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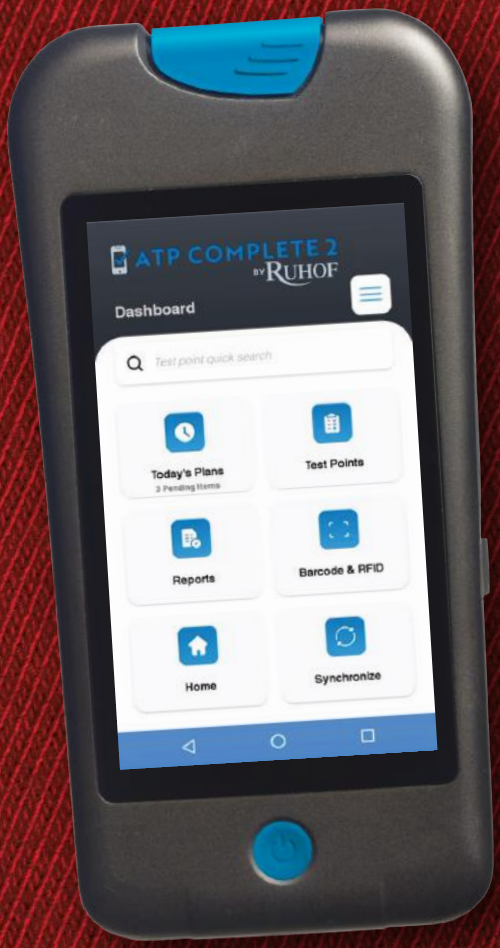

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CE COMPLIANT

The Latest in GI Tumors

Cedars-Sinai Expert Shares Conference Takeaways

Medical conferences abounding with great content are frequent—too frequent for any busy endoscopy professional to make it to even half of those they'd like to attend. One such conference perfect for the GI professional was hosted in March by Cedars-Sinai in Los Angeles, called the Cedars-Sinai Gastrointestinal Tumor Conference.

In conjunction with the conference, Andrew Hendifar, M.D., medical director of the Gastrointestinal Oncology Disease Research Group at Cedars-Sinai Cancer, participated in a Q&A to discuss latest advances in treating GI cancers. This information will give you a taste of what you missed at the conference, and if you were lucky enough to attend, here's a review.

What has changed about the way we diagnose gastrointestinal (GI) tumors?

Dr. Hendifar: Now we use molecular profiling. These tests look at the makeup of the tumor's genes and protein expression through a biopsy or blood specimen. This helps us understand the biological underpinnings of the specific tumor. Molecular profiling is especially important in GI tumors because these tumors—liver, gastric, pancreatic, small-bowel, colon—look similar and are often located in the same area.

Without molecular testing, it might not be possible to tell that you're dealing with a bile-duct tumor rather than a liver cancer or a pancreatic cancer. The bile ducts travel through the liver, so a bile-duct mass could be in the same position as a liver cancer, but the cellular makeup is quite different and the treatments they require are worlds apart.

We're also using advanced imaging techniques that employ artificial intelligence to discern subtle pancreatic masses that might be invisible to the human eye, and special MRI sequences that can detect pancreas cancer at an earlier stage. Imaging can also tell us whether treatments are working and predict what a patient's outcomes could be.

How is treatment of GI tumors changing?

Dr. Hendifar: When I started treating patients 15 years ago, the only treatments available were a couple of different IV chemotherapies. Now, thanks to new diagnostic tools and more targeted forms of treatment, we can often turn a patient's life around, and that's actually the best feeling in the world.

Immune therapy has been such a breath of fresh air. Treatment involves just an hour-long infusion with minimal side effects, so we no longer have to worry about whether a patient can tolerate the treatment. I have so many patients who are alive and well [thanks to] receiving immune therapy, who otherwise wouldn't have made it. Through our continuing work to develop new biomarkers, we're able to pair more of our patients with immune therapy. And these biomarkers go across tumor boundaries, so we no longer need to think about the site of origin. If your tumor has the right biomarker, we can pair you with the right form of treatment.

In 2024 we presented a study comparing patients with localized liver cancer who received local therapy alone with those who received local therapy and immune therapy in combination. For patients receiving the combination therapy, progression-free survival was twice as long, so this has become the new standard of care.

There are also a lot of new antibody drug conjugates that are working their way through the pipelines, including options for various types of GI tumors. Antibody drug conjugates deliver chemotherapy directly to tumor cells by binding to specific proteins on the surface of the cells. This allows us to target the cancer without targeting healthy tissue. If we can identify the right protein on a patient's tumor cells, we can use antibody drug conjugates to deliver very effective treatment.

What are some of the more challenging tumors to treat?

Dr. Hendifar: Bile-duct tumors need more attention. They are often lumped in with pancreatic cancer but are completely different. And they are difficult to diagnose without advanced endoscopy. We're doing a lot of research to identify bile-duct tumor biomarkers that help us pair patients with targeted therapy, especially antibody drug conjugates, to improve outcomes. There are many clinical trials now open for these therapies, and many patients do incredibly well.

That's a happy note to end on, so let's quit while we're ahead. Happy spring to all of you, and thank you for everything you do to improve health for your patients, GI-tumor-related or otherwise.

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Anderson Endoscopy Center

Creating a Consistent and Caring Patient Experience

By Madison Knutson

Anderson Endoscopy Center (sometimes known as AEC), located in Cincinnati, Ohio, prides itself on its high-quality patient care.

The facility has been rated by Newsweek/Statista as one of the top outpatient surgery centers in Ohio for four years in a row. This award highlights the team's dedication to fostering an efficient and groundbreaking environment for endoscopy patient care.

The freestanding facility has five procedure rooms and 19 pre- and post-operative bed spaces. The center performs approximately 12,000 procedures each year, including gastroenterology procedures and esophagogastroduodenoscopy. The center primarily performs colonoscopies.

AEC's team of 40 full-time staff members includes technicians, front office staff, a pathologist and registered nurses. AEC also owns a company that employs restorative nursing assistants for the center's anesthesia services.

The team bonds through the completion of difficult work. AEC trains staff to earn their place on the team. According to Chief Operating Officer Greg Schooler, by implementing rites of passage, new team members feel a better sense of belonging in the facility. Positive reinforcement helps newer staff members to integrate into the team.

Each department at AEC fosters community in different ways. Billing employee Jenny Little said that the billing department bonds over simple team activities.

"The billing team has lunch together once a month," Little said. "We order from a local restaurant. It started [as a way] to support local mom-and-pops during COVID, and we have continued the practice."

Patient Satisfaction

AEC's team puts most of their attention into quality patient experiences. They systematically review their patient satisfaction system. Schooler said they always maintain a 95% satisfaction rate in each of their survey categories. The medical executive committee meets regularly to evaluate the performance of facility procedures and patient care.

GI physician Dr. Said Nabhan is proud of the work that AEC does in treating patients. He asserted that just one GI procedure can positively impact a patient's future. Nabhan uses his own experience to inform patient care.

"Keep aiming for better and better medical care by treating patients exactly how you want yourself or your family to be treated," Nabhan said. "Nothing less than that is acceptable."

AEC utilizes state-of-the-art technology. The center is the first endoscopy center in southwestern Ohio to implement Artificial Enhance Colonoscopy capability. This tool is meant to assist staff in detecting risk factors such as polyps during colonoscopies.

The center is not without challenges. When COVID-19 shut down many other facilities, AEC stayed open. The center received most of the endoscopy patients from the surrounding hospitals. Schooler commended his staff's work during that time.

Nabhan said that the staff is dedicated to excellence in endoscopy care and acknowledges the growth AEC will continue to exhibit through future challenges.

"The high quality of care [is] provided by tireless, high-quality physicians/providers and staff who are genuinely caring, conscientious and ambitious, with enough humility that we are never fully satisfied," Nabhan said. "We are completely there, which gives us our drive to keep improving, mixed with the size of the group that is small enough to be flexible and nimble in making timely strategic decisions, and big enough to cover multiple hospitals."

Madison Knutson is a student at Arizona State University pursuing a bachelor's degree in journalism and mass communication. She works as a producer for the Alaska Teen Media Institute and is a deejay for Blaze Radio at ASU.

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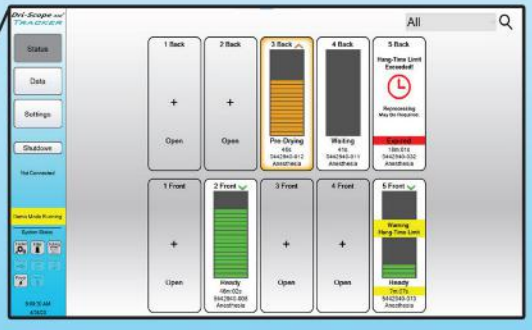

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Avoid Silos

How to Share Info and Stay Updated

By Nancy Chobin, RN, AAS, ACSP, CSPM, CFER

When I encounter a department where the practices do not meet current standards, I ask myself, "How can this happen?" Today, we live in an electronic world where we can get updated via our smartphones, tablets and computers. Why is keeping updated even important? The mentality appears to be, "If we have been doing it this way all this time and we have no infections, why change?" Or, "I am too busy," among other excuses.

Too frequently, we read about a breach in protocol at a facility resulting in either a letter to patients advising them of the breach and/or the need to have bloodwork performed to determine if an exposure occurred or an alert from healthcare agencies (e.g. the U.S. Food and Drug Administration) regarding problems with processing specific devices and equipment.

Yet, in some instances, individuals do not get this vital information or it was not disseminated to them from a central facility source (e.g., risk management). Yet, without this information, your patients can be at risk. Whose responsibility it is to ensure current information and standards are readily available?

Litigation

To avoid litigation, healthcare providers must comply with established standards of care. Standards of care arise from regulations based on state and federal legislation or statutes. Regardless of the term used, they are the law.

Practice guidelines, such as AAMI, CDC, AORN and SGNA, are all applicable. However, when AAMI publishes

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a national standard (represented as ANSI/AAMI National Standard) this takes precedence. In 2015, AAMI published ST-91, "Flexible and Semi-Rigid Endoscope Processing in Healthcare Facilities." This should be the golden standard guide for endoscope processing activities. Guidelines from other organizations are applicable if the material is not covered in ST-91.

Practice guidelines and facility policies/procedures are not laws. These are often introduced as standards of care by a prosecuting attorney trying to prove that negligence has occurred. On the other hand, a defense attorney can use the same guidelines and policies/procedures as evidence that standards of care were met.

Expert witnesses are used by both prosecuting and defense attorneys to establish standards of care. An expert witness could be a nurse, doctor, facility administrator or other member of staff or leadership. They are usually individuals who are well-known and respected in their field. Understand that the expert's role is to explain to the jury the standard of care based upon their particular area of expertise. The expert witness is allowed to use articles, practice guidelines and policies to prove their point. The jury will interpret the opinions of the expert witnesses and determine whether negligence occurred.

Keeping Informed

The primary responsibility to keep staff updated on all matters pertaining to endoscope processing lies with the department or nurse manager. There are a number of ways to keep updated.

Join the professional association for the practice area. In this case, the Society for Gastroenterology Nurses and Associates (SGNA). Join the Association for the Advancement of Medical Instrumentation (AAMI), or at least purchase their national standard, ST-91, to use as the baseline for endoscope processing practices. (Note: This document is under revision; keep checking the AAMI website in 2019 for information when the updated version will be available.) Most facilities have someone on staff who is a member of AAMI (usually a biomedical staff member). Members receive discounts on AAMI documents. The Joint Commission expects facilities to reference the national guidelines; since AAMI publishes national standards, and in this case an endoscope document, this should be the basis for the processing policies. In addition, most professional organizations have online help for questions and access to their guidelines.

Sign up for FDA alerts. On the FDA website, you can subscribe to the Center for Devices and Radiological Health mailing list, based on your area of specialty. This will alert you via email to any pertinent information about medical device issues.

Attend seminar and webinars. Many organizations offer webinars online so travel is not necessary. All professional organizations have annual meetings as well as local/state meetings that include educational programs. Seminars are also a good way to meet new colleagues. In addition, seminars often have vendor exhibits where you can see new products that can improve your practices.

Subscribe to practice-related magazines. These offer new information and educational articles. These magazines also have vendor ads where you can learn about new products or services.

Provided ongoing educational opportunities. Endoscope processing personnel also need to be kept updated. Encourage your staff to achieve certification in flexible endoscope reprocessing and to keep updated in new practices and standards. Continue their competence by supporting their attendance at seminars/webinars. All staff members who attend conferences or webinars should be required to provide a summary of the information disseminated at the educational program so the remainder of the staff benefits as well.

Documentation

Documentation is important because these records (as well as others) can be subpoenaed in a court of law and used in court proceedings. Unless you know the standards and guidelines, you are vulnerable.

There are many types of documentation required. In endoscopy, some of the most important pieces of documentation include (at a minimum):

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- employee training records (for processing activities)
- annual competency assessments (for processing activities), including competencies for every make and model of endoscope, leak testing, automated flushing devices (if used), use of PPE when handling used scopes, transport of used scopes, selection and use of detergents, transport of disinfected scopes, storage of endoscopes and the use of the high-level disinfectants
- leak-testing results
- verification of leak tester's accuracy
- the temperature of the high-level disinfectant (if indicated)
- the results of minimum effective concentration testing of the high-level disinfectant solution before each use (if indicated)
- the automated endoscope preprocessor's printout (showing it was reviewed and signed after each cycle)
- audits performed to verify compliance with manufacturer's instructions
- audits performed to verify compliance with stated policies
- risk analyses performed to determine needed areas of improvement

In summary, silos are for farms, not healthcare. We have an obligation to the patient to provide the best quality care based on the most current national standards and guidelines. It is your responsibility. Get involved. Develop policies and procedures based on these standards and guidelines. Train the staff in all policies and procedures when developed or updated. Review your processing policies at least every three years. Perform audits to ensure staff compliance with your policies. It is important to remember when you do not comply with a stated policy, you can be found negligent.

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Nancy Chobin, RN, AAS, ACSP, CSPM, CFER, is the president of Sterile Processing University, LLC, an online training and continuing education website. Her company also provides consulting services to hospitals and ambulatory care facilities.

Medication 3rr0rs

A Focus on Prevention for RNs

By Brent L. Younglove, RN, BSN

I remember when I was fresh out of nursing school, feeling the intense weight and responsibility placed upon my shoulders for upholding patient safety. For the first time in my career, I was the final stop between the patient and any proposed treatment or administration of medications. The patient's safety ultimately depended on me strictly following established protocols, applying a keen attention to detail, and using critical thinking prior to my every action. As a new registered nurse (RN), I found this process was not intuitive and required significant forethought and focus; at the end of each shift, I was both mentally and physically exhausted.

While the primary focus of this article is on avoiding lethal errors within the context of an endoscopy unit, it's essential to acknowledge that medication errors span the entire healthcare spectrum. Whether administering medications in the chaos of an emergency department or managing infusions in a serene outpatient clinic, the principles of medication safety remain universal. Drawing on real-world scenarios, evidence-based practices, and the collective wisdom of seasoned healthcare professionals, this article strives to empower endoscopy RNs with the knowledge and tools necessary to proactively navigate the complexities of medication administration.

A Whole New World

In the hustle and bustle of the clinical environment, new RNs need to acclimatize to unfamiliar surroundings, adapt to diverse patient populations, and familiarize themselves with medication administration protocols.

In contrast, seasoned RNs benefit from having years of experience on the job, having encountered and learned from a wide range of clinical scenarios throughout their career. The seasoned RNs' familiarity with medication regimens, recognition of potential risk factors, and refined clinical

judgment contribute to a lower overall probability of making medication errors.

However, the risk of making a medication error is not solely determined by experience. Factors such as the complexity of the healthcare system, workload, communication within the healthcare team, and adherence to safety protocols also play crucial roles in error prevention. Continuous education, training programs, and a culture that prioritizes patient safety contribute to reducing the probability of medication errors for both new and seasoned RNs alike.

Safeguards

Even with the implementation of "smart" infusion pumps, bedside barcode scanning, electronic medical records with computerized order entry systems, medication reconciliation, and annual education sessions, medication errors are still consistently identified as a significant contributor to adverse events in healthcare settings. Based on recent studies and healthcare quality reports, medication errors may account for approximately 5% to 10% of all hospital-related errors.

Though human error will likely always exist, newer models in patient safety strive to eliminate the "shame and blame" mentality that has historically accompanied error reporting. Such models aim to identify and reduce systematic errors in order to better anticipate and prevent errors before they occur.

A systematic review of existing literature on medication discrepancies upon discharge from the hospital environment showed that up to 87% of patients encountered some form of a medication error.[1] Of note, there was also a correlation between the number of medications a patient was taking and the number of discrepancies present that contributed to the overall probability of an error occurring.

Within this context, approximately one out of every 14 prescriptions for a hospitalized patient could be potentially grievous. In most cases, medication errors are identified and rectified well before they reach the patient. In cases where these errors reach the patient, serious or deadly results could occur.

Such situations can be described by the theory of active and latent failures, first proposed by James Reason in the book, "Human Error." Widely known as the "Swiss cheese model," this theory illustrates how multiple layers of defense, each with its own weaknesses (or holes), can momentarily align, allowing a window of opportunity for errors to pass through and lead to patient harm. Identifying these holes or barriers within a system, either through error reporting or root-cause analyses after an error occurs, can help ensure patients are not harmed again in the future.

Contributing Factors for Medication Errors

A systematic review of recent literature revealed several commonalities to medication errors, where nearly every medication error that occurs can be explained by at least one of the following contributing factors: Not following standards of practice (deviations from standard protocol); ineffective verbal or written communication among staff; environmental factors (i.e. short staffing, fatigue, overwork); substandard or poorly designed medication-distribution systems; low-quality prescriptions; inadequate medication reconciliation on admission; barriers to reporting errors; and inadequacy related to pharmacology, mathematics, or general knowledge and skills.

Nurses may also fail to catch the mistakes of others, or even make mistakes themselves if interruptions occur while medications are being prepared or delivered. Within the endoscopy setting, interruptions during nurse sedation may occur while nurses try to meet unrealistic charting expectations, cope with physician requests and unique patient requirements, or even have simple conversations occurring on personal matters interprocedurally. If a nurse loses concentration during a task that requires absolute focus, an error is more likely to occur, endangering the patient's safety.

Mortality Data Associated with Medication Errors

No one wants to experience a sentinel event, let alone be the cause of one. Yet, deaths have occurred under a nurse's care, due to medication errors that have reached the patient. Unexpected deaths are always investigated to help identify root causes and to fix system shortfalls to prevent similar events from occurring again in the future.

The Food and Drug Administration (FDA) has an Adverse Event Reporting System to track deaths related to medication errors. A review of the literature on this data revealed that the wrong dose of a medication represented 40.9% of all the fatal errors reported. The wrong drug represented 16%, wrong route 9.5%, wrong patient 3% and wrong time <1%.[3]

According to Jerry Phillips, et al., in the American Journal of Health-System Pharmacy, "The most common causes of errors were performance and knowledge deficits (44%) and communication errors (15.8%). Fatal medication errors accounted for approximately 10% of medication errors reported to FDA and were most frequently the result of improper dosing of the intended drug and administration of an incorrect drug."

Moreover, nearly half of the medications that resulted in death were from injectable agents, and a third from oral routes. Central-nervous system agents, antineoplastic agents, antimicrobials and cardiovascular drugs were identified as the most common types of medications causing fatality. In several cases, death occurred because the clinician failed to check the patient's liver and renal function or failed to monitor serum levels of drugs requiring monitoring.

As such, pertinent underlying medical history, such as hepatitis, liver failure, and cardiopulmonary insufficiency should be considered at the time of admission, to help

prevent sentinel events related to patient comorbidities and home medication usage.

Though the numbers on preventable deaths across the literature vary, a 2020 meta-analysis from research by Yale University found evidence of about 22,000 preventable deaths annually, mostly in people with less than three months to live.

Furthermore, a study in the New England Journal of Medicine on admitted patients in Massachusetts found only 1% had serious, life-threatening or fatal adverse events that were preventable.[4] Of these, adverse drug events specifically were identified as the most common cause of error, accounting for 39% of all events.[4]

With respect to reporting error statistics responsibly, it is important to always consider study limitations related to such data. As previously mentioned, the influence of contributing factors, such as the patient's underlying health history, may influence the likelihood of poor outcomes related to adverse drug events. Also, the study's ability to determine if the adverse events identified actually contributed to the patient's mortality or not should be considered.

The Endoscopy Setting

Within the endoscopy setting, sedation is a common practice to enhance both patient satisfaction and safety. According to John Triantafillidis, et al., in the World Journal of Gastroenterology, "Moderate sedation, using midazolam and an opioid, is the standard method of sedation, although propofol is increasingly being used in many countries because the satisfaction of endoscopists with propofol sedation is greater compared with their satisfaction with conventional sedation.

"Moreover, the use of propofol is currently preferred for the endoscopic sedation of patients with advanced liver disease due to its short biologic half-life [4 minutes] and, consequently, its low risk of inducing hepatic encephalopathy."

In addition, propofol has been found to be associated with lower overall complication rates when compared to sedation using traditional agents for colonoscopies.[5,6]

In situations where RNs administer propofol sedation, overall complication rates remain low. In one such study that evaluated the safety and efficacy of nurse-administered, low-dose propofol on 8431 adult patients, the authors found that "only 0.26% of the patients required a transient supplemental oxygen supply, and full recovery occurred in 99.9% of patients 60 min after the procedure."[5,7]

As for moderate sedation using traditional agents, "Midazolam is the benzodiazepine of choice because of its shorter duration of action and better pharmacokinetic profile compared with diazepam. Among opioids, pethidine and fentanyl are the most popular."[5] The use of such opiates as fentanyl may also enable a faster overall recovery time.

Patient safety during sedation is always a top consideration. Triantafillidis wrote, "The controversy regarding the administration of sedation by an endoscopist or an experienced nurse, as well as the optimal staffing of endoscopy units, continues to be a matter of discussion. Safe sedation in special clinical circumstances, such as in the cases of obese, pregnant, and elderly individuals, as well as patients with chronic lung, renal or liver disease, requires modification of the dose of the drugs used for sedation. In the great majority of patients, sedation under the supervision of a properly trained endoscopist remains the standard practice worldwide."

Given that the most-common fatal medication errors for hospitalized patients include intravenous narcotics, and according to FDA reports, fentanyl is the second-most-common medication involved in cases of accidental death, the endoscopy nurse should take pause and use critical thinking during sedations that use this common medication.

Promoting Safety Using Critical Thinking

Ensuring medication safety is paramount to preventing fatal errors. Though it may seem obvious, some of the basic principles we learned in nursing school on medication safety still apply. The Five Rights of Medication Use is a simple, yet effective tool to ensure the medication being delivered is correct. Verifying the right patient; the right drug; the right time; the right dose; and the right route are being used, is generally regarded as a safe medication practice.

The prudent nurse remains alert and aware in critical situations, especially during medication administration, thereby greatly reducing the risk for fatal errors. Making keen observations by monitoring and responding to abnormal vital signs, being aware of underlying health history, and making note of any necessary labs prior to sedation will help mitigate risk.

Regardless of the medication being administered, the nurse should be aware that serious drug events are much more likely to occur when the medication being used is at the high end of the therapeutic range. Questioning orders that start at the high end would be prudent and proactive. Furthermore, serious drug events are more likely to occur if the medication being administered is by the parenteral route. "Double-check before you inject," is a motto I learned as a new RN that continues to apply to my everyday practice.

By implementing rigorous protocols, fostering a culture of accountability, and utilizing advanced technology, RNs can significantly reduce the risk of medication errors, ultimately safeguarding patient well-being and improving overall healthcare outcomes.

For references, visit www.EndoProMag.com.

Brent Younglove, RN, BSN is a charge nurse of the endoscopy and ECT departments at Swedish Medical Center, in Issaquah, Washington. He received his B.S. degree in biochemistry and molecular biology at Hope College in Holland, Michigan and his B.S. degree in nursing from the University of Washington.

Facility Design

Enhancing Patient Experience Through Interior Finish Trends

By Jason Costello, AIA, LEED AP and Julia Donahue, IIDA, NCIDQ, WELL AP

It is probably fair to say that no one likes going to a hospital or ambulatory care center for medical testing purposes, especially ones that require sedation. It is quite normal for anxiety to set in. Healthcare environments designed with sensitivity will go a long way to help take the edge off and make the patient more comfortable, while actively supporting staff and equipment functionality.

Hospitals and healthcare systems in the vanguard of patient care have long taken their cues from the hospitality industry—namely hotels and retail, where it is all about creating ambiance and delivering services that actively enhance the guest- and user-experience. Implementation is always informed by facility purpose, services, budget, and patient demographics. For instance, designing interiors for a children's hospital requires a very different approach than for a general hospital with a host of departments and services, or those specific to an endoscopy suite.

Among the tried-and-true solutions present in hospitals and specialty suites are creative application of color, types of finish materials, way-finding signage, artwork, plants, customized lighting fixtures and levels, acoustic controls, furnishings, and views to nature. Let's look at how some of these solutions are being leveraged now and what the future may hold.

Digital Art

Ubiquitous in hospitality and retail settings, digital art is now trending in healthcare as well. What is it, exactly? A wall-mounted screen that can be programmed to display a single or changing array of images and messages. The ability to customize the art—and even lighting and sound—during diagnostic procedures and treatments based on the patient can promote comfort during what might otherwise be a stressful experience.

Traditional Art and Sensory Experiences

Incorporating more traditional artwork types such as prints, paintings, photography, and sculpture into clinical spaces adds beauty and creates welcome visual distractions and focal points for nervous patients—and even their families in waiting areas. Don't discount the power of light as art, either. One of our clients asked us to create spaces for a renovated procedural suite that was bright, serene, and complimentary to the equipment being installed. We introduced a touch of whimsy by designing a colored LED lighting system paired with music that is customizable by patients during treatment sessions.

Incorporating Nature

This is commonly referred to among architects and interior designers as biophilia, which literally means a love of life or living things. According to the Natural Resources Defense Council, biophilic design has been found to support cognitive function, physical health, and psychological well-being. While biophilia—basically the introduction of plant material into a space—may not be the first interior finish that leaps to mind, plants are an essential part of our natural world and are becoming increasingly common within indoor environments.

Studies have shown that spending 120 minutes per week in nature is tied to good health and well-being, and enriching

Digital Art

Nurse station featuring design patterns from nature. Ginkgo leaves were incorporated into the backlit millwork and wall coverings.

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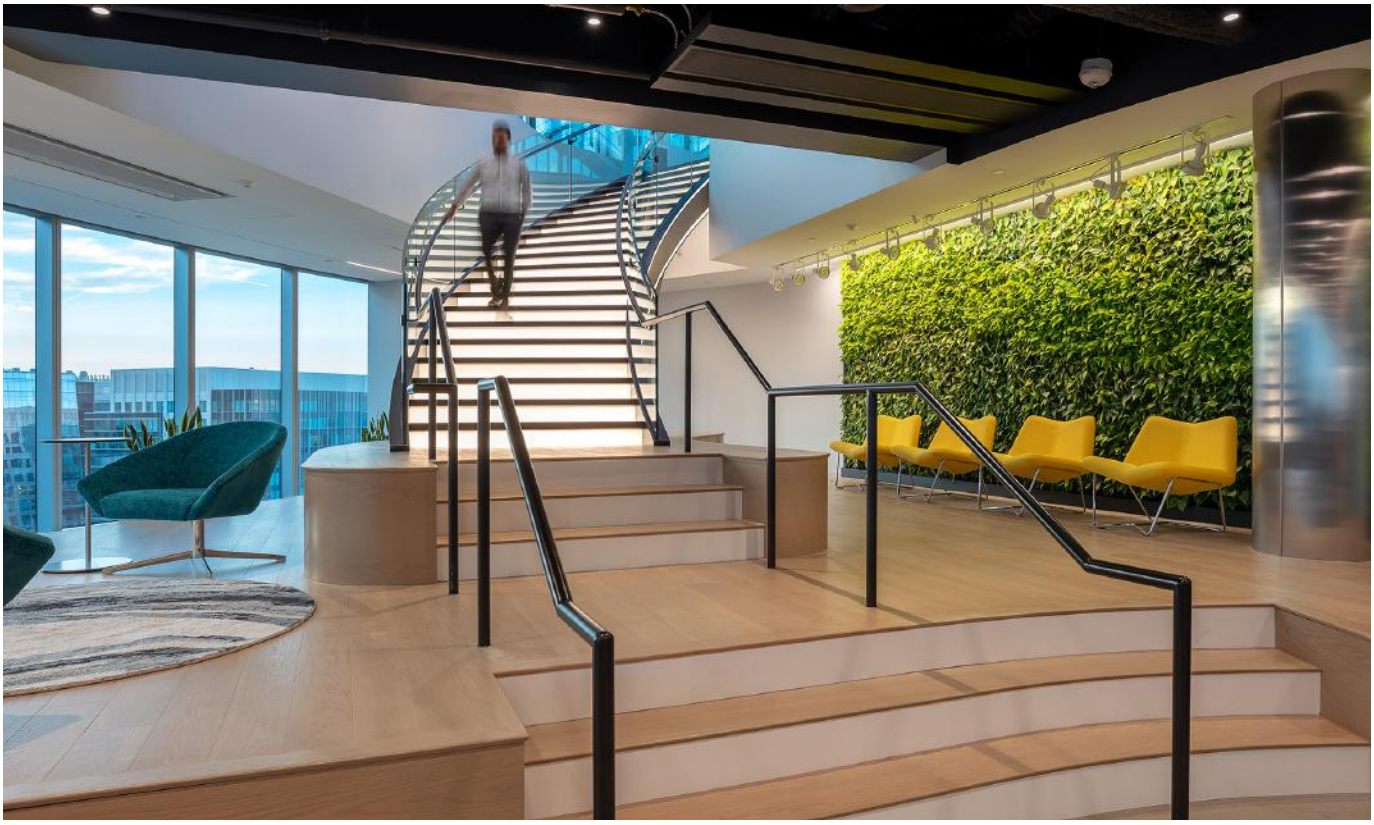

Incorporating Nature

The live wall featured to the right brings green space into lobbies and waiting spaces.

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Reception and Waiting

Example of reception a waiting area using lighting to accent the design of the reception desk.

Reception and Waiting

Reception and waiting area using unique fixtures to provide visual interest.

a space with plants can increase productivity by as much as 15%. Biophilic installations such as live plants and green walls have been shown to reduce stress in both healthcare and workplace settings, which is beneficial for patients and medical staff alike.

Where infection-control risks limit the use of real plants, a sense of nature can be introduced into non-private areas of clinical spaces through the addition of creative finishes such as murals, traditional artwork, various man-made materials such as resin or acrylic panels that embed plant elements, or natural stone and wood products. You may also want to consider illuminated ceiling tiles, with creative imagery that introduces blue skies and leafy trees overhead for patients who are conscious during their procedures. Another way to bring nature indoors is through generous fenestration—provided there is an outside view worth looking at. And if not, then clerestory windows and skylights are solid options to bring in natural light.

Way-finding

Even under normal circumstances, it can be a challenge to navigate the vastness of some healthcare facilities, and even more so when anxiety over an impending medical procedure sets in. Way-finding is much more than just informational and directional signage; it is a crucial design element that must be eye-catching enough to do the job without clashing with other interior design elements.

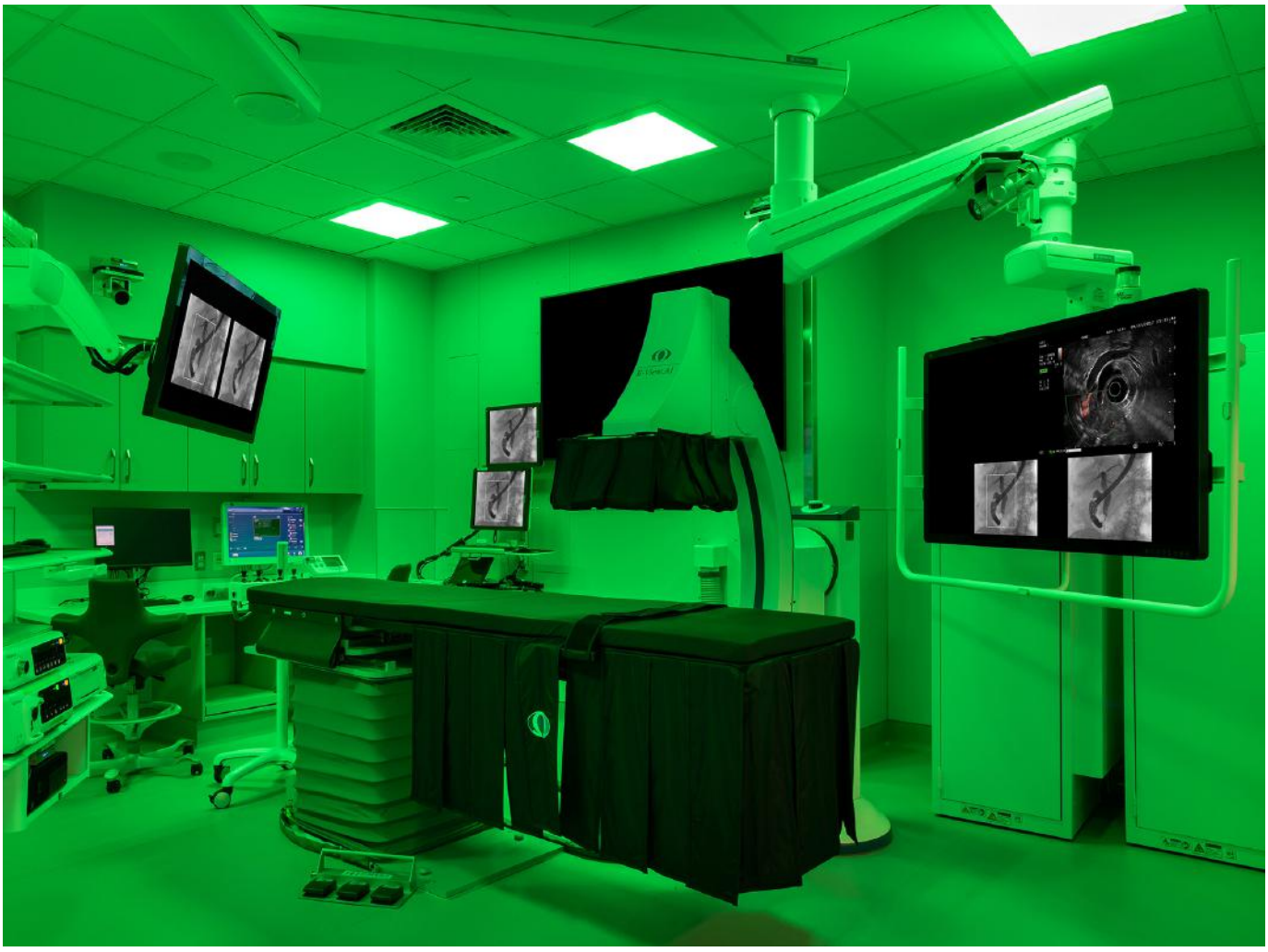
This can be accomplished through selective application of color—we are all familiar with colors denoting parking levels in commercial garages, for example—and flooring patterns. A trend currently on the uptick is the use of artwork as a way-finding device. This is especially effective in a clinical setting to distinguish between departments, and then extending the artwork color theme throughout the department as a guidance device.

Design Approach and Materials for Different Areas

Application of available interior-design treatments to improve the patient experience is based on the type of space and its functional requirements, as well as hygienic, maintenance, and privacy standards. The two most common areas ripe for transformation are reception and waiting, and the clinical area involving pre- and post-patient care.

Reception and Waiting

This area is where first impressions are formed, and research has shown that the visual environment has a measurable impact on the perceived quality of care that is being provided. The reception and waiting area provide the greatest opportunity to impact the patient's experience in a positive manner by helping to reduce stress and anxiety prior to their procedure. This is the perfect space in which to introduce nature, whether through plants or outdoor views.



Procedure Room

A procedure room using bicolor lighting. The green color increases screen contrast while maintaining higher lighting levels for anesthesia and clinical support staff in the room.

Pre- and Post-Patient Care

Prep and recovery area features natural light and durable finishes replicating natural materials. Nurse stations use durable, solid-surface materials to hold up t

Another key element of comfort is acoustics and the ability to reduce noise levels, particularly in larger waiting areas. Sound-dampening treatments include carpeting; high-performance acoustical ceiling tiles; acoustic wall panels and ceiling baffles; and introduction of white noise.

Pre- and Post-Patient Care

The design of the patient prep and recovery area revolves around the nursing stations and visibility to the individual pre- and post-recovery bays. The nursing station must be designed to resist the abuse of stretcher traffic, provide workstations for staff for charting, and contain visual status boards that communicate the flow of patients through their procedures.

Solid engineered-acrylic surface materials such as Corian are a viable option for countertops and ancillary work surfaces. Not only do they provide consistent color and add a textural appearance, but the material hides scrapes and gauges better than less-expensive plastic laminates. They are also easy to clean and can accommodate a wide spectrum of cleaning products.

The individual patient bays present several design opportunities through the introduction of pattern and texture in the cubicle curtains and new water-jet-cut vinyl flooring, which allows designers to tie-in natural curves and incorporate way-finding features.

Wall protection can be customized to integrate images, be they photos or abstract patterns. This is one way to make each station unique and shape the patient's experience about where they are in the process. For instance, naming bays for landmarks (instead of numbering them) allows staff to connect with patients and can become a conversational icebreaker during the intake process.

Procedure Rooms

The design of the procedure rooms begins with the flooring. Utilizing natural seamless materials like rubber provides a hygienic floor that is soft underfoot for clinicians' comfort and can provide an integral cove base for housekeeping.

Prefabrication is a trend, and interior wall panels provide long-term flexibility for the number and location of electrical receptacles and medical gases. They also can be backlit to incorporate artwork images into the room, while maintaining the ability to quickly clean and turn over the room between cases.

The third key aspect of procedure room design is the lighting. The baseline for lighting design should be dimmable to allow for low levels of light for procedures when focusing the monitor and high levels of light during cleaning. Task lighting should be provided for other clinical activities like the anesthesiology work area and automated medication dispensing. One technology uses green light to improve contrast on scope/fluoroscopy monitors while maintaining overall light levels in the room during the procedure.

Within all areas of the endoscopy procedural suite, design opportunities abound to incorporate nature, reduce noise levels, and support staff well-being. The thoughtful selection of materials and lighting can transform the clinical environment and help alleviate stress and fatigue for both patients and clinical staff.

Jason Costello, AIA, LEED AP is a principal and partner, and Julia Donahue, IIDA, NCIDQ, WELL AP is an interior designer with Margulies Perruzzi, a leading architectural firm in Boston specializing in science, healthcare, workplace, and real estate projects. For more information, please visit https://mparchitectsboston.com/

o the stretcher traffic in the pre- and post-patient-care areas.

Equipment Maintenance and Repair

Most-Common Mistakes Manufacturers Encounter

By Lisa Hewitt, MA

Endoscopy professionals depend on their equipment every day to perform lifesaving—and quality-of-life saving—procedures. When that equipment fails or doesn't perform adequately, it can create devastating consequences for doctors and patients alike.

We invited equipment manufacturers and quality control experts to weigh in on some of the biggest challenges they see regarding instrument use and processing. Their answers may surprise you, but they may also help you find an easy fix for a vexing challenge or avert a catastrophic problem.

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Our panelists include:

Roberta Harbison, MBA CHL CRCST CER AGTS, President, RLH Consultants LLC

George Cronin, National Sales Manager, TRICOR-Systems Inc.

Hope Byer-Everd, BSN, RN, LNC, Clinical Education Consultant, Advanced Sterilization Products

Eric Smith, Infection Prevention & Control Specialist, Olympus Corporation

Theresa Kunsman, Sr. Product Manager Infection Prevention Solutions, Olympus Corporation

What are the most common error(s) you see during endoscope and instrument processing? Why do you think this is the case?

Roberta Harbison: The most common errors I see are missed preventable repairs, improper flushing times, improper detergent soak times, and incomplete documentation. Endoscopy is a very high-paced environment, and endoscopes require manual cleaning to be performed within an hour of POUT. These two things tend to cause staff anxiety and they will rush, missing critical pieces of the process.

Hope Byer-Everd: The most common errors I have seen during endoscope and instrument reprocessing have been:

Omission or modification of steps during manual cleaning.

- Due to high case volume and low endoscope inventory, there is often a demand for high scope turnover. Based on this, technicians may omit or miss crucial steps in the manual cleaning process, such as using the correct cleaning agents, brushing or flushing.

Multiple cancellations of a cycle during reprocessing.

- The reasons for these cancellations might be technical malfunctions, lack of understanding of the equipment, or improper loading of instruments. This could potentially compromise the effectiveness of the entire reprocessing procedure.

Reasons for these errors include:

Time-saving motivations

- Technicians may feel pressured to save time, especially when dealing with a large number of scopes and instruments. This time constraint can lead to mistakes in the cleaning process, increasing the risk of incomplete or ineffective reprocessing.

Lack of awareness and training

- Some errors stem from a lack of awareness about proper procedures. Technicians may not have had access to or read the Instructions for Use (IFU) or might not have received adequate training. This lack of understanding can result in deviations from recommended protocols during both manual cleaning and reprocessing.

Unfamiliarity with equipment

- Errors related to automated equipment like the Automated Endoscope Reprocessor (AER) or sterilizer may occur due to team members' unfamiliarity with these devices. Inadequate training on the operation and maintenance of such equipment can lead to mistakes during reprocessing cycles. To address these issues, comprehensive education, ongoing training, and regular equipment maintenance are crucial to ensuring a thorough and effective endoscope and instrument processing workflow.

Theresa Kunsman: The most common errors in reprocessing we see include:

- Skipping steps or shortening (rushing) steps in the reprocessing process. Skipped steps in reprocessing are often a result of a facility being busy while trying to maintain the schedule of procedures.

- Failure to check minimum recommended concentration (MRC) before each cycle. Forgetting the MRC check is an easily missed but very important step to verify an adequate concentration of disinfectant is present. This step is often missed due to rushing reprocessing steps.

- Performing steps incorrectly. The use of incorrect reprocessing steps is usually a training issue. Repeating training frequently, quizzing staff, and providing reprocessing guides and posters can help prevent this type of error. Olympus also offers lectures and accredited continuing education and on-demand learning courses in reprocessing via a global educational platform.

Is there a critical error you've seen or been told about? What is the most effective way to fix, monitor for, or prevent this?

Roberta Harbison: The most critical error I've witnessed was a bronchoscope C-cover breaking and pieces falling into the patient's lungs during the procedure. The bronchoscope was immediately manually cleaned and high-level disinfected and then sent for repair to the OEM. This specific issue prompted us to take a deeper dive into inspection practices for reusable endoscopes, and the possibility of single-use bronchoscopes moving forward.

Hope Byer-Everd: I have observed and been informed about critical errors associated with manual soaking. The most significant issues involve the lack of documentation, maintaining low fluid temperatures, and forgetting to use test strips before each use. The most effective approach to address and prevent these issues is to prioritize education provided by the product manufacturer. Clear communication of all requirements for optimal product utilization is essential. Additionally, implementing a weekly log review can ensure continuous compliance with all specified requirements.

Theresa Kunsman: Not following the endoscope Instructions for Use and Reprocessing Manual instructions is a critical error. It is extremely important to verify that technicians are following the steps outlined in these manuals. Utilizing quick-reference guides and reprocessing wall charts as real-time visual guides may help technicians follow correct step-by-step processes.

Have you seen any equipment/maintenance processes or tips from an endoscopy department that have impressed you?

Roberta Harbison: I consulted at a facility that utilized collector card sleeves to keep washer and leak-tester receipts orderly and together. I was very impressed with the level of creativity and attention to detail that went into that process.

George Cronin: Many years ago, there was a lead technician at Lahey Clinic in Burlington, MA, who taught every tech, nurse and physician to pay attention to how the scope worked. If a physician feels resistance in a channel, [they should] speak up and let the tech/nurse know where they feel it. If a tech feels resistance with a cleaning brush, take note of where it is and spend time inspecting the scope. If a tech/nurse isn't 100% certain that a needle was retracted back into the catheter before coming back into the channel of the scope, let the tech know [when] cleaning the scope to take a little extra time inspecting. This can [take a potential fix] from [requiring] a major repair of fluid damage down to a minor bending rubber change or channel repair.

Hope Byer-Everd: The most challenging aspect of my role when working with end users lies in the diverse range of experience levels among them, creating a situation where a one-size-fits-all approach during in-service sessions is not feasible. It becomes a delicate balancing act to engage individuals with extensive experience, while simultaneously providing effective training for those who may be entirely new to the field.

Addressing the needs of both seasoned professionals and beginners requires a tailored and flexible approach. For experienced technicians, the challenge is to keep them engaged by offering advanced insights or addressing specific concerns that align with their expertise. On the other hand, when training new technicians, the focus is on imparting fundamental knowledge and ensuring a solid foundation.

The ultimate objective is to leave all end-users with a richer understanding than they had before the session, but this must be achieved without overwhelming anyone. Striking the right balance involves adapting the training content, pace, and level of detail to cater to the diverse audience. It's about creating an inclusive learning environment that benefits everyone, regardless of their background or experience, and ensuring that each individual feels empowered rather than burdened by the information provided.

Eric Smith: Having the hospital provide training can help all parties that work with the equipment to be able to identify potential damage. Some hospitals ask that their technicians handle the device by the distal end of the endoscope, in that it may be better if the distal end is first thing you pick up, and the last thing you set down. It is one of the most damaged parts of the endoscope and should always be handled with care.

What is the most challenging part of your job?

Roberta Harbison: Space constraints are the most challenging part of my job. The physical limitations of the department make it impossible to increase productivity and efficiency.

George Cronin: Time. Nobody has any. When trying to in-service a new product or help with competency training, we often hear, "I've only got two minutes, or can you do it while I wait for the next patient to be ready?" It isn't their fault, but we need to find a way to have dedicated time for training that can be uninterrupted.

We often in-service groups of people, and not everyone feels comfortable asking questions in front of the group. This falls on both the sales rep and manager to allow some time at the end of the in-service for anyone to ask questions or come back with any follow-up.

Hope Byer-Everd: Manufacturers' products play a crucial role in assisting endo departments to address challenges such as lower staffing and budget constraints, particularly in enhancing the quality assurance of endoscope high-level disinfection. Key considerations for manufacturers' products that aid in mitigating these challenges include:

Ease of Use

- Products designed for easy operation can be instrumental in overcoming lower staffing levels. Simplifying processes ensures that tasks can be efficiently performed, even with limited personnel.

Longevity of High-Level Disinfectant

- Manufacturers offering products with extended high-level disinfectant lifespan contribute to cost savings by reducing the frequency of fluid replacements. This becomes particularly advantageous when facing budget constraints.

Automation of HLD Solution Testing

- Products incorporating automation for testing high-level disinfection solutions streamline the monitoring process. Automated testing not only enhances efficiency, but also helps in maintaining compliance with stringent hygiene standards.

Compliant Information on AER Printouts

- A critical aspect is the provision of compliant and comprehensive information on Automated Endoscope Reprocessor (AER) printouts. Clear documentation assists in meeting regulatory requirements and ensures that the facility is consistently adhering to best practices. By prioritizing these features, manufacturers contribute to the optimization of endo department processes, facilitating consistent high-level disinfection and allowing facilities to operate efficiently, even in the face of staffing or budget challenges. Streamlining these processes not only improves overall throughput, but also ensures that the facility remains survey-ready at all times.

Eric Smith: Despite training and existing guidelines, there can still be variability in how equipment is handled and maintained, leading to potential issues or breakdowns.

How can manufacturers' products help endo departments cope with problems like lower staffing or budget challenges?

Roberta Harbison: Quality assurance is the best way to help departments cope. Staffing and budget challenges will always exist, [so] providing a quality product that delivers repeatable results and does not fail is the best help to the departments.

George Cronin: There are over 200 steps to clean an endoscope. Manufacturers must work to automate the endoscope cleaning process with as many steps as possible. One of the ways we have found to be the most helpful is listening. End-users are managing 10–50 scopes per day. They know what they need [in order] to be safer and more efficient.

Theresa Kunsman: For facilities that may not have a capital purchase in their budget, Olympus offers purchase programs that allow healthcare facilities to benefit from the latest technology.

How have you been able to streamline your equipment maintenance processes?

George Cronin: Our preventive maintenance happens once every six months and takes very little time. One of the ways we have done this is to make everything easily accessible. We have also designed a step to look at potential long-term wear on the pump. This allows for maintenance before the Dri-Scope can break down. We have also built YouTube videos on how to do all preventive maintenance.

How do you recommend that endoscopy departments handle repairs?

Roberta Harbison: Repairs should be monitored closely, and departments should track and trend data. Often repairs are preventable and trending the data to make corrections can be highly cost effective.

Eric Smith: Endoscopy departments should have a designated point of contact for equipment repairs and establish clear communication channels with manufacturers or authorized service providers. It's essential to promptly report any issues and have the devices removed from service immediately.

What are the most frequent and/or difficult repair issues you see?

Roberta Harbison: Preventable repairs that could've been fixed prior to the repair becoming critical. Preventative maintenance is so important for endoscopes; they are such delicate instruments and most get used several times a week.

Eric Smith: Regardless of the repair issue, the key is catching these damages early and having them addressed immediately, as such damage can lead to a costly repair.

Do you work directly with GI doctors to develop and modify your equipment? How does this help?

Eric Smith: Collaborating with GI doctors allows us to gain valuable insights into their clinical needs and challenges. Their input helps us develop and modify equipment to enhance functionality, usability and patient outcomes. This collaboration helps Olympus to design our products to meet the specific requirements of end-users.

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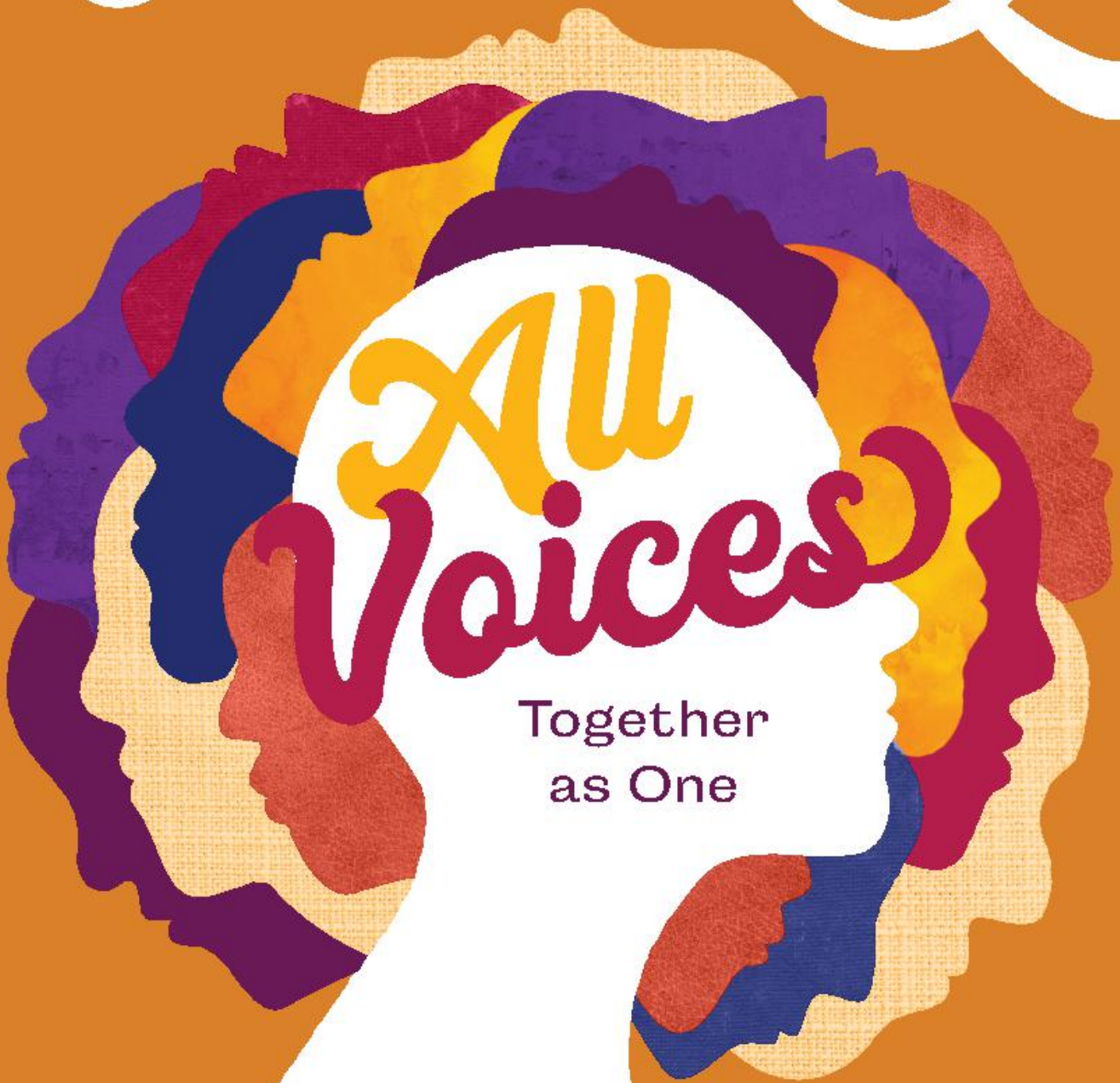

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FDA Grants Clearance for Imaging Technology That Measures Colonic Lesions

LEXINGTON, Massachusetts—FUJIFILM Healthcare Americas Corporation, a provider of endoscopic imaging and endosurgical products, has been granted FDA 510(k) clearance for SCALE EYE, a new endoscopic imaging technology.

The SCALE EYE system consists of a laser-equipped colonoscope (model EC-760S-A/L) and endoscopy support software (EW10-VM01). The system displays a linear or circular virtual measurement—or scale—over the area of interest on the endoscopy monitor. With the push of a button, SCALE EYE aids endoscopists in estimating the size of colorectal lesions in vivo without relying on visual estimations, consumable tools, or the need for additional surgical instruments.

Traditionally, endoscopists estimate the size of neoplasms by comparing them against the size of the forceps being used to examine them, which creates risk for subjectivity. Compared to the biopsy forceps method, SCALE EYE enables more accurate, one-objective measurement of colon polyp size, a critical factor in making decisions for clinical management of neoplasms, specifically colonic polyps, as size can be an indicator of malignancy. Polyp size measurements are important for risk stratification, choice of polypectomy technique, and follow-up interval decisions.

"During colonoscopy, it is important to correctly measure the size of the polyps because it can directly impact the patient's care pathway," said Tai Fujita, vice president of the endoscopy division at FUJIFILM Healthcare Americas Corporation. "Early clinical results of SCALE EYE are impressive, and we're proud that Fujifilm's new, innovative in vivo scaling capability is demonstrating success in improving both the speed and accuracy of polyp measurement."

Several studies have demonstrated the advantages of virtual-scale endoscopes compared to current methods in use.

"When it comes to polyps, accurate size assessment is essential to our decision-making process," said Dr. Seth Gross, clinical chief of the Department of Gastroenterology and Hepatology at NYU Langone Health. "Polyp size is a factor in determining a patient's recommended follow-up interval and may impact the decision on how best to achieve a safe and complete resection. We're encouraged by early data and are excited to be the first U.S. site to evaluate SCALE EYE."

The Link to Zinc

Zinc Plays Key Role in IBD and 'Leaky Gut'

LONDON, England—Researchers from King's College, in London, England, have found an association between low zinc intake and health of the gastrointestinal tract. These findings have potential implications for a third of the world's inhabitants who are zinc-deficient.

This new research, published in Nature Communications, has found a link between the micronutrient zinc and a sensor protein in the gut that plays a role in the prevention and management of a range of bowel conditions, such as inflammatory bowel disease.

King's Professor Christer Hogstrand led an international team that created "mini-guts" from human stem cells and mice. They investigated the role of zinc and a sensor named the "Aryl Hydrocarbon Receptor" (AHR) that helps the body react to nutrients, drugs and toxic substances in the bowel. Mice fed a diet containing zinc and a chemical from cruciferous vegetables (such as broccoli) that stimulates the AHR were almost completely alleviated of IBD. In contrast, mice fed a zinc-deficient diet received no benefit from AHR activation.

There's a prevalence of zine deficiency in countries where diets are dominated by plant-based foods, which are poor sources of nutritionally available zinc. The discovery offers new options to manage IBD through dietary supplementation with zinc and plant-derived bioactive compounds that stimulate AHR, which are particularly abundant in cruciferous vegetables.

Not So Sweet

Artificial Sweeteners Alter Microbiomes

LOS ANGELES, California—Cedars-Sinai Medical Center investigators recently examined the potential effects of consuming non-sugar sweeteners on the composition of the stool and duodenal microbiomes. Compared to controls in the study, scientists noted significant differences in both stool and duodenal (small intestine) microbial diversity and composition. Levels of circulating inflammatory markers were also altered in participants who consumed non-aspartame non-sugar sweeteners as well as those using aspartame only.

The study is published in the journal iScience.

More than 140 million people in the United States use sugar substitutes, according to data from the U.S. Census Bureau. Sucralose, aspartame, saccharin and the plant-based stevia leaf extract are among the most popular. These artificial sweeteners are frequently used by people trying to reduce their sugar intake or lower calories from sugar for weight management. However, there are increasing concerns about the potential health risks associated with the use of non-sugar substitutes based on data suggesting they do not help with long-term weight loss and may be linked to higher risks for Type 2 diabetes, heart disease and death. There are also questions about the potential negative effects the sugar substitutes may have on the gut microbiome, which plays a vital role in overall health.

In a controlled study, Cedars-Sinai investigators analyzed and compared the duodenal luminal microbiome in subjects consuming artificial sweeteners, aspartame alone or no sugar substitutes. The stool microbiome in some of these subjects was also compared.

Investigators obtained samples from a small group of adults undergoing standard of care esophagogastroduodenoscopy without colon prep. All enrolled subjects provided duodenal luminal aspirates as well as fasting blood samples for analysis, and a subset also provided optional stool samples. Scientists analyzed the duodenal luminal microbiome in subjects consuming non-aspartame non-sugar sweeteners, aspartame only, controls, and the stool microbiome in a subset.

Artificial sweeteners are associated with a variety of changes depending on the area of the intestine. Significantly, the effects of these substances on the gut microbiome differ in the small bowel compared to the large bowel.

"Artificial sweeteners are not benign for the microbiome of the gut," said Ruchi Mathur, MD, a professor of Medicine at Cedars-Sinai, an endocrinologist, and the lead author of the study. "We found that the richness of the bacteria in the small bowel was less in those subjects consuming non-aspartame non-sugar sweeteners when compared to controls, whereas bacterial richness in those consuming aspartame was similar to controls.

"Interestingly, when we looked at predicted metabolic pathways in these bacteria, we noted that the pathway of cylindrospermopsin, a toxin, was enriched specifically in small bowel bacteria of subjects who consumed aspartame," Mathur continued. "This pathway is recognized for its harmful effects on the liver and the nervous system, and it is classed as a potential cancer-causing agent."

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