's concerns and priorities and foster a more effective approach to supply and equipment acquisition and use."
5. **Physician preference items add to inventory and procedural costs.** "All surgeons are highly motivated to get great results for their patients, and most have developed their preferences around supplies and equipment based on years (or decades) of trial and error. Because of this they tend to have strong biases about what works and what doesn't, and what they want to use in the OR. This isn't about physicians being stubborn — at the end of the day, the surgeons bear the ultimate responsibility for the results of the surgeries they perform. Effectively managing PPI requires establishing an ongoing relationship between supply chain and surgeons, so that both sides can understand the other's goals and work together to achieve great patient care at a reasonable price." HPN

Read on: ***Tackling top OR challenges, full speed, steam ahead*** **at https://hpnonline.com/21286570**

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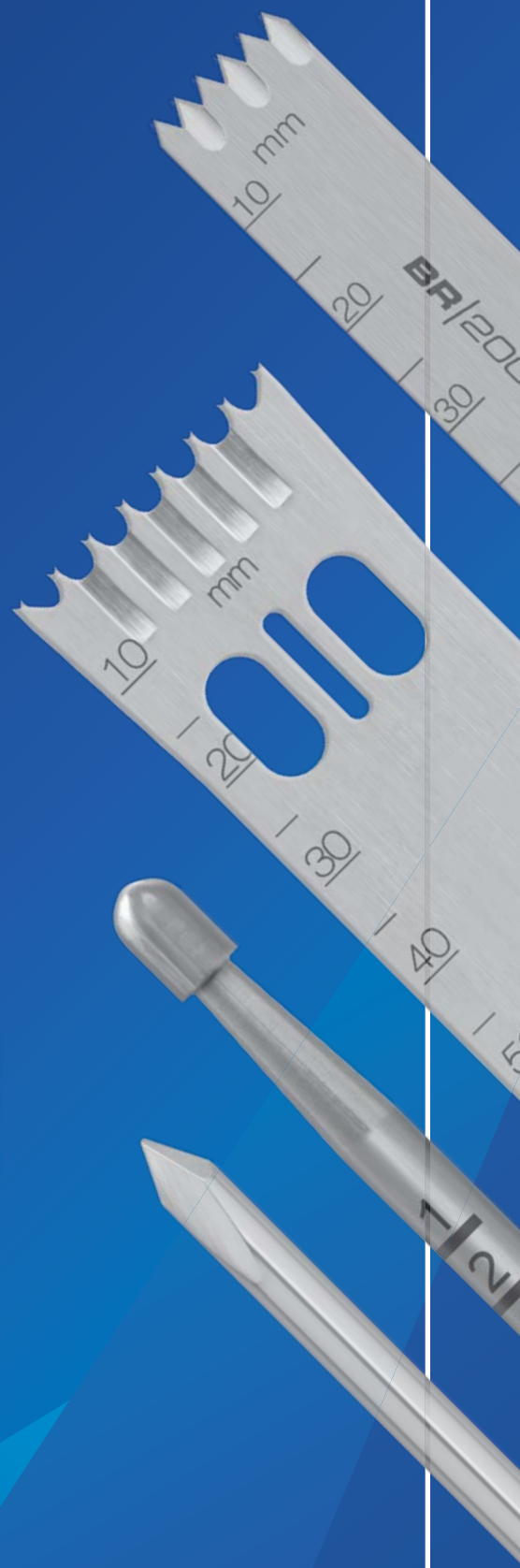

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BM-5604-12.22-HPN

Women's health at all ages & stages

by Kara Nadeau

Photo credit: Gorodenkoff | stock.adobe.com

Woman's health spans a broad spectrum of life stages, diseases, and conditions, including pregnancy and post-partum care. While one article can't possibly cover the full scope of women's health, let's look at some of the innovations helping providers care for women throughout their lifetimes, and in the case of mothers, their babies as well.

Women's health and unique challenges to care

Female patients face unique health conditions not experienced by their male counterparts, including menstrual cycles, pregnancy, menopause, reproductive cancers, and a higher risk for breast cancer. And for conditions that impact both men and women, the symptoms may present differently.

For example, a study published in May 2022 on JAMA Network Open analyzed data on 2,264 heart attack patients 55 and younger, looking at risk factors for men and women. While leading heart attack risk factors for men were current smoking and family history of heart attack, diabetes was further up on the list for women. Depression, high blood pressure, and low household income were stronger risk factors for women than family history.[1]

Donna M. Baldwin, D.O., Family Medicine Physician, Chief Quality & Innovation Officer for CirrusMD, offers this advice to clinicians when caring for their female patients:

"Because women can present differently with symptoms, be an empathetic and good listener. When women talk about depression or when they are having chest pains their concerns can be minimized when the clinician dismisses them as being over emotional. That presents a problem with women wanting to step forward and talk about their symptoms. Clinicians acknowledging the symptoms are real and taking them seriously is really important."

Donna M. Baldwin

Dr. Baldwin notes how women who are caring for children, elderly parents or other family members tend to put themselves last when it comes to healthcare.

"It's often not in the forefront of women's minds to seek healthcare for themselves so they definitely have more delays in care, which can lead to higher costs and higher morbidity and mortality," said Dr. Baldwin. "Access to care that is easy and on their time is important."

Dr. Baldwin said is it also about providing women easier access to birth control and safe reproductive care. And as screening recommendations change for conditions, such as breast and colon cancer, women have more questions about when they should be screened based on risk factors. She states:

"As our prevention and screening recommendations change as we learn, how can technology and telehealth really help get people the right care that they need so they don't waste a visit? Let's say you are 39 years old, you just had a pap last year and have no risk factors for cervical cancer but you need a birth control refill. You don't need to go into a physician's office for that. Maybe you have anxiety and depression – spend time talking with your physician about that. It is about creating a meaningful healthcare experience for women."

A cutting-edge approach to HPV testing

When detected as pre-cancer, cervical cancer is avoidable. According to the Centers for Disease Control and Prevention (CDC), every year in the United States 11,000 women are diagnosed with cervical cancer caused by human papillomavirus (HPV), and more than 4,000 women die from cervical cancer.[2] Today, clinicians can stop this

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alarming rate of deaths by testing women for HPV before it causes cancer.

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The BD Onclarity HPV Assay

More accurate breast cancer diagnosis

Early detection of breast cancer improves survival rates,[6] but approximately 20-30% of women with breast cancer have tumors that are missed by mammogram screening.[7] The use of digital breast tomosynthesis (DBT), also known as 3D mammography, allows radiologists to look through tissue layers, "making it less likely they'll miss an early sign of cancer."[8]

Koning's Breast CT (KBCT) is a revolutionary 3D breast imaging device that produces real 3D images of the breast. KBCT provides exceptional spatial resolution, dramatically improving the way clinicians visualize and evaluate breast tissue while improving the patient exam experience.

Koning Breast CT (KBCT)
3D breast imaging device

"Koning's Breast CT technology was developed to address many of the limitations of modern mammography including eliminating painful breast compression and delivering a true 3-dimensional image data set of the breast at radiation dose levels in the same range as mammography," said Naomi Cosman, Head of Marketing at Koning Corporation. "Through the adoption of this technology, patients will be more compliant, and physicians will have more detailed information free from compression artifacts and overlapping structures. These benefits will lead the way towards detecting more early-stage cancers - the point at which outcomes are much better for the patient."

Enabling a more convenient setting for hysteroscopy

Up to one-third of women will experience abnormal uterine bleeding in their lifetimes,[9] which can be a sign of fibroids, polyps, endometriosis, adenomyosis, hyperplasia, infection, or cancer.[10]

Uterine cancer (also known as endometrial cancer) is the most common gynecologic cancer in the U.S.[11] and it is on the rise, particularly among Black women. Recent research revealed the death rate from uterine cancer among Black women was twice that of other racial and ethnic groups.[12] A new study points to a potential cause: hair straightening products. A study from the National Institutes of Health found women who use these products are twice as likely to develop uterine cancer than those who do not.[13]

Hysteroscopy is commonly used in the diagnosis of uterine cancer, as well as other conditions of the uterus, and KARL STORZ has developed technology and tools to facilitate this endoscopic technique outside of the hospital setting.

"Recent advances in endoscopic technology are enabling a growing number of doctors to perform hysteroscopies in their offices rather than hospital-based settings," said Anna Palian, Group Marketing Manager, Gynecology & Fetoscopy, KARL STORZ. "Moving hysteroscopy procedures out of the OR allows for increased physician productivity and increased patient satisfaction while supporting population health in a cost-effective way."

KARL STORZ offers an extensive office hysteroscopy portfolio, with products designed to perform the full range of endoscopic intrauterine procedures. A key enabling technology is the TELE PACK+, a compact self-contained unit that combines all the components needed for hysteroscopy—camera, light source, display, documentation, and network connectivity.

KARL STORZ office hysteroscopy equipment

Beyond state-of-the-art products, KARL STORZ offers extensive value-added tools to facilitate seamless introduction of hysteroscopy procedures to the office setting. These tools provide efficient management of assets, education of the staff, and financial solutions to eliminate capital outlays.

"At KARL STORZ, we are dedicated to the advancement of women's health across the continuum of care," Palian added.

Technologies now shaping pregnancy, birth, neonatal care

Hospitals have made major strides in maternal/fetal care over the decades to improve outcomes, reduce the risk for complications, and improve patient comfort and satisfaction. Research has shown how "ensuring maternal satisfaction of childbirth services is essential for preventing anxiety, promoting treatment adherence, preventing disease and health promotion."[14]

In the neonatal intensive care unit (NICU), family involvement in their baby's care can improve both short- and long-term outcomes, help facilitate successful breastfeeding, and promote healthy growth and neurodevelopment.[15]

Here are some ways technology is supporting higher satisfaction, improved quality, and healthier patients from prenatal through postnatal care.

Monitoring fetal development

Ultrasound is a critical tool for monitoring the health of mom and baby during pregnancy, but there are multiple limitations on data sharing of images between providers and their patients, says Matthijs Groot Wassink, General Manager, Point of Care Ultrasound at Philips. When an ultrasound is performed by one provider in a healthcare facility, it is challenging for them to share it with providers at other facilities for collaborative decision making.

If a provider wants to share ultrasound images with their patient, they can use costly thermal printing or download the information onto a USB drive or DVD, both of which present the risk that the images or data will be misplaced. For patients who want real-time data on their

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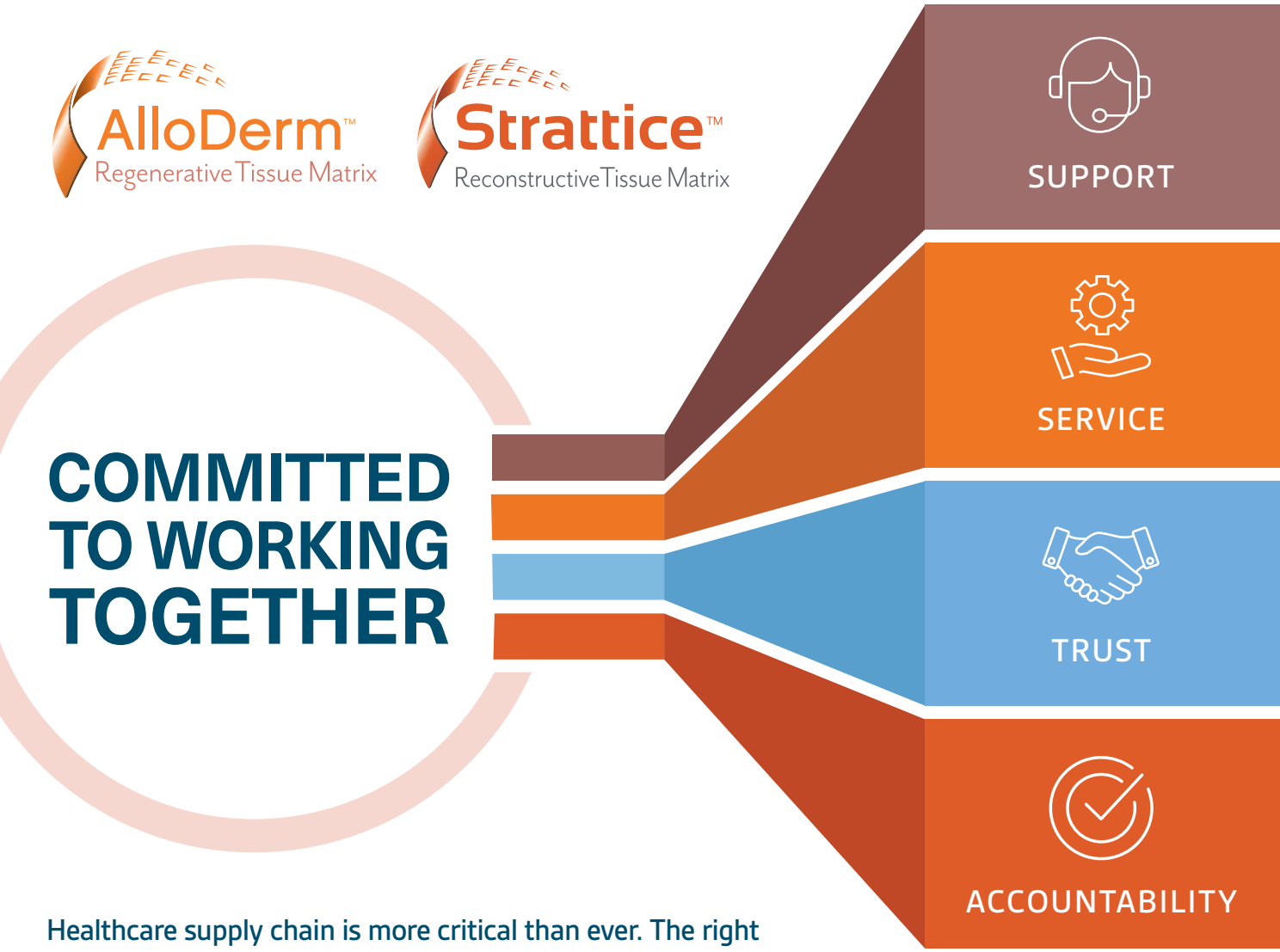

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References: 1. Data on file, Allergan Aesthetics, July 2022; Aesthetic Monthly Tracker. **2.** Data on file, Allergan Aesthetics, July 2022; PRM Customer Summary. **3.** Data on file, Allergan Aesthetics, July 2022; Tissue Contracts. **4.** Data on file, Allergan Aesthetics, July 2022; Supply Chain Attitude and Usage Assessment. **5.** Wainwright DJ. Use of an acellular allograft dermal matrix (AlloDerm) in the management of full-thickness burns. *Burns.* 1995;21(4):243-248.

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The tale of two NICUs: Evidenced-based design and equipment

While every parent envisions a perfect, full-term delivery of a healthy baby, preterm birth affects 1 in every 10 infants born in the U.S. with many of them requiring care in the neonatal intensive care unit (NICU).[21]

Preterm NICU patients often require specialized care, such as temperature control, respiratory care, and noise and light protection.[22] Family centered care, where parents are encouraged to be part of their baby's care team, has been shown to improve infant weight gain, decrease stress and anxiety in parents, and increase high-frequency exclusive breastmilk feeding rates. Additionally, skin-to-skin care improves breastfeeding duration, milk production, parental satisfaction, and bonding.[23]

Based on the need and the evidence, hospitals across the U.S. have been renovating their NICUs or building completely new units to help premature babies survive and thrive.

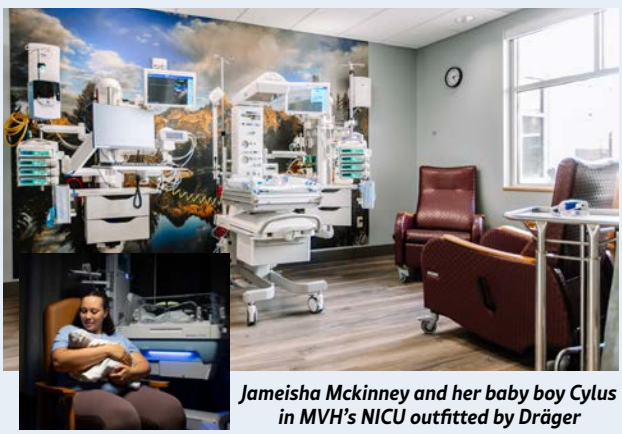
Mountain View Hospital

Mountain View Hospital (MVH), a physician-owned hospital located in Idaho Falls, Idaho, recently opened a new Level III NICU where its team of highly trained neonatologists, registered nurses, respiratory therapists, pharmacists, lactation specialists, occupational therapists and social workers work closely with parents to provide the best outcomes for their babies.

"Thousands of little boys and girls have been born at Mountain View Hospital over the past 20 years," said MVH NICU Manager Brandi Klingler. "A vast majority of children enter the world without complications. However, some babies need some extra help. Our team decided to open a state-of-the-art NICU in 2021. We wanted to provide our community with another option for babies born as early as 25 weeks and moms experiencing high-risk pregnancies. Today, we are proud to deliver the most babies in the region and be a facility where all babies are welcome."

The MVU NICU was intentionally designed to keep families together to improve health outcomes for babies. Infants are housed in individual suites with comfortable spaces for parents to relax and access to important items they may need, such as breast pumps and milk warmers. Parents have around the clock access to the NICU and can even stay overnight if they do not want to be away from their little one.

MVU built its NICU using the latest technology available. The isolettes, warmers, monitors and ventilators created by Dräger, take baby's every need into account. The equipment is designed to regulate temperature for optimal health, provide the perfect amount of lighting to avoid overstimulation, and reduce noise to protect baby's highly sensitive ears. Every detail has been carefully considered to make sure babies get the best start possible.



Jameisha Mckinney and her baby boy Cylus in MVH's NICU outfitted by Dräger

University Health Kansas City Truman Medical Center

Nearly half of all babies born in Kansas City, Mo., enter the world at University Health Kansas City Truman Medical Center (TMC) but its existing Level III NICU, built in 1979, needed updating.

The NICU team sought to renovate its space to better reflect the high level of care that TMC and its clinicians and staff provide, and the hospital secured the required funding. They teamed up with Dräger for innovative design services and advanced neonatal technologies to create a Level III NICU that simultaneously meets the needs of babies, families and staff.

The TMC NICU team wanted their new space to support closeness between baby and caregiver. They also wanted it to be a neuroprotective environment where premature infants were shielded from bright lights and loud noises their developing brains and bodies are not ready to process.

The decision was made to transition from housing all 22 NICU babies together in one triage room, to each baby having their own individual room where they could be together with their family. To equip the new NICU rooms, they chose the Dräger Babyleo TN500 IncuWarmer, BiliLux LED Phototherapy Light, GeminaDUO Wall-mount System, Infinity Acute Care System, and Babylog VN500 ventilators.

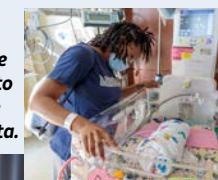
During the design process, the TMC NICU team visited the Dräger Healthcare Design Center in Telford, Pa. to visualize the entire workspace, and physically navigate the placement of devices, which helped them build proper traffic and workflows.

"We were working in a very dated space but the care we provided was unbelievable," said TMC Director of NICU Connie Potts, RNC-NIC. "So, to be able to take amazing technology and put that with the care, these babies will have even better outcomes."

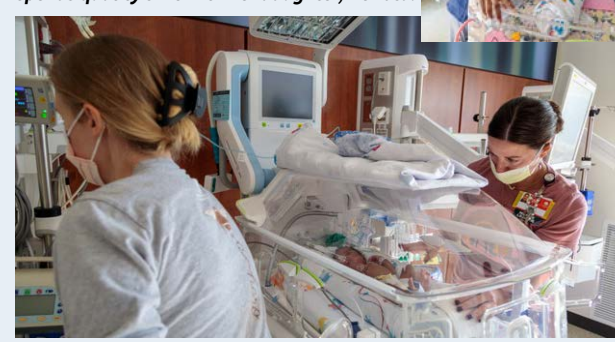
"So, what's really great about the new facility is finally our environment matches what we are able to do with the people that we have," said TMC's Chief, Department of Pediatrics, Joshua E. Petrikin, MD, FAAP.

Commenting on the integration between design and equipment and its impact on staff members, TMC Clinical Team Manager Alison McIntyre, MSN, RNC-NIC states: "It is nice to have everything integrated into one because now they only have to deal with one brand."

"I am so glad leadership of this hospital made it happen," said Sandra P. Ganon, RNC-NIC. "Also to all the contributors who made this unit possible."



Alison McIntyre, RN and a nursing teammate ensure all infants have been safely moved into the new space, while new mother Imani Rue spends quality time with her daughter, DeKota.



pregnancies, especially those at high-risk for complications, neither of these options meet that need.

Philips Avalon beltless fetal monitoring solution

Groot Wassink describes how the Philips FetView cloud-based fetal ultrasound image sharing and reporting platform allows for easier and more efficient data sharing:

"Patients and physicians can connect at any time and in any place in real-time. That is by far the biggest impact on the patients themselves. Patients and providers can store data for however long they want. Beyond just easier data sharing, the platform eliminates the limitations on the amount of data that can be shared. And the data sharing is done with the utmost attention to data privacy. Rather than a handful of images and brief summaries, providers can share complete patient data with their patients and colleagues."

Freedom of movement during labor

Studies have shown how maternal position during labor and delivery can influence duration of labor. Upright positioning helps the uterus contract more strongly and efficiently, positioning the baby to pass through the pelvis faster.[16] But conventional fetal monitors can restrict the mother's mobility and movement.

To facilitate greater mobility and comfort during labor, while at the same time perform essential monitoring, Philips has developed the Avalon beltless fetal monitoring solution. Instead of conventional ultrasound technology, the beltless solution uses ECG and EMG signals to extract fetal and maternal heart rates and uterine activity from the mother's abdomen.

The solution consists of the reusable CL Fetal & Maternal Pod, and the single-use CL Fetal & Maternal Patch. The caregiver attaches the adhesive electrodes of the patch to mother's abdomen, then magnetically connect the pod to the patch. The pod communicates with the Avalon CL base station, and the comfortable patch replaces the sweat soaked and pinching belt, removing the need for readjustment as the delivery progresses. The caregiver can concentrate on caring for the mother and rely on the technology to provide them with continuous monitoring, even under challenging conditions.

"New technologies, such as beltless and remote fetal monitoring, mobile low-cost hand-held ultrasounds, and apps that provide access to patients on-the-go fetal, maternal heart rate and contraction monitoring are game-changers for at-risk pregnancies," says Sachin Chaudhari, General Manager, Clinical Applications and Devices at Philips. "By meeting moms where they are, clinicians and payers can reduce this tension, improve outcomes, and even lower costs by increasing their ability to predict and proactively treat at-risk patients."

Safe and comfortable delivery

The Affinity 4 Birthing Bed is Baxter's primary birthing bed offering. It features an exclusive Stow and Go foot section that slides under the bed for easy storage, as well as an inflatable lumbar support that helps enhance patient comfort, a choice of traditional U-cut mattress or exclusive V-cut mattress for better clinical access, and infinite positioning calf supports that facilitate a safe and comfortable delivery.

Affinity 4 Birthing Bed from Baxter

Supporting healthy nutrition from the start

"Breastfeeding is associated with improved infant health and immune development, less incidences of gastrointestinal disease and lower mortality rates than formula fed infants."[17]

But a study of newly postpartum moms found perceived insufficient milk as the primary reason for breastfeeding discontinuation globally.[18] Medela's Symphony PLUS, the number one breast pump used in hospitals,[19] is clinically proven to support the initiation and maintenance of breast milk supply, significantly increase breast milk production and reduce pumping time through faster let-down and milk flow.[20]

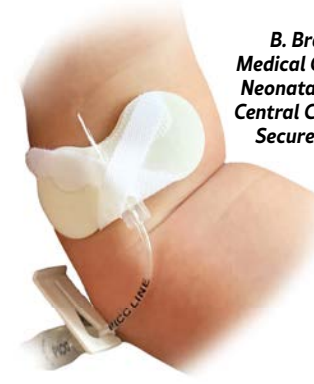
"The reseach-based Initiation Technology featured in Symphony PLUS was developed specifically to support mothers of preterm and term infants to initiate, build and maintain an adequate milk supply by combining stimulation phases, an expression phase and a pause phase that mimic healthy infant feeding behaviors," said Patrice Hatcher, MBA, BSN, RNC-NIC, Clinical NICU Specialist, Medela.

Medela Symphony PLUS breast pump

Symphony PLUS is available in most U.S. hospitals to help new moms initiate lactation, and it is available for rent through Medela, allowing moms to continue using Symphony PLUS at home to build and maintain their supply.

Securing for safety

Many babies in the NICU require placement of a peripherally inserted central catheter (PICC) to facilitate the delivery of nutrition and medications, but PICC line dislodgement is a common occurrence among patients of all ages. In one survey of clinicians, 96% identified peripheral intravenous catheters as most common device experiencing accidental dislodgement.[24]



B. Braun Medical Clik-FIX Neonatal PICC/ Central Catheter Securement

B. Braun Medical's Clik-FIX Neonatal PICC/Central Catheter Securement Device was specifically designed for neonatal patients. The device is made entirely of soft, flexible, comfortable materials that are designed to help cushion under the wings and reduce the risk of pressure injury. The hook-and-loop Chevron straps are adjustable and can secure the majority of neonatal PICC, central, and midline catheters, as well as other smaller-winged non-neonatal catheters. The adhesive on the Clik-FIX Neonatal Device is designed to be

skin-friendly, solvent-free and secure, yet gentle enough for a neonate. Also available is the Clik-FIX Soft PICC/Central Device, a larger version of the Clik-FIX Neonatal Device, for securing adult PICCs.

Transformation in neonatal transport

With nearly 70,000 neonatal transports to tertiary centers occurring in the U.S. each year,[25] transport is an area of critical importance to healthcare organizations and their NICU patients.

It all started back in the 1970s when U.S. states "developed coordinated regional systems for perinatal care that were predominantly focused on neonatal outcomes," with designated regional or tertiary care centers providing the highest levels of care. "Numerous studies validated the concept that improved neonatal outcomes were achieved through the application of risk-appropriate maternal transport systems."[26]

In the early days of transport, "infants were transported from the referring hospitals in a variety of conveyances with personnel who had no special training in the care or transport of premature or ill newborns," sometimes by parents in their own vehicles. But over the past 50 years, transport has evolved with the "development of sophisticated equipment to treat and transport infants…in concert with the development of specific clinical skills for transport personnel."[27]

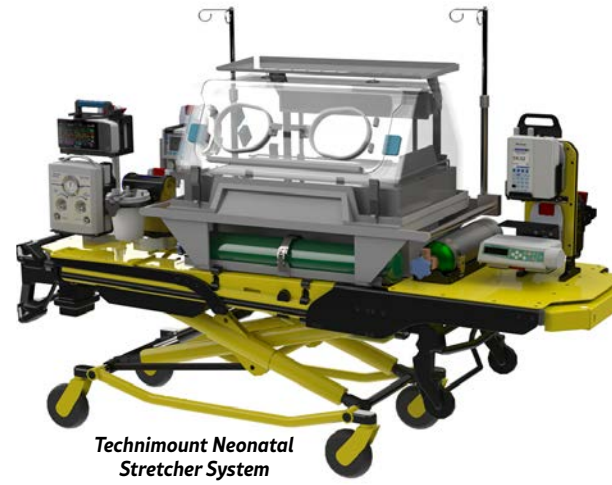
Mara G. Coyle, M.D., Professor of Pediatrics, Clinician Educator, Warren Alpert Medical School of Brown University, Staff Neonatologist, Director of NICU Outpatient Clinical Operations, Women & Infants Hospital of Rhode Island, comments on neonatal transport today.

Mara G. Coyle

"Compared with other populations, newborn transports require more interventions, involve more complications and as such require specialized teams to improve outcomes. The goal of neonatal transport is to stabilize the patient in an efficient manner, as extended time in the field is associated with increased mortality. The goal is not to bring the NICU to the baby but rather to bring the baby to the NICU."

Technimount EMS recently introduced its Neonatal Stretcher System designed to comply with the highest industry safety standards for the transport of medical equipment during neonatal inter-hospital transfers in critical care settings. Through the optimization of patient transport, this scalable solution ensures the centralization of the necessary equipment on the stretcher and provides security and flexibility.

"Our Neonatal Stretcher System is the most reliable solution on the market, becoming a valuable addition to the critical care team to provide optimal care to patients in their first stage of life," said Nancy Morest, Director of Business Development at Technimount. "Previously impossible, transport teams are now able to use the medical devices available and adapt the solution according to their unique and evolving needs. This system provides continuous access to medical device monitors and controls, thereby increasing safety and making patient care more efficient and responsive." HPN



Technimount Neonatal Stretcher System

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PPE for healthcare workers requires superior form and function

by Kara Nadeau

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Personal protective equipment (PPE) has become a household term because of the COVID-19 pandemic. We have all become too familiar with masks, gloves, face shields and other protective items. So, what more is there to say about the topic?

In fact, there is new research showing how common PPE may be inadequate in protecting healthcare workers (HCW) when handling contaminated instruments and devices. In some cases, it is the PPE itself that is contributing to cross contamination.

When looking outside the box of conventional PPE used to protect against microbes, there are product innovations to protect HCW against other dangers facing them each day, such as chemical and radiological hazards.

And with supply chain issues having become a way of life in the U.S., PPE manufacturers are bringing more production capacity onshore and nearshore to boost domestic inventory.

Protecting CS/SPD from splash back

Central Service/Sterile Processing & Distribution (CS/SPD) department teams manually decontaminate instruments and devices that can harbor human blood, tissue and secretions (e.g., urine, feces). They wear PPE to protect them from the splash that occurs while cleaning products in the decontamination sink, but recent research has shed light on the fact that it isn't enough.

A study published in the October 2022 edition of the *American Journal of Infection Control* (AJIC) found manual cleaning of a colonoscope and a transvaginal ultrasound probe in a new sterile processing department of a large urban academic medical center generated droplets that traveled over seven feet from the sink, hitting the technician at the sink and observers three to four feet away.

Droplets were detected on counters, walls, a wall-mounted water filtration system, an irrigation system, a magnifying glass, a leak tester, floors and carts. Wearing shoe covers heavily exposed to droplets and puddles, technicians tracked moisture from the decontamination sink to an automated endoscope reprocessor, to the unit door, and out into the PPE foyer - a 15-foot path.[1]

Association for Professionals in Infection Control and Epidemiology (APIC) Immediate Past President Ann Marie Pettis, RN, BSN, CIC, FAPIC, says healthcare facilities can use this study to educate CS/SPD staff members on the risks they face when decontaminating instruments and the proper precautions required.

Ann Marie Pettis

"It is all a matter of degree. We know there will be droplets, but the fact that it spreads so far was the really interesting part to me," said Pettis. "It's one thing to say PPE is important, but to share something like this study is powerful, using real world science to help bring home the importance."

Pettis says while wearing proper PPE, such as impermeable gowns, long heavy-duty gloves, full face shield, and head and shoe coverings, is essential to protecting staff against contamination, adherence to proper PPE doffing and hand hygiene procedures is equally, if not more important in some cases. This includes restriction of PPE doffing to the decontamination room, availability of hand hygiene products during and after doffing, and limiting hand washing to a designated clean sink.

"As infection preventionists and educators, we need to reevaluate how we're doing this training and making these points to our staff members, including making sure we have visual cues always set up for them. As humans when we get familiar and comfortable with a process, we tend to get complacent, so training is not a one and done event. Again, using a study like this can help bring these points home."

Personal protection during transport

The transport of dirty instruments from procedural areas to the CS/SPD department is another process that presents contamination risk to HCW, the environment and patients.

Healthmark recently launched its new single-use, Disposable SST Tray System for post-procedure transportation of contaminated instruments from procedure areas to the decontamination area. The tray is clear and can be used to identify the instruments inside conveniently and quickly. Manufactured from 100% recyclable plastic (RPET), the Disposable SST Tray System (DSST-001-10) comes with a base with the dimensions of 30cm L x 33cm W x 11cm D (11.8" L x 12.9" W x 4.0" D), as well as a matching lid. Weight capacity of the tray has been tested to 25 lbs. The DSST-001-10 is available for purchase in a quantity of 10.

Healthmark new single-use, Disposable SST Tray System

Stopping microbes in their tracks

Sometimes personal protection isn't about what you wear, but the cleanliness of it.

Recent research has shown how HCW can spread dangerous microbes from infected patients to other areas of a hospital through the soles of their shoes.

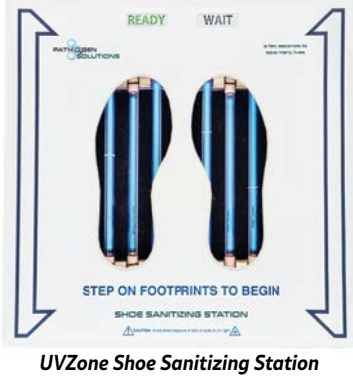
A study published in the August 2022 issue of *The Journal of Hospital Infection* describes how researchers cultured the shoe soles of HCW twice per shift while they were caring for patients infected with *C. difficile* on a general care floor of an acute-care institution. They also processed patients' fecal samples by routine microbiological methods.

A total of 103 HCW exposed to 42 hospitalized patients participated in the study, providing 206 samples. Contamination of shoe soles with C. difficile was detected in 37 samples (17.8%). Upon comparing the patients' and HCW's *C. difficile* strains, 74% were linked epidemiologically to infected patients. The researchers note how this suggests potential transmission by of *C. difficile* by HCW's shoe soles.[2]

PathO3Gen Solutions UVZone Shoe Sanitizing Station is an innovative multi-patented disinfection technology using the combined power of UVC light and ozone. It is on average 110x more effective than UVC alone, and as much as 346 times more effective for some microorganisms studied; eliminating up to 99.999% of the most harmful pathogens including *Candida auris, E. coli, C. diff,* MRSA, Klebsiella pneumoniae, Norovirus, and Human coronavirus from shoe soles in ≤ 8 seconds.

"Pathogens are proven to spread quickly from hospital floors to high-touch surfaces", said Scott Beal, COO PathO3Gen Solutions. "UVZone is an easy-to-use, portable, chemical-free technology that enhances existing infection prevention protocols to lower overall bioburden in your facilities creating cleaner, safer environments."

The UVZone Shoe Sanitizing Station is NSF International tested, TÜV SÜD Certified, EPA Registered, and manufactured in an ISO 9001-2015 facility in the USA.



UVZone Shoe Sanitizing Station

Protecting against chemo drug exposure

The National Institute for Occupational Safety and Health (NIOSH) classifies antineoplastic drugs, including chemotherapy to treat cancer, as hazardous drugs. HCW exposed to them have increased risk for leukemia, other cancers, adverse reproductive outcomes, and chromosomal damage.[3]

While PPE is an essential part of protection, a NIOSH study found 12% of female nonpregnant nurses and 9% of pregnant nurses never wore gloves when administering antineoplastic drugs, and 42% of nonpregnant nurses and 38% of pregnant nurses reported never using a gown[4]

Cardinal Health manufacturers a variety of PPE that meets industry performance and safety standards to help keep clinicians and patients safe. The company's apparel solutions include Association for the Advancement of Medical Instrumentation (AAMI) (PB70[5]) Level 2-4 isolation gowns, AAMI Level 3 and 4 surgical gowns, chemotherapy gowns, headwear and footwear, lab apparel, facial protection, and exam gloves.

Cardinal Health ChemoPlus Chemotherapy Gown

"Cardinal Health Infection Control Apparel stays at the forefront of the regulatory environment, continuously evaluating and improving product offerings so customers can comply with industry best practices," said Rosie Squeo, RN, BSN, MA, Senior Clinical Consultant in Business & Clinical Optimization at Cardinal Health. "Our newly developed, ChemoPlus Chemotherapy Gowns and Sleeves are chemotested and meet AAMI Level 3 and help protect against exposure to 16 types of chemotherapy drugs during preparation, handling, administration and more — wherever therapy is delivered."

"This year, we also reintroduced our AAMI Level 3 Isolation Gowns that allow clinicians to level up for greater protection," Squeo added. "These gowns, along with the new ChemoPlus gowns, are made in North America for greater supply resiliency."

Tronex Healthcare Vice President Edmund Tai, says, "Make a statement in pink! Offering over three decades of expertise in disposable PPE, Tronex delivers a comprehensive line of GPO-contracted clinically preferred protective solutions." Tai comments on the company's new PINK line of PPE:

"Our advanced formulation PINK Nitrile Chemo-Rated Examination Gloves offer superior fit and softness, tactile sensitivity, and exceptional barrier protection. Tronex PINK Nitrile exam gloves are fingertip-textured and not made with natural rubber latex. The Tronex PINK Bouffant Cap is made of a breathable, fluid-resistant multilayer non-woven material and features a soft elastic for all-day comfort."

Tronex Healthcare's new PINK line of PPE

Shielding female clinicians from radiation

The U.S. Occupational Safety & Health Administration's (OSHA) radiation protection standards are based on the premise that any radiation dose carries some risk, and that risk increases with dose. The OSHA website notes how "Some workers, such as radiology department workers, may be repeatedly exposed to low levels of ionizing radiation over the course of their careers."

While the "resulting dose levels are almost always below the threshold doses needed for deterministic health effects to occur," the government agency makes a point to state how "stochastic health effects, such as cancer, may occur years following the radiation dose."[6]

For female clinicians, conventional radiation PPE garments, such as aprons, may not fit their body shape, leaving areas exposed. To enhance protection, BLOXR Solutions developed its BLOXR XPF Bra Inserts, which minimize occupational exposure of the breast area to scatter radiation for those medical personnel involved with x-ray and fluoroscopy.

BLOXR XPF-Bra Inserts

XPF Bra Inserts, which slide underneath a normal bra, provide 0.5 mm Pb equivalency, offering a means of additional protection to those with a history of breast cancer or those concerned about the possible risk. The inserts are flexible, comfortable, non-toxic and machine washable.

"We are woman-owned and care about women's health," said President and CEO of BLOXR Solutions, Julia Jacobson. "We created these inserts based off discussions we had with female clinicians who were concerned with the ill-fitting x-ray protection gear they were given to wear. They are helpful especially when the size of the radiation protection garment provided doesn't adequately cover the chest area."

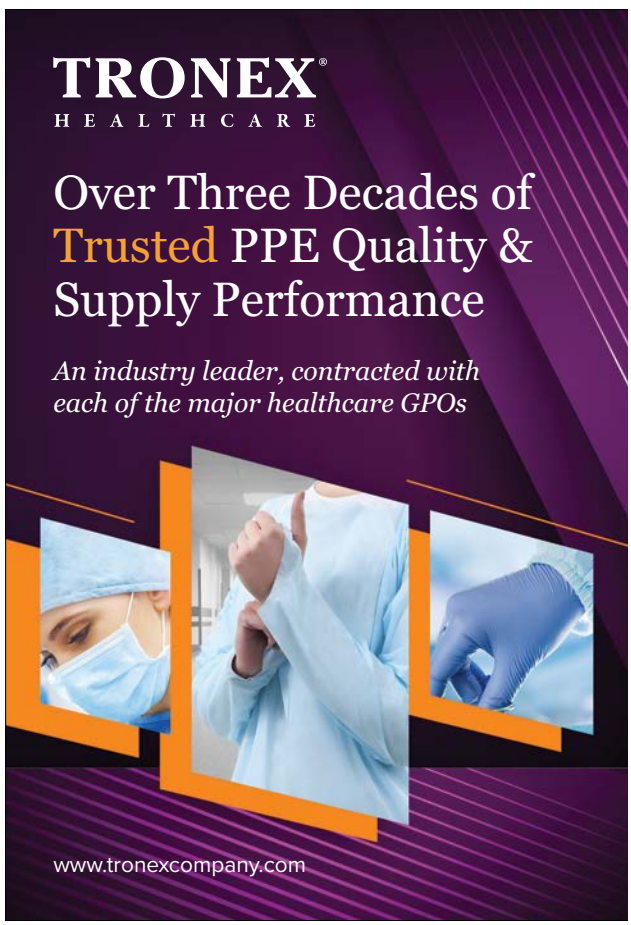
Rendering of United Safety Technology's new production facility in Sparrows Point, Md.

Designing PPE for clinician comfort

HCW are dealing with PPE fatigue after nearly three years of donning masks for protection against COVID-19. Among 250 HCW surveyed about facemask discomfort, 67% reported excessive sweating around the mouth, 58% difficulty in breathing on exertion, 56% acne, and 52% itchy nose.[7]

"Now more than ever, we recognize that wearing a mask for an extended period of time can be uncomfortable," said Squeo. "For healthcare professionals with sensitive skin, wearing a mask can be even more irritating, especially during extensive surgical procedures. So, we developed the new Sensitive Skin Surgical Mask portfolio, which was carefully designed for users with skin sensitivities and dermatologically accredited by the Skin Health Alliance."

Cardinal Health surgical masks



Boosting domestic PPE production

PPE shortages during the pandemic increased risk for infection among healthcare staff members and caused countless headaches for healthcare supply chain leaders. Nitrile gloves were one PPE category in scarce supply, with the demand for these products nearly doubling from 300 billion pieces in 2019 to 585 billion in August 2020. Surging demands caused prices to jump from $3 per box to a staggering $32.[8]

The shortage was in large part due to a heavy reliance on offshore manufacturing of these products, driving a subsequent boom in domestic PPE production.

United Safety Technology (UST) is focused on the domestic production of critical medical supplies to reduce our country's reliance on foreign suppliers. Led by an international team of manufacturing and distribution experts, UST was awarded a $96.1M contract by the Department of Defense to manufacture medical-grade nitrile exam gloves on American soil.

"Currently, the U.S. purchases upwards of $8 billion in nitrile gloves per year, and more than 98% of these products come from Asia, which puts our frontline workers at risk when supply chains are jeopardized," said UST Chief Commercial Officer Will Benton. "UST is now in the process of opening a 735,000-square-foot production facility in Sparrows Point, Md., which will leverage a proprietary manufacturing model with enhanced automation to drive lower production costs. At full scale, UST plans to manufacture more than 10 billion gloves per year, while creating 1,500+ new jobs – with at least 30% for people with disabilities. Commercial production is projected to start in Q2 of 2023."

Isikel Manufacturing will be manufacturing powder-free nitrile examination gloves in its world class manufacturing plant in Katy, Texas by Q1, 2023, notes the company's Chemical Engineer, Chris Betts. He states:

"Led by a team of highly experienced management and chemical professionals, Isikel's proprietary glove formula and dipping process raises the bar for consumer comfort and performance over foreign imports. Isikel is committed to being the 'go to' supplier of domestically produced PPE that customers can depend on." HPN

Isikel Manufacturing powder-free nitrile examination gloves

References online at https://hpnonline.com/21286585

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1

3

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- 9 Mil

2 Face Shield with Drape

- 13" High x 9" Wide with 12" Drape
- 1" Brow Foam
- 7 Mil PET

2

3 Lined Sleeve Gloves

- 28" Long
- 4 Mil Protective Sleeve
- 15 Mil Nitrile Glove

4 Face Shield

- 13" High x 9" Wide
- 1" Brow Foam
- 7 Mil PET

4

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For safety, effectiveness, SPD's endgame must be cut and dried

by Rick Dana Barlow

Photo credit: sukan | stock.adobe.com

To aerate, dry and store or not to aerate, dry and store, there is no question.

Endoscopes and other medical/surgical devices and instruments with lumens, niches, nooks and secluded recesses may be used to repair patients and steer them on the road to healing and recovery but they also potentially cause harm when they're not completely cleaned, high-level disinfected or sterilized, aerated and dried in sterile storage.

In fact, even if all organic material and residue from a procedure were removed successfully via reprocessing, but elements of moisture remained, the dangerous risk of contamination and infection to the next patient lingers. That's what sterile processing and distribution (SPD) professionals know that makes aeration, drying and storage such important components of the reprocessing procedure – and they must be managed properly to prevent shortcuts during time crunches and turnover demands. After all, in many cases, shortcuts can lead to shortfalls, experts agree.

All told, problems in the aeration, drying and storage process, while an integral part of sterile processing at the end, may not only involve the process itself but other mitigating factors.

Staffing and supply

"The primary challenge SPD staff face is having adequate amount of tray inventory," noted Kayla Ostrander, Application Engineer, Device Reprocessing, 3M Health Care Business Group, Medical Solutions Division. "When a one-of-a-kind tray is needed for more than one case in day, or you have two sets of a tray but they are needed for four different cases, these time crunches can cause staff to rush the process and not allow instruments to properly dry before sterilizing them. If possible, increasing inventory on these types of trays or sets can help with allowing staff to take the proper steps when reprocessing them.

Kayla Ostrander

"Another challenge has to do with staffing," Ostrander continued. "Whether it's high turnover rates or inadequate staffing that you're facing, ensuring that staff are knowledgeable of the proper procedures to reprocess items that may harbor moisture can be tricky if you don't have enough staff to help and you don't take the time to help properly train incoming new hires."

Richard Radford, CEO, Cenorin LLC, points to another fundamental issue – the definition of "dry" that he contends is a "huge" challenge.

Richard Radford

"Historically it was subjective, like early definitions for 'clean,'" Radford told *Healthcare Purchasing News*. "Fortunately, this clean endpoint has evolved to a more precise description from merely visual inspection to grams per square centimeter of debris. 'Dry' is moving on from estimating or observing dryness (subjective) to a more scientific condition of 'clinically dry' that has been established through a rigorous process with solid documentation."

Radford refers to a disciplined study performed in a clinical setting that demonstrated a way to determine drying times for specific instruments (in this case, robotic devices) to assure a clinically dry state. "Robotic surgical devices contain small lumens, complex chambers and tortuous pathways in which water can accumulate and must be removed to prepare for subsequent steps in the reprocessing cycle," he said. "The study [found via Cenorin's website] describes a precise, controlled methodology that helps provide greater assurance than a subjective judgment."

But Radford cautions that the presence of moisture is not the only barrier to clinical dryness.

"Each medical device brings its own challenges," he noted. "Device design and material aspects, such as interior and exterior surface shapes and textures, device component materials, and the shape, size and configuration of ports, can all become challenges to successful drying. Robotics, endoscopes, CPAP circuits, sequential compression devices, nebulizers, LMAs and hundreds of other semi critical devices each present their individual challenges."

Radford recommends looking at the materials used to process devices, too.

"Many devices are processed using liquids or other chemicals that may leave a residue that penetrates the surface material of a device and may require aeration," he

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observed. "Modern drying systems aid in the aeration process using controlled heat and exhaust air. When aeration and drying are complete, some drying chambers can also be part of a staging or storage plan. To be used in this way, the chamber must be sealed to prevent external contamination or protected with HEPA filtered circulating or continuous heated or room temperature air."

Radford acknowledges that each type of lumened or complex device presents its own challenges for drying and storage, so he advises a key step to initiate any changes in the process.

"We suggest performing an inventory of the devices used in your hospital and determining what specific drying conditions are most effective for each one," Radford said. "It might also be helpful to compare the various available drying systems and cabinets to determine which ones have the features that meet your needs best. Consult each drying chamber manufacturer to determine whether they have engineered their drying process to handle all of your devices, and whether they can share validated data to demonstrate drying effectiveness.

"In a quality-focused healthcare environment, the critical contribution of effective drying is becoming an even more important factor in the reprocessing cycle because of its contribution to the next safe use of each device," he added.

Malinda Elammari

Access to enough product can make a difference, according to Malinda Elammari, CST, CSPM, CSPDT, CFER, CSIS, CRCST, CIS, CHL, CER, CLSSGB, Clinical Education Specialist, Healthmark Industries.

"While challenges occur in all facets of the process, the storage of extra instruments and devices is an important concept that is often overlooked but can have a negative impact on patient outcomes when done incorrectly," Elammari noted. "The use of organizational items such as peg boards and bins are beneficial for helping with space constraints and easy instrument identification; however, they are not a set it and forget it concept. These items must be maintained and not serve as collection points for dust which act as fomites for microbes. If these items make it to the patient they can lead to complications for the patient."

Aaron Champion, Vice President, Endoscopy Sales, Solaire Medical, recognizes the intensity of the SPD department and the clinical pressure to perform – particularly for minimally invasive devices.

"Endoscope sterile reprocessing departments are often fast-paced environments that require quick turnover of reprocessed scopes to meet the demands of a high caseload facility," he said. "Reprocessing technicians need to feel confident that a stored endoscope has been through a drying cycle. Forcing air through the internal channels of the endoscope to promote drying helps remove moisture that might not drain out by simply hanging the scope vertically in a cabinet. Removing this internal moisture with forced air can mitigate bacterial growth and contamination in a reprocessed endoscope."

Aaron Champion

Picking a pathway

Quantity should not surpass quality such that shortcuts lead to slipups with dire consequences, according to Theresa Kunsman, Senior Product Manager, Cleaning/Disinfection/Sterilization, Olympus Corporation of the Americas.

"Controlling the human factor in reprocessing is always a challenge," Kunsman indicated. "The key to effective reprocessing is repeated and consistent execution of the device's defined process each time the endoscope is cleaned. On busy days, some technicians may be inclined to 'speed up' a process. It is important to stress the quality of cleaning and put processes in place to keep external pressures from influencing technicians to hasten the cleaning or sterilization process."

Kunsman advises that SPD implement drying processes that should be dependent on whether the device is sterilized or disinfected before storage.

"This is because drying occurs before an endoscope is sterilized but occurs after an endoscope is disinfected," she noted. "Separate drying devices should be designated for sterilization and disinfection to avoid contamination of high-level disinfected scopes.

"Simply managing two distinct drying processes in the same department can be challenging," Kunsman recognized. "A workaround for this issue that is sometimes adopted is high-level disinfecting of the endoscope before drying and sterilization. This allows the same drying device to be used without the fear of contamination. In this scenario, the time for sterilization is increased by the length of the HLD process. Technicians must be educated on both sterilization and disinfection processes – unless the facility is able to designate experts for each area."

Kunsman advises that technicians need to be able to identify the proper category each device requires – whether high-level disinfection or sterilization.

"The ultimate challenge is selecting the process that works best in the facility and evaluating the cost/benefit of maintaining separate drying devices against adding additional time for sterilization," she said. "In the case of sterilization, ensuring the device is completely dried is critical because moisture can impede most sterilization processes. For example, if moisture is present during steam sterilization, the sterilizer may experience condensation issues. Some sterilization units have a built-in abort mechanism if moisture is detected. Drying before sterilization may include the use of a clean lint-free cloth to wipe external visible moisture, pressure-controlled compressed air, and a drying device/cabinet.

"The drying process is also critical for high-level disinfected devices because any residual moisture left after disinfection can promote bacteria growth," Kunsman continued. "Drying a device after disinfection may include wiping the external surface of the device with a clean, lint-free cloth, and drying with highly filtered air, such as instrument air. Using a drying cabinet to complete the drying process provides a controlled environment for drying, limits exposure to external contaminates and helps protect the endoscope from damage."

SPD should evaluate this process beyond the confines of its departmental footprint as well, according to Kunsman.

"Most SPDs do not store devices in that department," she said. "In many cases, the devices are transported to a separate department. SPDs must develop a method of transport and storage that maintains the endoscope reprocessing status and protects the device from damage. Tracking methods must also be included in the overall process. This enables device location, validation of reprocessing status, and process management."

Inside the lines

While some areas to watch to ensure proper aeration and drying works may be overt, others are more covert and hard to find – and cannot be dismissed, ignored or missed, experts argue.

"Surgical instruments can be very complex these days, and staff may not be aware of areas that may hold moisture or what needs to be disassembled for proper drying," said 3M Health Care's Ostrander. "When acquiring new instrumentation, it is important to educate staff through in-services on proper cleaning and assembly methods to help ensure instruments aerate and dry properly."

Ostrander lists several examples of areas that may hold moisture or need to be disassembled for proper drying, such as depth

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The internal complexities and differences between endoscopes must be understood to ensure proper drying of the internal channels, according to Solaire's Champion. "Not all channels are interconnected within some endoscope models, meaning that directing air through one port does not necessarily mean all residual moisture is being removed from the endoscope," he indicated. "The length of the endoscope and size of the lumens may contribute to the amount of residual moisture left in the endoscope after the AER cycle. Failure to leave the endoscope in a drying cabinet for a sufficient length of time may result in an incomplete drying cycle, thus allowing for residual moisture to promote bacterial growth. Additionally, environmental factors like water quality, ambient temperature and humidity and atmospheric pressure can have an impact on the effectiveness of a drying cycle within an endoscope drying cabinet.

"Each facility should perform a risk assessment to verify that a standard drying cycle is sufficient to remove moisture and minimize the potential for contamination in endoscopes," Champion added.

Healthmark's Elammari warns about improper storage as well as storage techniques that may seem harmless enough.

"The manner in which extra instruments are stored can be damaging to the instrument and in turn does not allow for proper functionality during surgical procedures," she noted. "For example, when placing ringed instruments on a peg board, some facilities clamp the ratcheted instruments closed in an effort to utilize one peg and save space. This practice places stress on the box lock of the instrument and with time can diminish its ability to function correctly. An additional example would be with light cords. According to most light cords' IFUs they should be stored coiled no less than six or eight inches. Coiling less than this will cause the light fibers in the cord to break and reduce the amount of light produced. This translates to a dark operating view for the surgeon."

Photos courtesy Malinda Elammari, Healthmark Industries

Olympus' Kunsman stresses the innate importance of aeration, drying and storage of surgical devices for the durability and lifecycle of the devices.

"Even with the proper drying methods and devices, whether sterilizing or high-level disinfecting, verifying dryness can be a challenge," she said. "This is because there are no broadly available methods for determining if a device is dry. Ensuring proper care and handling of equipment during reprocessing and transport should be managed because this can directly impact drying effectiveness and device longevity. Finally, checks and balances should be implemented to ensure proper reprocessing and drying steps are performed." HPN

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Tips, tools, tricks for device aeration, drying and storage

Maintaining standard, traditional and minimally invasive surgical devices – particularly during peak demand or elective and scheduled procedural demand spikes – can escalate to pressure cooker situations for sterile processing and distribution (SPD) professionals.

SPD experts share some relevant and useful recommendations to help relieve some of the pressure once the devices exit the high-level disinfector or sterilizer. Note that some overlap or may be repetitive for emphasis.

- Make sure to consult your endoscope's Instructions for Use (IFU) for proper aeration and drying methods (such as blowing air and/or using alcohol) as well information on the proper way to store the scope. There is no one-size-fits-all way of cleaning that applies to all endoscopes, so it is important to know what specific steps need to be taken to ensure proper cleaning and storage for your scopes.
- Scopes also should be hung and stored as soon as possible after cleaning is finished to allow for adequate drying. Documentation that contains the date of reprocessing and initials of who cleaned it is important to help identify scopes that have reached your facility's identified storage time.
- Make sure your endoscope storage cabinets are clean. Storage cabinets should be cleaned according to the manufacturer's IFU. However, doing visual inspections of the cabinet whenever storing or retrieving endoscopes can help ensure the cabinet's cleanliness is maintained between scheduled cleaning times.

Kayla Ostrander, Application Engineer, Device Reprocessing, 3M Health Care Business Group, Medical Solutions Division

The below useful tips stem from some of the main issues that I have seen at different facilities.

- The cloth that is being used to dry the outside of the scope should be changed with each scope.
- Scopes that come out of the [automated endoscope reprocessor] should be tagged as clean and with additional information per AAMI ST91
- Handheld air guns do not allow for proper drying of scopes internal lumens; invest in an automated system or drying cabinet.
- Ensure your leak tester's pressure is being tested each day it is in use. This is different

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from pushing the pin prior to processing a scope. This involves testing the actual unit and cord.
- Transportation of dirty scopes should be in a biohazard-marked containment device that has an IFU for proper care and handling.

Malinda Elammari, CST, CSPM, CSPDT, CFER, CSIS, CRCST, CIS, CHL,CER, CLSSGB, Clinical Education Specialist, Healthmark Industries Co.

The mindset needs to shift to active drying prior to scopes being released by processing professionals. It becomes the last formal step of processing – prior to storage or as part of storage. Key points:
- The drying cycle in an AER is a purge, not a validated drying cycle.
- Both the exterior of the scope and accessible channels need to be actively dried.
- Low-linting wipes need to be used for external drying.
- Instrument air or HEPA-filtered air needs to be used for channel drying.
- Based on research to date, channel drying should occur for at least 10 minutes.
- Holding an air gun to the proximal working channel does not ensure drying of the entire channel.
- Scopes need to be dried before storage in a conventional vertical storage cabinet or they need to be placed in a dedicated channel drying cabinet.
- Conventional storage cabinets need to have active filtered air circulating through the cabinet.
- Embedded QC for active drying would include the use of periodic drying verification testing.

John Whelan, Clinical Education Specialist, Healthmark Industries

AAMI ST91 addressed this issue rather nicely:
- Endoscope channels be dried for a minimum of 10 minutes with pressure-regulated forced instrument air (or, at minimum, HEPA-filtered air). If moisture is still observed, the drying time should be extended until no moisture is visible. The endoscope manufacturer's written IFU should be reviewed for the maximum PSI. Note: Manual drying should occur even if an AER is used, and it has an air purge or extended dry time feature.

They also looked at the use of alcohol and came up with the following recommendation:
- The use of alcohol has long been recommended in the drying process after disinfection is completed; however, some studies have shown that alcohol can be a fixative agent. For that reason, ST91 now recommends that a multidisciplinary team (with representation from infection preventionists, endoscopy and perioperative nurses, endoscope processing personnel, endoscopists, and other involved personnel) conduct a risk assessment to determine whether endoscope lumens should be flushed with 70% to 90% ethyl or isopropyl alcohol. Since no two facilities are alike, the use of a risk assessment makes perfect sense.

Sharon Ward-Fore, BS, MS, MT(ASCP), CIC, FAPIC, Infection Prevention Advisor, Envista

- Using a drying cabinet that directly connects to the endoscope lumens and forces air through the internal channels is preferred over simply hanging in a cabinet.
- Facilities should conduct a risk assessment to determine the appropriate length of drying cycle and appropriate maximum storage time for their endoscopes.
- Place the endoscope into a drying cabinet and initiate the drying cycle as soon as possible after the endoscope is removed from the AER.
- Conduct periodic inspections of the internal channels of endoscopes to ensure moisture is completely removed through a standard drying cycle.
- Follow manufacturer IFUs for endoscopes, reprocessing equipment and drying cabinets.

Aaron Champion, Vice President, Endoscopy Sales, Solaire Medical
- Ensure endoscope manufacturer instructions for use (IFUs) are followed for maximum psi allowed for endoscope channels.
- If possible, dry in a controlled environment such as a drying cabinet with instrument air or a minimum of HEPA-filtered air. This helps limit exposure of the clean endoscope to airborne contaminates.
- Designate a defined drying space in your reprocessing/sterilization flow. Ensure the drying space does not cross over into the dirty space. Keep the reprocessing flow unidirectional.
- To protect the integrity of the endoscope, vertical hanging is best for long-term storage. The use of a drying cabinet for storage is preferred. If a drying cabinet is not available, endoscopes may be completely dried, and then stored in a standard cabinet with HEPA filtration, ventilation and air flow.
- Follow drying cabinet or drying device manufacturer instructions for use (IFUs) for filter changes. This is critical to ensure the quality of air that is exposed to clean endoscopes.

Theresa Kunsman, Senior Product Manager, Cleaning/Disinfection/ Sterilization, Olympus Corporation of the Americas

Endoscope drying and storage play a key role in endoscope reprocessing. It is important to stress that preventing the introduction of contaminants after disinfection is also pivotal to patient safety. Here are a few tips on drying and storing reprocessed endoscopic devices:
- The quality of compressed air used to dry endoscopes is important. Inadequately filtered air could introduce contaminants to a clean endoscope. Societies are moving toward the use of instrument-quality air. The AORN guidelines state, "The exterior surfaces of the endoscope should be dried with a soft, lint-free cloth or sponge and all channels purged with instrument air."[1] AAMI has also noted that endoscopes that have completed an HLD cycle should undergo additional drying internally with instrument air.[2] SGNA indicates that step #8 in endoscope reprocessing is drying, "which requires an alcohol flush, followed by forced-air drying with instrument-quality compressed air."[3]
- Heath care facilities should avoid the use of oil-based compressors for drying endoscopes.
- When drying endoscope channels, be sure the maximum air pressure introduced does not exceed manufacturer IFU requirements. The latest Multisociety Guidelines recommend, "Endoscopes should be completely dried after reprocessing and before use."[4] AAMI ST91 2021 guidelines have taken this a step further and recommend that endoscopes with channels should be dried for a minimum of 10 minutes with pressure-regulated forced instrument air or a minimum of HEPA-filtered air. If moisture is still observed after 10 minutes, drying time should be extended until no moisture is visible.[2]
- Whenever possible, store the endoscope in a drying cabinet. If a drying cabinet is not available, dry the endoscope (exterior and lumens) and hang it in a well-ventilated HEPA cabinet that provides positive pressure.
- Once disinfected, endoscopes should be dried and stored in a way that will protect them from external contaminants. Hang the endoscope in a vertical position to enable drying and maintain scope integrity. Remove caps, valves, and other detachable parts per IFU instructions.

Melinda Benedict, Director, Infection Prevention and Control, Olympus Corporation of the Americas

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

LEARNING OBJECTIVES

1.) *Determine the foundations for sound quality management systems.*

2.) *Understand the relationship between quality assurance and efficiency.*

3.) *Execute effective quality management strategy planning sessions.*

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Education nation: Creating Sterile Processing Department SOPs

Sarah B. Cruz, CSPDT, CRCST, CHL

The Sterile Processing (SP) department has its own soundtrack. The sound of the cart washer door opening, the rumblings of a full autoclave truck being pulled, and even the phone ringing are contributors to the Sterile Processing album. Even if we aren't in the department while we read this, some of us may think we hear the sterilizer beeping now. The hustle and bustle of the department professionals are a part of this chorus. Banter about weekend plans, discussion about a possible wet load, and conversations between the SP and the Operating Room (OR) happen regularly.

The tone and attitude that we use within our department reflects our standard operating procedures (SOPs). SOPs allow for the department and its professionals to work together because everyone knows what goals they are working towards. They are the difference between a reactive situation that has an outcome and a high-pressure moment with a proactive solution. As a vital part of a Sterile Processing department's quality management system (QMS), SOPs encourage everyone to move towards a solution together via clear expectations. The actions of the department rely upon SOPs to create harmony and flow towards positive patient safety outcomes.

The FAQ of SOPs

Standard operating procedures are the instructions that outline how to perform a certain process. The idea is that if the SOP is performed the same way, every time, then the same outcome can be expected. Therefore, they are an integral part of any effective quality management system. While the QMS addresses the needs of the organization (in this case the department), the SOPs outline the factors that contribute to the overall success of the department.

SOPs have a direct impact on patient safety because they are designed to guide the professionals towards a singular outcome. SOPs are a high-level overview of a process, which is why they should not be confused with exact or instructional step-by-step processes or "how-tos". The main objective of an SOP is that all parties involved are made privy to the information necessary to perform said task effectively.

Standard operating procedures are designed to help break down the most complex processes so that even new technicians know the desired outcome of their task[2]. There is no limit as to the number of SOPs that can be assigned in a Sterile Processing department. However, this does not necessarily mean that a department with hundreds of SOPs will operate more effectively than a department with fifty. In the case of an SOP, "effectiveness" is determined by the ability to perform a task consistently. An SOP is effective when the end results are achieved consistently within range and when there is an increase in:

- Staff confidence in process application
- Quality products
- Productivity
- Department safety

These factors must be considered when determining the realistic outcome of an SOP. If even one area is lacking at the expense of another area to thrive, the SOP cannot be considered effective.

For example, if a Sterile Processing professional can check ten instrument sets per hour on assembly, but the quality of each set decreases over time, the SOP is not effective. This may call for the SOP creators to reevaluate how they are defining the term "productive" and to address what physical indicators they are using to indicate that one is being such. The SOP does not suggest that one area of the process is more important than another; rather it demonstrates why all areas must be considered equally important when building out the processes to achieve it.

This ushers in the evident reminder that Sterile Processing professionals are *humans*, not machines. Machines don't require confidence or reassurance in their work performance to maintain focus on their end goal. The parameters of what is or isn't acceptable must provide a range that Sterile Processing professionals can work within and still be successful.

Variations due to interpretation

Standard operating procedures define what success is. They do so by removing emotional biases and preconceived notions of expertise and creating a foundation for application. Variations in SOP application are typically the result of the SP professional's interpretation of the process and its expectations. The SP professional will interpret how to achieve the SOP outcome through their own scope of job skills formed by workplace tenure, experience levels, and learned habits. Thus, SOPs level the playing field and give every SP professional the same foundation for evaluation.

It is possible to create SOPs that consider different professional levels and are only applied to those levels. However, using a high caliber SOP as the baseline for professionals with less experience is only setting up the department and our patients for failure. SOPs must be tangible; their tangibility measured by the success rate of those performing them.

One indication that an SOP should be evaluated is that the result isn't being achieved due to multiple observed process deviations. The key term in that sentence is "observed". Assumptions have no place in SOP creation, implementation, management, or assessment. Process observation can be performed through direct observation of the process, data analysis, and even conversations with the frontline SP professional performing their duties. While a good hypothesis can serve as the starting point for investigation, it must remain that until proven true or false. This proposed assumption was based on the limited evidence made available and easily becomes true if we allow our bias to lead its investigation.

Niche training

Another way to tell if SOPs need to be created or evaluated in a Sterile Processing department is by the awareness of niche training. "Niche" defines the area in which one can offer a tremendous amount of insight on a certain topic[1]. Niche training is the concept that only a few individuals can perform a certain duty because they have excelled in the tasks outlined in said area. As a result, they are the only ones assigned those duties.

This is common in facilities experiencing a high employee turnover rate. As professionals come and go, the desired outcomes still need to be achieved. This results in the designated tasks and applicable knowledge becoming stagnant in one or a few specific individuals. Thus, the information and skills specific to these areas are not transferred to new professionals. While these particular assignments in the department have become suitable for one or few professionals, niche training has caused information and professional knowledge to become limited to those expert(s). This perpetuates the cycle of insufficient training of new professionals due to the time necessary to hone these skills.

Let's observe niche training in the case cart SP assignment. In this area, the professional is responsible for interpreting a preference card based on the surgical procedure it is intended for. For this example, we'll focus on the instrumentation that is requested. The preference card lists every single type of set that may be necessary for the procedure, including multiple duplicated sets that are to be provided by different instrument companies. An experienced SP professional may be able to see the doctor's name and know what company they use due to their accumulated knowledge on the case cart assignment. A new SP professional may pick every single instrument set that is itemized on the preference card, resulting in excessive equipment. The case cart is hence assembled incorrectly. The experienced professional reviews the cart and tells the new technician to remember that this doctor only uses this specific equipment. Time goes by and the inaccurate case cart assembly happens again but for a different doctor. The trainer says that they went over this with the trainee and the trainee only recalls the previous event with a different doctor. Unfortunately, this will cause the trainer and trainee to become frustrated and impatient. The trainee views the trainer as incapable of teaching because they are only being corrected after the error and told to remember yet another fact amongst hundreds. The trainer will think "they just don't get it" and that they may not care about the job responsibilities or take them seriously.

SOPs will help limit niche training because the process outlined is based on the overarching task. They undermine the niching process by depersonalizing the actions used to achieve the outcomes. The professionals experiencing the effects of niche training have taken the job duties and made them apply to how they perform the task. Hence intertwining their personal perception, professional experience, and even their own view on workplace success. The trainer in this example looks to their learned subject matter expertise; a wealth of knowledge that has taken them their entire professional career to acquire. The expectations for the new technician are not only to gain and retain this vast amount of knowledge during the short training period, but also demonstrate it in all the new moments that require it. The end results will vary in accuracy and consistency when a new technician is expected to achieve the same results the way their trainer has. The trainee and their manager may also begin to expect the desired outcome, based on the trainer's success measurements. Instead of allowing this to happen, an SOP can clearly define the goals, tasks, and resources required and leave no room for ambiguity.

Create Valid Expectations

SOPs are necessary to create a clearly defined expectation. However, we would do no justice to our SP team or the patient if we just grab an outcome out of thin air. Like in our previous example of inspecting ten sets an hour on assembly: Where did we get the number ten from? How did we determine that ten was a benchmark number we should use to measure productivity? These benchmarks must have a sound basis in logic. This is what makes them reasonable and therefore tangible. Without this, performance expectations can be perceived as biased, unrealistic, and frankly unfounded. Hence, several regulatory, industry, and facility-based requirements and recommendations must be considered in SOP creation. For a Sterile Processing department, this includes:

- Hospital policies
- Regulatory agencies
- Recommendations through accredited sources
- Facility documents
- Interdisciplinary groups

Determining key players, as in the FDA, AAMI, and even the facility's Infection Prevention and OR team, is important in SOP creation. As we have come to experience, industry benchmarks in Sterile Processing vary and may not even exist in some areas. Because of this, the specific department's data and workflow become even more vital when determining and creating credible figures used in SOPs.

Most importantly, do not forget to include SP leadership in the creation of Sterile Processing SOPs. Frontline contribution is vital to the implementation and continued practice of SOPs. If the bar is set based on a perceived workflow or half understanding of department responsibilities, the continued success of the SOP is in danger. Poor implementation of an SOP can be the result of a lackluster creation phase. Therefore, setting quality expectations and foundations is of the utmost importance and will affect the positive patient safety outcome.

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

How we've always done it

An SOP is a living document. It serves best when the document is consistently reevaluated for accuracy and relevance. The Sterile Processing industry, like much of healthcare, is always evolving. Facilities run the risk of performing tasks inadequately if "the way we've always done it" isn't achieving SOP outcomes or isn't synonymous with the facility's needs. Consider if:

- interdisciplinary roles have changed within the facility
- department employee turnover rate is high
- industry regulations and recommendations have been updated

These factors also contribute to how the SOP is being performed and encouraged in the department. Posting SOPs in their designated areas and making them easily accessible is vital to adherence. While having them electronically stored is nice and neat, being sure they can be accessed is a separate story. Technology and software training may be required to retrieve SOPs; and if they are all on one computer on Assembly, how does that serve the other areas throughout the department? Revisiting SOPs on an interim basis (determined by the department's needs) also keeps knowledge and practices on the forefront of the SP professional's mind.

Even the best written SOPs fail if they are not followed. The professionals required to interpret their outlined process need to understand why they are important. Department leaders create buy-in to process improvement based on their leadership style. While there are a lot of ways to promote adherence, creating opportunities for engagement will promote process consistency. Involving the SP professionals with *how* the SOP is achieved can create skin in the process improvement game. It also gives them a direct line to how their work impacts the patient. This can be achieved through department best practices, standard works, competencies, and in-services[3].

Standard operating procedures are necessary for the department to function as an entire unit. They are a key component to the hum of productivity in the Sterile Processing department. SOPs contribute directly to the Sterile Processing professional's workplace experience, perception of value, and noted contributions to the department. Whether that is a positive or negative view is determined by how SOPs are created, implemented, and managed. By creating SOPs based on regulations, industry recommendations, facility policies, and incorporating leadership goals, everyone moves towards the SAME positive patient safety outcome. They allow us to fine tune outdated practices, observe deviations, and even recognize the professionals that are excelling. When Sterile Processing professionals become silent in the department, this is a sign of disengagement, frustration, and unrest. By incorporating SOPs, leadership provides an actionable, tangible, and clearly articulated goal that gives everyone something to talk about. HPN

All opinions and views expressed are an extension of Sarah B. Cruz only and are not a representation of any other companies or organizations she is associated with

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Sarah B. Cruz, CSPDT, CRCST, CHL, serves as CS Education Coordinator for The Bone & Joint Institute at Hartford Hospital. She also serves as a columnist for the Healthcare Sterile Processing Association.

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CONTINUING EDUCATION TEST • DECEMBER 2022

Education nation: Creating Sterile Processing Department SOPs

Circle the one correct answer:

1. **SOPs are an abbreviation for:**
   A. Strategically Outsourced Problems
   B. Standard Operating Procedures
   C. Standard Opportunity Practices
   D. Strict Outline Procedures

2. **SOPs can create clearly defined expectations.**
   A. True
   B. False

3. **SOP "effectiveness" is determined by:**
   A. When a SP professional clocks in or out
   B. The ability to perform a task consistently
   C. How long breaks are allowed to be
   D. Regulatory agencies
   E. All of the above
   F. None of the above

4. **What are some factors that contribute to a facility risk of performing tasks effectively:**
   A. Interdisciplinary roles have changed within the facility
   B. Department employee turnover rate is high
   C. Industry regulations and recommendations have been updated
   D. All of the above
   E. None of the above

5. **Niche training is a vital part to SOP implementation**
   A. True
   B. False

6. **Which is a factor as to how a Sterile Processing professional interprets and carries out an SOP?**
   A. Job skills
   B. Workplace tenure
   C. Learned habits
   D. All of the above
   E. None of the above

7. **There are plenty of Sterile Processing industry benchmarks so facilities do not need to rely on their own data collection.**
   A. True
   B. False

8. **Standard operating procedures are part of a department quality management system.**
   A. True
   B. False

9. **A hypothesis is NOT an assumption.**
   A. True
   B. False

10. **Which of the following is NOT true?**
    a. SOPs are living documents.
    b. SOPs outline a certain process.
    c. SOPs do not need to be evaluated for accuracy after creatio n.
    d. All of the above
    e. None of the above

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HSPA VIEWPOINT

What's in your endoscope?

Proper inspection, brushing, documentation critical to patient safety

by David Taylor III, MSN, RN, CNOR and Scott Pasternak, BSN, M.Div., MBA, RN

In 1975, the first endoscopic clip (also known as the endo-clip or hemo-clip) was used for the treatment of gastrointestinal bleeding.[1] Since then, endoscopic clipping has become a common practice among endoscopists.

Clips used today are metallic devices that are available in various models and sizes. Most clips are rotatable, with reopening and reclosing capabilities that allow the endoscopist to produce mechanical compression without causing injury to surrounding tissue—thus, achieving hemostasis (the stopping of blood flow) by clamping a vessel and/or approximating the edges of a lesion and allowing closure of gastrointestinal perforations. Clips are introduced via the working channel of the endoscope; larger clips are mounted onto the distal tip of the endoscope, which helps enable precise deployment.

Updated recommendations from ANSI/AAMI ST91:2021 *Flexible and semi-rigid endoscope processing in health care facilities* highlight the importance of meticulous manual cleaning and, more specifically, diligent inspection of endoscopes and their internal channels. External inspection is a visual process that can best be accomplished using lighted magnification.

Internal inspection requires the use of a borescope, which helps the technician performing the inspection to visualize internal aspects of the device's channel lining to identify cracks, voids, scratches and other damage as well as retained foreign objects.

Retained clips prompt improved practices

At a large quaternary health system in the western U.S., a busy endoscopy department performed a 12mm endoscopic mucosal resection, with hemostasis obtained using endoscopic clips. Following the procedure, the SP technician processing the endoscope noticed a single clip exiting the distal end during the brushing phase of cleaning. The technician completed manual cleaning and documented the clip finding. The endoscope passed cleaning verification, was high-level disinfected in an automated endoscope reprocessor, and was dried, packaged and stored for later use, with each of these processes documented in the appropriate logs.

A few days later, the same endoscope was used on a different patient during a routine diagnostic screening procedure in which no clips were used. After the procedure, point-of-use treatment was initiated, and the endoscope was sent to the reprocessing area for thorough cleaning and high-level disinfection (HLD). While brushing the endoscope in the decontamination area, the technician noticed two additional clips coming from the distal end of the endoscope. Management was alerted, and the endoscope underwent HLD and was removed from service. The management team then notified the senior administrator and regulatory and infection prevention professionals.

It is important to note that the endoscope in question, along with the entire fleet of endoscopes in the health system's inventory, underwent thorough, meticulous borescope inspection. The first inspection was performed by the endoscopy supervisor, and additional inspection was performed by the SP manager. No clips were found in any of the endoscopes' channels during inspection, and the endoscopes were recleaned and underwent HLD.

Within 24 hours, a new-and-improved protocol was developed for routine borescope inspection of the health system's endoscope inventory. A multidisciplinary team that consisted of the endoscopy technician supervisor and leaders from Infection Prevention, Regulatory and Endoscopy departments convened and performed a root cause analysis. All steps in the process were discussed openly, and each party provided its perspective and guidance during the investigation, which included patient notification and the development of steps to avoid similar problems in the future.

The investigation did not determine why so many clips were retained in one endoscope or why brushing with an appropriately sized brush did not dislodge them during cleaning. Staff members were briefed about the situation and its risk to patient safety. Inservice education was scheduled to ensure all staff members who used endoscopy clips were knowledgeable about their use (including their loading, mounting and deployment) and were also accountable for identifying the number of clips used in a procedure to help prevent accidental retention of the clips following the procedure.

In the past, the department had experienced a retained stent that deployed intraluminally in a duodenoscope; the retained stent was discovered during borescope inspection by the duodenoscope manufacturer when the device was sent for routine service. At that time, the manufacturer implemented a quality control measure during cleaning where a larger pull-through brush was used after brushing with the manufacturer-recommended brush (the rationale was that the longer pull-through brush would not be able to pass through a deployed stent). It was decided by the health system that this would be a prudent practice to implement for all of its channeled endoscopes undergoing reprocessing because any retained clips would become dislodged or would stop the pull-through brush, thereby alerting reprocessing staff to a potential problem.

Conclusion

It is important for today's facility and SP leaders to follow recommendations for use of endoscopes, their accessories and processing equipment; document the number of clips used during a procedure (and ensure they are accounted for afterward); consistently use borescopes and lighted magnification to more thoroughly inspect endoscopes; and document all reprocessing steps to ensure the devices are cleaned and high-level disinfected (or sterilized when appropriate) to help ensure safe patient care and positive procedural outcomes. HPN

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SUBMIT YOUR QUESTIONS:
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STERILE PROCESSING INSIGHTS

Understanding your P's, Q's, and S's in instrument care & handling

by Stephen M. Kovach

Q I have been asked to, **"Explain the difference between polishing and passivation,"** and, "**Explain the difference about spotting and staining on instruments."** I will tie both answers together because, in my mind, they go hand-in-hand when it comes to care and handling of surgical instruments.

A In my observation, approximately 75% or more of the surgical instruments available today in a medical device reprocessing department are made of stainless steel, which in most respects is an ideal material. It resists rust, takes a fine point, and retains an edge. But the term "stainless" is frequently, to me, taken too literally. Stainless steel does have its weaknesses—water spotting and staining are but two. So, there is no "stainless" type of steel.

During manufacturing, surgical instruments undergo many processes Two of which, we will focus, that help to inhibit the tendency to corrode are passivation and polishing.

Passivation is a chemical process. It should remove all iron particles, leaving a corrosion resistant-surface by forming a thin-transparent oxide film. Passivation subjects the instrument to a solution of dilute acid and oxidizing salts.

Steam sterilization helps in protecting the passivation layer and promoting its continued buildup. Also, the regular use of a water-soluble lubricant reinforces this protective coating. Rust and corrosion can occur if the passivation layer is damaged; thus, if the oxidized layer is destroyed or damaged, the instrument will have a greater tendency to rust.

Polishing achieves a smooth, closed-surface and builds up a protective outer layer of chromium oxide. This oxidized layer is highly resistant to corrosion and continues to build up with regular use and sterilization. Remember, on the other hand, this protective coating could be unknowingly removed if the instruments are cleaned improperly (i.e., exposed to harsh cleaning solutions and brushed with highly abrasive materials). Also, etching instruments will ruin the coating and promote corrosion.

Another P, medical device reprocessing professionals should be aware of, is Pitting of the medical devices. Pitting can be caused by exposure to blood, chloride, or other highly corrosive solutions. It occurs in shallow to deep, localized defects that appear as black holes (pits) on the instrument's surface. Some say you can't repair this defect. What you must do is remove pitted instruments from the set and replace them, and work with your repair company to find the causes.

Spotting is a discoloration in the stainless steel of surgical instruments. Spotting differs from a stain in that it looks like it has been deposited on the surface rather than being a discoloration inherent in stainless steel.

Staining is a discoloration of the stainless-steel surface. Some stains disappear when the cause is removed or understood. Others may be permanent until the device is refurbished by the original manufacturer of the device or an authorized dealer like a repair company. Some can never be refurbished, the damage is too far gone, once noticed.

I have been talking about stainless-steel instruments, and, as I stated earlier, they represent at least 75% of a department's instruments inventory. I want to stress that medical device reprocessing professionals need to understand all the various materials and how they are processed. One material is titanium. This is what one company states about the color on their instruments. "Different shades of blue may be found on our various anodized xxxx Titanium instrumentation. This is not a defect but a phenomenon, which can occur due to any slight variation of manufacturing technique or alloy composition. This is a cosmetic characteristic only and does not compromise the high-quality of your xxxx Titanium Instrumentation." This statement shows the importance of reviewing the instructions for use (IFU) of all devices.

Many device manufacturers have charts within their instrument catalog explaining causes and solutions to common staining and spotting. If you use a repair company, they also have resources to help solve these issues.

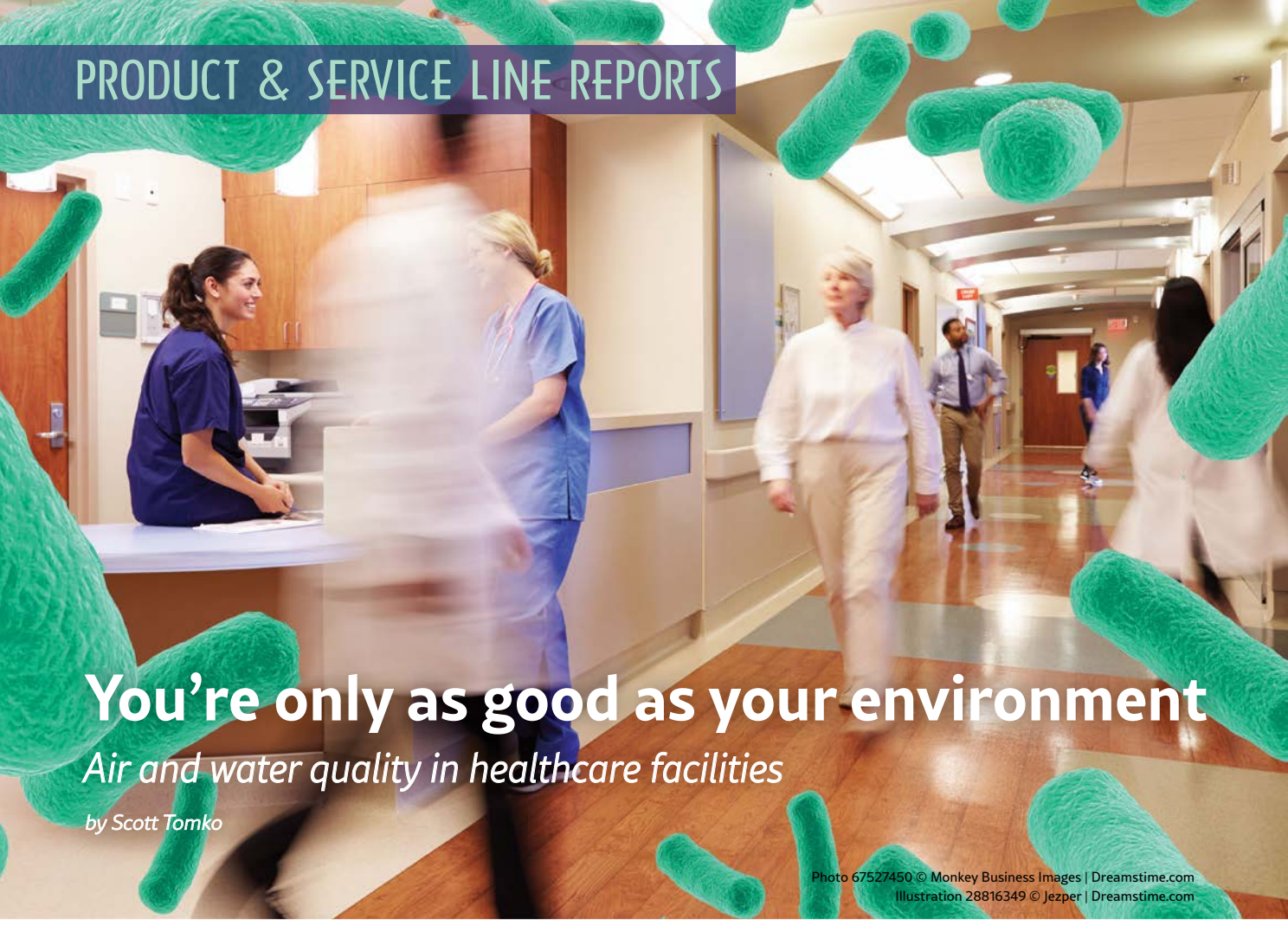
My experience has shown me that many of the staining and spotting problems are due to such factors as a) water pH, b) boiler compounds in water lines, c) cleaning solution residue, d) laundry residue from cloth towels/wrappers, e) exposure to chemicals incompatible with the surgical instrument material, and f) automatic washers not being tested properly with clinically relevant evidence-based products , to name a few of the reasons.

Taking care of one of the medical facility's greatest investment medical devices used in surgery (surgical instruments), understanding these terms, and working with your various manufacturers is important to make them last as long as possible. Staff needs to remember "inspect to prevent" at each stage of the medical device reprocessing cycle. And if an issue find out the "why" to prevent it from taking place again. HPN

References online at ttps://hpnonline.com/21286602

Figure 1: Dirty back-up instruments

Figure 2: Dirty instruments with water spots



You're only as good as your environment

Air and water quality in healthcare facilities

by Scott Tomko

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It can certainly be said that water and air are vital within any facility, whether it be your home, office, school, church, or hospital.

But, wait just a few minutes before grouping in hospitals with the rest of these establishments which play central roles in our lives. Let's remember what hospitals take on and provide everyday: the sick, the infected, the concerned, the morbid, the doctors, the caretakers, the staff…..

Or, how about the seemingly innumerable types of facilities within a hospital or health system, from the ER to the OR, from the laboratories to the pharmacies, from rehabilitation to administration…

The fact of the matter is that the wide variety of facilities and people that makeup the healthcare environment make it unique compared with other locations in our lives; indeed, its countless complexities and seemingly endless, potential issues make it far more dangerous than other environments.

And, just as in any other environment, the proper management of water and air lie at the very center of ensuring that a hospital retains highly efficient operations.

In fact, due to the ever-increasing resiliency and resistance of pathogens, air and water quality is more vital than ever, and hospitals are under more pressure than ever to ensure water and air quality.

Likewise, COVID-19 has undoubtedly triggered an increased focus on environmental quality within our health systems, and thus caused an uptick in seeking new, innovative, and combinative means to keep the air and water clean.

UVDI's VMAX disinfection technology

Use what works

Cleanliness may be next to Godliness, the adage says, but cleanliness really means healthiness when it comes to air, power, steam, and water quality necessary for patient care operations.

The combination of UV-C technologies and HEPA filtration systems have long become par for the course in our health facilities, as they are proven to be highly

efficient at eliminating a wide range of pathogens and germs.

According to the CDC, UV-C radiation has effectively been used for decades to reduce the spread of bacteria, such as tuberculosis. For this reason, UVC lamps are often called "germicidal" lamps.[1]

Dr. Ashish Mathur, UVDI's Vice President of Innovation and Technology, indicated germicidal Ultraviolet (UV) and high-efficiency filtration are proven technologies to combat the transmission of airborne and waterborne pathogens.

However, in consideration of the ever-increasing focus on infection prevention methodologies, how can a facility ensure that it is applying the best strategy to combat the spread of pathogens?

According to Dr. Mathur, "It starts with evaluating and selecting a proven technology. To do so, first review the technical guidance of leading Public Health organizations. For example, CDC, GSA, ASHRAE and IUVA include UV-C as a recommended mitigation step to reduce airborne transmission in commercial buildings. In addition, ensure the technology's performance has been independently validated through accredited third-party testing and in peer-reviewed published studies. Last, due diligence on the manufacturer itself — pedigree, technical expertise and support capabilities, manufacturing location, sourcing and systems and current customer base – to name just a few criteria — is key to ensuring your are working with a capable and long-term partner in Public Health."

UVDI's portfolio includes proven solutions for both Air and Surface Disinfection, including the UVDI-360 Room Sanitizer, and the V-MAX advanced UV-C air disinfection technology.

Make HVACs reliable sources of cleanliness

While the practices (or lack thereof) of good hygiene and surface cleaning are well established as methods for preventing the spread of dangerous pathogens, nosocomial infections are potentially in the air all around at us (at any time) within a healthcare environment.

Thus, the movement of air particles via HVAC systems is a vital process within hospitals; HVAC systems that are not properly managed, maintained, and as needed, modified, make them one of the primary sources for microbial contamination within healthcare facilities.

RGF Microcon MAP

According to Tony Julian, VP Business Development at RGF Environmental Group, "the HVAC system is one of the main sources for microbial contamination within healthcare facilities. There are a number of air quality standards which should be adhered to in order to guide facilities in managing effective HVAC systems, including ASHRAE 170, which provides key guidance on ventilation efficiency in healthcare settings.

RGF specializes in the development and application of technologies that combine HEPA and UV strategies to combat airborne pathogens; one such system is the Microcon MAP, a mobile, in-room HEPA/UV system used to pull airborne pathogens from the breathing zone.

The organization also provides Lucidium UV-C coil sanitation technologies, eliminating mold growth on HVAC coils and providing air purification to large facilities.

Julian emphasized that hospitals should "work with their facilities staff, HVAC contractors and engineers to identify problem areas, like mold on the HVAC coils or isolation room airflow. Then, select a reputable technology manufacturer to partner with over long term to ensure a reliable solution is delivered, realized (tested if necessary) and supported. Follow CDC, EPA and ASHRAE guidance for indoor air quality and set realistic goals to improve areas of concern one by one."

In-duction time

In-duct air purifiers, which are integrated right into the ductwork of a hospital's HVAC system, take another significant step in ensuring air purity.

Wladyslaw Kowalski is the Chief Scientist at Sanuvox, a company that specializes in in-duct and stand-alone UVC air purifiers and coil disinfection systems. According to Kowalski, "although hospitals commonly use UV technology to disinfect surfaces, they do not commonly use in-duct UV air disinfection systems to clean the air. They traditionally rely on air filtration for air cleaning based on ASHRAE recommendations (ASHRAE 2003).[2]

Sanuvox's UV air disinfection system, BioWall

However, UV air disinfection systems can be combined with MERV filters to produce reductions of airborne pathogens that can match the removal rates of HEPA filters without the associated costs."

Kowalski continued, "Sanuvox pays particular attention to the nature of every new outbreak and every new pathogen to determine the transmission mode and what type of UV technology would be appropriate and effective for reducing contamination and associated infections. Each microbe is evaluated for its ultraviolet susceptibility and whether it needs to be disinfected in air or on surfaces. Each application is considered in terms of what would be the best approach, air disinfection, surface disinfection, or both."

Water quality

It is a primary responsibility of hospitals to take every step possible to address every possible source of infection. If hospitals' water lines are not consistently and properly disinfected, and areas used for washing and rinsing are not maintained with the highest level of cleanliness, the potential for the spread of infectious agents is greatly increased.

For sterilization processes that involve water, the quality of sterilization is only as good as the quality of water used. Filters that remove bacteria and debris from the water system are essential to provide the cleanest water possible and ensure proper sterilization of equipment.

According to Marissa Khoukaz, Business Development Manager – Hospital Water Americas, Prefiltration Product Manager – Medical Products for Pall Corporation, "filter technologies that remove bacteria from the water are not brand new, but have been widely adopted in the United States only over the last decade. "

Khoukaz reiterated that pleated mechanical air filtration is a key component to combat water and air-borne aerosolized waterborne pathogens within healthcare, and that it is critical to understand the filters rating and materials of construction to ensure they are applied correctly for their intended use.

"Pall's Point-of-Use Water Filters and range of sterilizing-grade process filters are validated to completely retain waterborne organisms at 0.2 microns. This means that water used for sterilization and for patient care can be considered extremely low risk for bacteria, fungi, and parasites. When these pathogens are removed from the water used with patients, HAI's from contaminated water are reduced, ultimately resulting in better patient outcomes, reduced patient stays, and overall lower healthcare costs."

Water, water everywhere

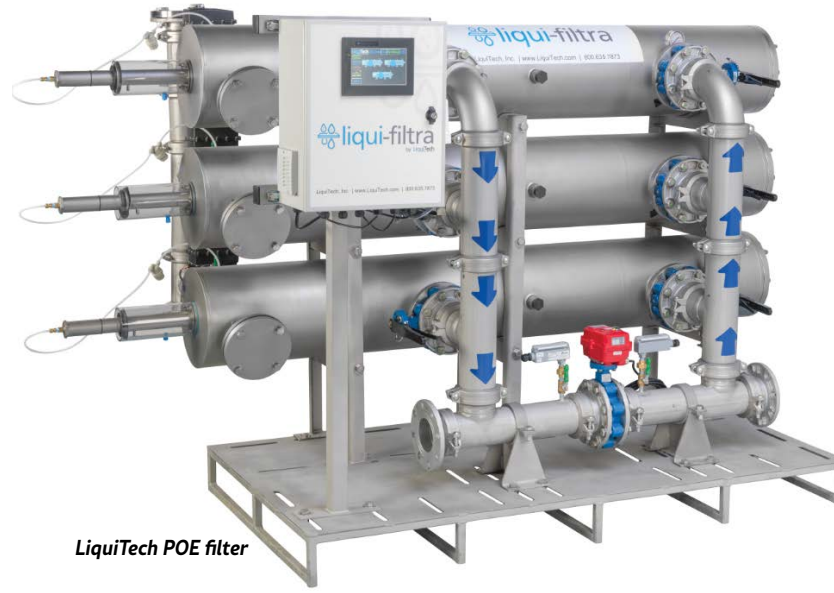
When thinking about waterborne pathogens, Legionella is the posterchild. However, there is increased awareness on other waterborne pathogens, as up to 33% of HAIs are from our water.

David Pierre, Director of Water Management Programs with LiquiTech, spoke about his company's multi-tiered approach to addressing the ever-present risks involved with water in our hospitals:

"LiquiTech provides healthcare facilities a multi-barrier approach to water safety. This allows the facility to control water quality from the building entry to the usage points. The approach incudes:

- Point of entry filtration to remove sediment and nutrients for pathogens
- UV to kill incoming pathogens
- Copper-silver ionization to attack biofilm/pathogens throughout the entire system

With the increased focus on water management, new technologies are emerging that not only address pathogen risk, but can be incorporated in a facility's water management



LiquiTech POE filter

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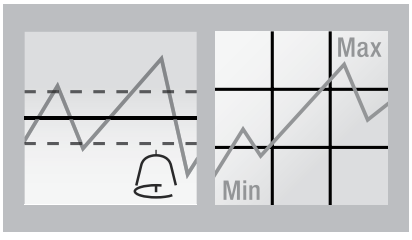

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programs to make implementation easier, including data logging, trending, water quality monitoring, temperature control, automatic flushing, etc. As we collect data, it will increase our understanding about our buildings and continue to tailor products, services, and maintenance to proactively mitigate risk."

Ozonation

Ozonation of water in municipal supplies is becoming more common because it is more efficient and has fewer toxic byproducts than other methods like chlorination.

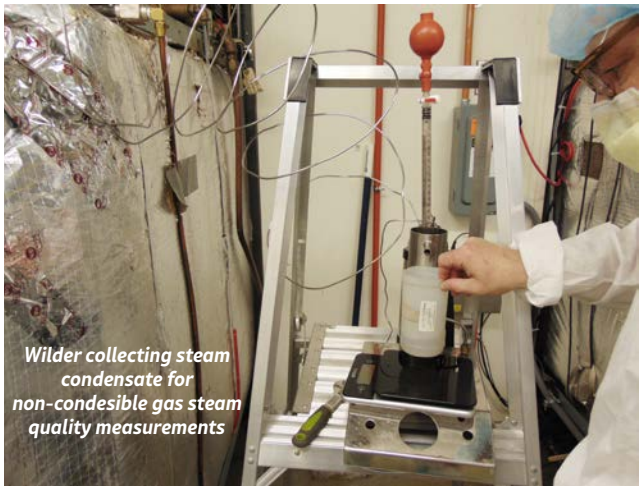
Jonathan Wilder

Jonathan Wilder is the Managing Director for Quality Processing Resource Group, LLC, a provider of infection prevention and other procedural products and services.

"This is a question of scale. On a municipal level, ozonation appears to be slowly overtaking chlorination to avoid formation of potentially toxic byproducts like trihalomethane compounds. Also, ozone is more effective per ppm than chlorine. Less is always more. On a building scale, specifically a healthcare facility, the only place that disinfection is typically done is in critical water systems, which, having no copper plumbing in them, have an ultraviolet lamp to disinfect the water. In utility water systems, copper in the plumbing leaches out very slowly to effectively disinfect the water without side effects. Critical water systems cannot have copper in them because it will be attacked by the much-purer critical water and the plumbing system will be damaged in relatively short order.

Water quality is essential to the CS/SPD department, as the vital processes of cleaning and sterilizing are completely dependent upon the management and assurance of uncontaminated air, water, and steam."

Wilder continued, "Quality Processing Resource Group primarily assists in the areas of steam and water purity. We help our clients get steam for sterilization to a good state (dry, air-free, and without superheat or excessive contaminants) and water to comply with the requirements of AAMI TIR34 for its purity. Any attempt to decrease HAIs has to take a systems approach. We can get steam and water right so that processing is done by the numbers, but if there is a breakdown due to human or mechanical imperfection in how the instruments are treated between the last patient and the next patient, none of this infrastructure work will matter.



Wilder collecting steam condensate for non-condesible gas steam quality measurements

Every step matters. And they all influence each other. Making healthcare safer for the patients takes a concerted effort to maintain top-quality resources and performance on the part of all involved departments, from the OR to EVS."

Let's get digital

Rada is a company that has long specialized in providing plumbing solutions and ensuring clean waterways; they have also taken a digital approach in controlling the water within health facilities.

According to Stuart Skinner, Marketing Manager, Rada, "we believe that digital water delivery is at the heart of driving safety, infection control and sustainability improvements, and our new range of Rada Digital Faucets have been designed and engineered to specifically address these challenges.

Every element of the faucet has been scrutinized to improve infection control. The faucet has touchless operation but without internal solenoid diaphragms notorious for being prone to bacterial growth. The exterior surface has been designed to minimize joints, removing areas where bacteria can build up and making cleaning easier.

The faucets are fully digital, with capabilities for multiple outlets to be networked and operated via a building management system. To minimize water and energy wastage, the faucets can be pre-programmed with optimum temperature, flow rate and run times and set to automatically duty flush only as and when required based usage data from each outlet.

Rada Digital Faucet

Electronically kept data provides clear evidence of compliance with water management plans, meaning that clinical staff time can be spent on delivering best patient care.

As we look to the future, enhancing safety and quality in the health and care system will be fundamental for supporting the overall health of the global population. For us, the direction of travel is continuous improvement and driving innovations in water delivery technology that support greener, safer healthcare." HPN

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How a single solution supports population health and workforce shortages

by Karen Conway, Vice President, Healthcare Value, GHX

Earlier this year, Jeremy Strong, the supply chain system vice president for Rush University Medical Center, spoke at the GHX Summit about work his organization is doing to support local economic development on the west side of Chicago. As an active member of the Healthcare Anchor Network, Rush has invested in a number of programs, including local impact purchasing to help generate job opportunities and address the root causes of poverty and, in turn, health disparities in the communities it serves.

At the Summit, we also hosted discussions around how to address critical labor shortages, and that got Jeremy asking: "Was there a way Rush could address both issues by hiring more individuals from the west side to fill open positions in supply chain at the health system?" When Jeremy asked some of his current team members from the west side their opinion, he discovered an unfortunate truth. Too often, those interested in positions at Rush had trouble even getting an interview. One employee, who is a top performer, shared that he had applied unsuccessfully multiple times for jobs at Rush; he was only able to get a job by going through an employment agency.

Being a good systems thinker, Strong once again thought about the root causes, and together with his team realized that many of these potential employees did not make it through the initial screening because they lacked opportunities to gain relevant experience before applying. Many also needed support to develop what Strong calls power skills, such as resume building, communication, and/or customer service. Speaking with community leaders, Strong also discovered other barriers, including lack of transportation and/or childcare.

> *"...investing in communities through job training can give people the resources they need to change their lives for the better."* — ***Jeremy Strong***

That's when things began to fall into place. Just as Strong and team were thinking about how they could provide some entry level knowledge, experience and skills, he was contacted by the Tullman Foundation and InUrban Strategies, which were looking to do some business incubation on the west side. Together, they realized they had similar visions in mind, and both, with a bias for action, got to work. Within a matter of months, their vision had turned into reality. An inaugural cohort began training at the Jump Higher center on the west side in mid-November; upon graduation they will be offered interviews with Rush and other organizations looking for supply chain talent.

The Tullman Foundation is providing the power skills training, the stipends and the critical wrap around services, like childcare and transportation; Strong and his team, along with supply chain professionals from its distributor Concordance, will provide not only classroom-style overviews of key entry-level supply chain subjects, such as purchasing and inventory, but also job shadowing. Previously, Rush had chosen Concordance as its distribution partner after the company said it would hire and train local residents to work at a new center it would build on the west side. Strong also hopes this helps expose the potential for building a career in supply chain, vs. seeing it as just another job.

For Strong, this is not just about helping address the health system's workforce challenges. He says this is fundamentally about supporting historically disinvested communities by helping people find not only a job, but a career with upward advancement possibilities. As Strong describes it, while providing resources, such as nutritious food, to struggling families and communities is valuable, investing in communities through job training can give people the resources they need to change their lives for the better.

He brings this sentiment to life as he describes the pride of one worker who now supports the hospital where so many of her family members have been treated. This is her hospital, her community, and she is passionate about making life better for herself, her family and her neighborhood. In Strong's words, "Why wouldn't you want someone with that much passion on your team?" HPN

> *This is her hospital, her community, and she is passionate about making life better for herself, her family and her neighborhood. ..."Why wouldn't you want someone with that much passion on your team?"* — ***Jeremy Strong***

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

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