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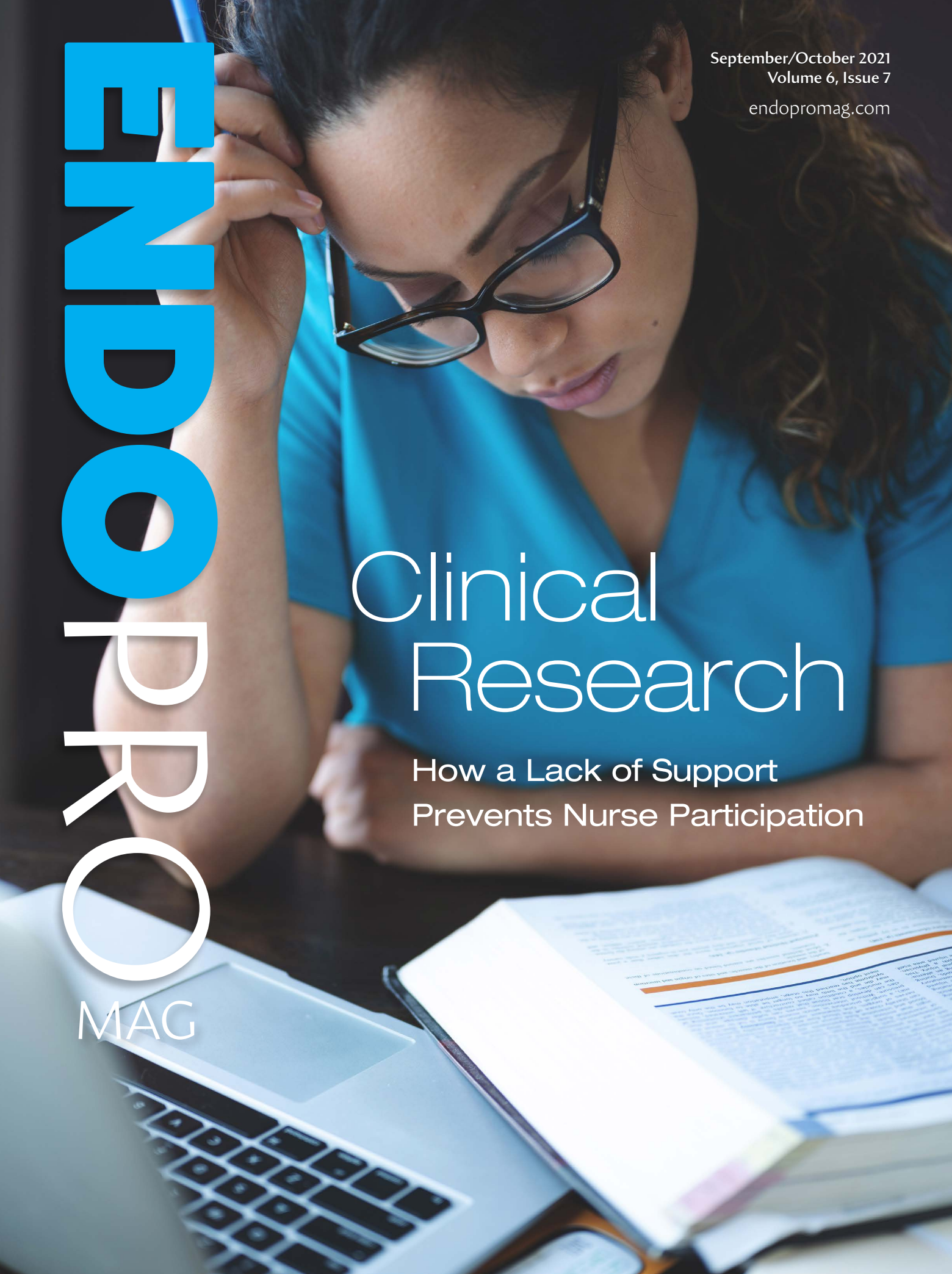

# Clinical Research

## How a Lack of Support Prevents Nurse Participation

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# Participating in Clinical Research
## Should Nurses Do More or Should We Do More for Nurses?

It's a dangerous question to pose during a once-in-a-century pandemic, when healthcare and frontline workers have been pushed to the breaking point and beyond, but here goes: Should nurses do even more?

This month's cover story takes a candid look at what's holding back America's largest healthcare force from participating in clinical research. In short, there are few opportunities and resources for nurses to contribute to medical research. We all know nurses are overworked and that hospitals and outpatient facilities would come to a grinding halt without them, but should we try to further leverage their skills and experience by also making strides toward getting them involved in clinical research? Nursing expertise in this way would certainly improve research as we know it, but do we dare add to their workload? Is it fair to put that burden on an already overworked and undervalued bedrock of healthcare?

Our cover story this month, by healthcare journalist Kyle Patton, is titled "Nurses and Clinical Research: How a Lack of Support, Confidence and Time Prevent Nurse Participation." The article examines a plethora of studies that show many nurses would theoretically like to be involved in clinical research but are held back by the systems and institutions that employ them.

Many nurses do want to participate in clinical research, but not if it means taking time away from bedside care. Furthermore, there are seldom opportunities at one's workplace, and even in the case of opportunities, there's often a lack of support. Even if opportunity and resources present themselves to give nurses a chance at clinical research, a culture that doesn't inspire nurses to take on this work may prevent them from having the confidence to spearhead a study and/or share their experiences, findings and opinions.

Kyle Patton's article highlights how the gap between nurses and clinical research could be narrowed—or better yet—bridged.

Indeed, there are plenty of nurses who would love to participate in clinical research, especially if it translates to better patient outcomes. Most nurses probably recall their early programs and textbooks emphasizing clinical research's importance. Yet, once nurses start working, their roles are often well-defined and arduous, and nowhere in the job description are the words "clinical researcher."

There are avenues of opportunity for nurses who want to do more for their patients and aren't afraid of questioning the status quo (or of running themselves ragged with extra work). Sometimes, as we see in this month's cover article, it takes a few dedicated nurses to push for change or to create opportunities themselves.

Clinical research benefits from nurses participating, but nurses don't necessary benefit from clinical research (not if it leads to burnout, that is). We all know that nurses could improve the research we see, but that doesn't mean it's time to apply pressure. Perhaps we should look at the healthcare system in place and ask if it does enough for nurses before we ask nurses to do even more for it.

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# Certification and Continuing Education Can Improve Scope Processing Quality and Safety

**By Julie Williamson**

Technicians responsible for reprocessing flexible endoscopes can attest to the role's many challenges. These complex, sophisticated devices require meticulous care and handling and are inherently difficult to clean. Beyond that, the sheer volume of intricate steps sterile processing (SP) technicians must perform from the moment an endoscope arrives in the decontamination area to the time it is transported for subsequent patient use is eye-opening and alarming.



Although the Centers for Disease Control and Prevention's Healthcare Infection Control Practices Advisory Committee lists seven essential steps[1] for flexible endoscope reprocessing (pre-cleaning, leak testing, manual cleaning, visual inspection, disinfection or sterilization, storage and documentation), and reprocessing standards issued by SGNA, AORN and ANSI/AAMI list nine broad steps that include personal protective equipment (PPE) and drying. A study that delved further into the complexities of flexible endoscope reprocessing revealed that more than 100 steps are involved for reprocessing a single endoscope.[2] Put simply, within each broad step are many more detailed steps that must be performed—in the proper order, explained epidemiologist Cori Ofstead, MSPH, president and CEO of Ofstead & Associates Inc.

"When you realize all these steps must be performed on these complex and difficult-to-clean endoscopes that you can't see inside—and while technicians are wearing all the required personal protective equipment and facing other challenges like inadequate training, (vague or insufficient) instructions from the device manufacturer, and a lack of other tools and resources to manage the process effectively—it's easy to see how problems are common," she explained.

**Studies, Surveys, Stakeholder Meetings Highlight Key Challenges**

In 2020, the American Society for Gastrointestinal Endoscopy held an Infection Control Summit outside Washington, D.C., to review endoscope disinfection and reprocessing from regulatory, practice and training perspectives, and explore future avenues of technological advancement and research. The International Association of Healthcare Central Service Materiel Management (IAHCSMM) joined other key stakeholders and experts, including Ofstead, who presented data on human factor-related challenges for endoscope processing. She presented data that originated from audits she and her team performed during site visits to more than 60 institutions, as well as from 2017 and 2018 surveys of IAHCSMM members.[3] These studies established that personnel processing flexible endoscopes are often:

- Expected to memorize and perform complex tasks involving hundreds of steps from all of the instructions for use (IFU) involved.
- Subjected to a hostile work environment.
- Not provided with adequate training (some receive no training).
- Unable to understand or follow the manufacturer's reprocessing IFU. A survey showed 84% of respondents had read the endoscope's IFU, but it could not be consistently understood or followed.
- Bothered by odors and pain during endoscope reprocessing (47% of survey respondents admitted this is a workplace issue).
- Pressured to move quickly. Up to 17% of survey respondents admitted skipping steps/cutting corners or doing steps faster due to time pressures.
- Bullied by others in the workplace. A survey showed that 40% of endoscope reprocessing technicians either witnessed bullying or experienced it themselves, including both verbal and physical attacks.[4]

The Food and Drug Administration's (FDA) Post-Market Surveillance Studies: Human Factors and Microbiological Sampling/Culturing Data was also presented during the 2020 Summit. The results from human-factors studies indicate that reprocessing instructions in current user manuals should be strengthened because they are difficult for reprocessing staff to comprehend and follow. Many reprocessing professionals missed one or more steps in the process and needed additional training to complete the process properly. Also, it was noted that descriptions of some of the processing steps in the user manuals were unclear.[4]

"At our hospital, technicians aren't trained nearly enough," noted one IAHCSMM member who participated in the survey. Another member stated that most of their colleagues were insecure with their knowledge of scope reprocessing and skipped steps or made mistakes in manual cleaning prior to HLD. Yet another stressed how significantly fewer mistakes and skipped steps would occur "if everyone who touches these scopes was educated and certified."

The importance of continuing education and certification is a point consistently emphasized in industry standards and guidelines as well as by IAHCSMM. The association provides targeted continuing education and certification for all SP professionals, including those responsible for endoscope reprocessing. IAHCSMM's Certified Endoscope Reprocessor (CER) certification recognizes individuals who have demonstrated the knowledge and skills necessary to pre-treat, test, decontaminate, inspect, disinfect and/or sterilize, transport and store endoscopes in accordance with industry standards, guidelines, regulations and manufacturers' IFU. To earn CER certification, candidates must successfully complete the CER certification exam and demonstrate skills through completion of three months of hands-on work experience. To maintain the certification, CER certificants must recertify annually through completion of continuing education requirements.

"Certification and training matter. Endoscope processing is a complex process, and understanding what we are doing and why it is important helps ensure patient safety," said Natalie Lind, CRCST, CHL, FCS, IAHCSMM's director of education. She explained that one of the biggest mistakes organizations make is assuming all flexible endoscopes are alike. "There are many configurations, and each has specific instructions for use."

Data from the FDA's postmarket surveillance studies and a human factors study[5] underscore Lind's point. The FDA human factors study examined reprocessing personnel's ability to follow recommended reprocessing instructions in duodenoscope labeling and user materials, without causing reprocessing errors or failures that could harm patients; it also demonstrated disparities in recommended steps across different models and manufacturers.

For example, one duodenoscope manufacturer lists eight pre-cleaning steps in its IFU whereas two different models from another manufacturer require 12 and 21 steps, respectively. For manual cleaning, one manufacturer lists 33 steps for its model and two different models from another manufacturer list 73 and 111 steps, respectively. The FDA noted in the human factors study that for the model with 111 manual cleaning tasks, 75 of the steps were not successfully performed.[5]

*(Author's note: The FDA's human factors study uncovered numerous other startling findings related to challenges and missteps that occurred during core reprocessing functions. To read more, visit https://bit.ly/FDA_study.)*

The concept of thrusting inexperienced and inadequately training employees into the role of flexible endoscope reprocessor is dangerous and shortsighted, Ofstead warned. She has witnessed inexperienced and poorly trained employees, including clinicians from various departments (e.g., respiratory therapy, GI lab and outpatient urology departments), attempting to manage the complex and challenging role of endoscope processing.

Another problem, she said, is failure to ensure that employees receive deeper training on the core processing and quality assurance steps. Inspection with lighted magnification, for example, is essential for cleaning efficacy. However, many facilities still fail to provide magnifying glasses and borescopes—and some facilities that do provide them may fail to provide proper training, so employees don't know what to look for and can't identify and address areas of concern found during the inspection. This focused training should be delivered for every flexible endoscope model managed by the facility, and the training should not just be "one and done."

"Certification and education are critical to get these individuals to view themselves as specialists, which they absolutely are and must be in order to do the job safely and effectively," Ofstead added. "Healthcare organizations need to recognize the very difficult nature of the endoscope reprocessor's job and give them the time, resources and compensation needed to promote quality. This is a challenging, detail-focused role that one can aspire to, but it's not a role that everyone can—or should—do."

*For references, visit www.EndoProMagazine.com.*

*Julie Williamson is IAHCSMM's director of communications/senior editor.*

## Thorough, Effective Endoscope Cleaning

Like every other medical device that undergoes reprocessing, manual cleaning is the most important step—and for good reason, explains Ofstead. "High-level disinfection and sterilization simply cannot be effective if proper cleaning doesn't occur first."

An Ofstead & Associates study[1] that involved direct observation of reprocessing methods to examine the reprocessing effectiveness for flexible bronchoscopes and endobronchial ultrasound bronchoscopes found that 100% of the 24 clinically used bronchoscopes examined had residual contamination following manual cleaning, and damaged bronchoscopes were also seen at all sites studied. Further, a study[4] that examined ureteroscopes after manual cleaning and sterilization using hydrogen peroxide gas found that 100% of the reprocessed ureteroscopes tested remained contaminated.

For references, visit www.EndoProMagazine.com.

# How Do You Manage Your Endoscopy Equipment?

## Tips to Keep You and Your Patient Safe

**By Roberta Harbison, BBA, CHL, CRCST, AGTS**

As with all medical devices, endoscopy equipment needs routine maintenance to prevent any potential issues that may arise. Poorly managed scopes and malfunctioning equipment can cause serious injury and harm to patients and employees. There are various support tasks and levels of scope maintenance that involve manufacturer agreements, training, staff inspections, maintenance contracts, policies and procedures, and all must be heeded.

A concept in the health industry to remember: "If it was never documented, it never happened." When endoscopes and equipment are in subpar condition, the facility is liable when endoscopes and equipment malfunction. Tracking all devices and equipment critical in the event of a recall or problem. According to AAMI ST91, all flexible endoscopes should be documented and traced to the patient and the procedure for which they were used.[1]

> Positive outcomes begin with taking responsibility for monitoring and managing endoscopes and equipment. Patients' lives depend on our experience, knowledge and compliance!

Unfortunately, medical devices are not made to last forever. At some point the endoscopes and equipment will need repair or replacement. Repairs can be costly as equipment and scopes exceed their useful life. To keep patients and employees safe from harm, staff must guarantee that all endoscopes and equipment function at a superior level.

Endoscopy facilities need to develop a protocol that prevents scopes from damage and that identifies damage before use. Protocol should include proper inspection and testing, as well as training and educating staff in how to identify potential problems.

### The Standards

Quality-control programs prevent the potential for serious issues. The AMMI ST91 standards request facilities to verify that manufacturer-recommended maintenance schedules and services are performed on all endoscopes and processing equipment.[2] This should include flexible endoscopes, light source towers, reusable accessories, monitors, sterilizers, automatic endoscopic reprocessors and all other equipment used in the facility. Documentation needs to include the model, serial number, the unique identifier and all work performed.

According to the Code of Federal Regulations, equipment must be maintained to ensure an acceptable level of safety to meet the Center for Medicare and Medicaid Services (CMS) regulatory requirements. All activities and functions must meet the American National Standards Institute (ANSI/AAMI) guidelines.[3] All protocols should be outlined so that staff can easily understand, interpret and perform the necessary steps for quality assurance. When developing these programs, there should be an assessment performed by a multidisciplinary team.

Inventory of scopes should be determined by the volume of procedures that are done each day. Endoscopes and equipment used on overdrive need repair more frequently. When there are not enough equipment and medical devices to perform the daily procedures, damage increases and this causes delays to procedures. Lack of equipment and medical devices in the long run increases the cost of repairs and overhead to the facility, not to mention the loss in revenue when procedures need to be canceled as a result. An effective endoscopy department should be stocked with enough medical equipment and endoscopes to meet the volume of scheduled cases.

### Preventative Maintenance Strategies

Once the amount of equipment and endoscopes needed are determined, the next step is to develop a proactive inspection plan and service agreement. When performing the assessment, there should be a multi-disciplinary team that includes, staff leaders, infection prevention, logistics and risk management personnel.[4]

The evaluation process should include how often the endoscopes will be turned over for the next cases, the use of the equipment, and how to determine if an endoscope needs repairs. The team should meet on a routine basis to evaluate, review, track and trend the program's effectiveness, and identify opportunities to improve. Creating dashboards or using a tracking system can generate reports for the team to review. Trends that uptick toward quality failures (e.g., broken equipment and endoscope increases) need to be addressed

immediately and trends that downtick (e.g., decreased repair, decrease in faulty equipment) should be recognized and celebrated.

The evaluation process should meet all the requirements necessary for optimization and safety practices. The group should periodically check and verify the process to ensure it is meeting the most current standards. Preventative maintenance (PM) programs should be incorporated and can be performed by certified trained staff, the manufacturer or by a licensed and/or certified third-party service. Contracted service staff are typically scheduled based on the manufacturer's recommendation for routine maintenance and prevention. PM programs support endoscope and equipment integrity.

Once the facility identifies all personnel responsible for the maintenance and care of the endoscopes and equipment, their job tasks and responsibilities should be outlined in the job description. In larger facilities where multiple areas perform endoscopy procedures, each area should be identified so that equipment and endoscopes can be tracked.

The facility is responsible to know and document the age, location, and the status of PM agreements on the storage cabinets. Mobile equipment used in a patient room should be trackable in the event of a recall or malfunction.[5] The documentation must include manufacturer, model, serial number or facility specific identification, and patient name or identifier. Tracking systems are the most effective way to accomplish this.

**Loaned or Borrowed?**

On occasion, a facility may need to borrow equipment and endoscopes. Strict policies and procedures should address thorough inspection processes when these requests are received.[6] Concerns should also focus on how equipment will be received and handled throughout the term, how loaners are traced to patients, and the condition of the equipment when returned. Loaned equipment and devices are meant for short-term use to help facilities get through their day while owned equipment is repaired.

As soon as a loaner is received, there needs to be an inspection process and verification that the loaner is in optimal condition. Any visual, mechanical, or technical damage to loaners should be addressed by the loaner company immediately. Borrowing should be limited and only requested while owned devices and equipment are out for repair or upgrade. Facilities that keep what is referred to as "forever" or "perpetual" loaners run a huge risk for liability.

When loaners are damaged while in use, this can be very subjective with the responsible party paying for repair or replacement cost. It is best to avoid this and address these issues with the loaner company when negotiating terms or contracts.

Loaners used in larger facilities for too long are more difficult to find and retrieve (they get lost in the system). This can create a heavy burden on staff who waste labor hours trying to locate the device. Additional cost and penalties can be faced when loaners are used for too long and cannot be retrieved at the end of the term. Keeping the loaners on a shorter timeline is most efficient.

**Quality Equipment Leads to the Best Patient Care**

Invested staff who care about patient safety understand and know the importance of well-maintained and optimal-functioning equipment. Facilities that integrate quality-assurance programs will reduce risks to patient safety as they identify potential quality assurance indicators or breaches in the process. Staff who include a protocol of endoscope inspection, leak-test scopes, and visually inspect scopes under 10x lighted magnification are more likely to detect errors and prevent injury. Facilities are now using borescopes to inspect inside the channels for more common damage.

All the inspection steps should be recorded and retained per the facility's retention policies. Inspection of the equipment should be performed per the equipment's operational manual and according to the manufacturer's recommendations. Process monitors should also include routine checks for reprocessing equipment.[8]

On occasion, a facility may need to borrow equipment and endoscopes. Strict policies and procedures should address thorough inspection processes when these requests are received.

All information about servicing and maintenance should be in the equipment's operational manuals and instructions for use. A core team should identify potential outbreaks or clusters of infections that could be linked to devices or equipment. If or when an incident of infection occurs, the infection-prevention designee should report this to the manufacturer, the FDA's MedWatch or other relevant related agencies per AAMI ST91.[10]

Positive outcomes begin with taking responsibility for monitoring and managing endoscopes and equipment. Patients' lives depend on our experience, knowledge and compliance!

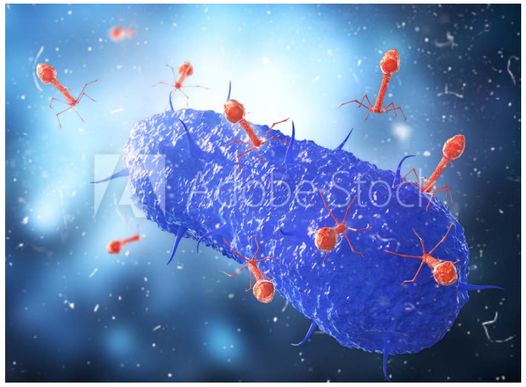
For references, visit www.EndoProMag.com.

*Roberta Harbison, BBA, CHL, CRCST, AGTS, is a senior consultant and educator with Sterile Processing University, LLC.*

# Bacteriophages

## An Alternative Approach in the Fight Against Antibiotic-Resistant Bacteria

**By Nancy J. Haberstich, MS**




When all this talk of antibiotic resistance makes you feel like doomsday is approaching and antibiotic stewardship will never keep up with the pace of resistance, remember that there could be a silver bullet for controlling multiply-resistant bacteria—bacteriophages.

Bacteriophages are viruses. They are one-fortieth the size of most bacteria and may be the most numerous organism on the planet. They attack bacterial cells in soil and water, and in the guts of animals and man.

Viewed through the electron microscope, bacteriophages look like lunar landing modules with mechanical-looking legs, multipaneled heads, and tails they use as syringes.

Though they have been around for eons, bacteriophages have very sophisticated behaviors for microbial competition and survival. When a phage lands on a bacterial cell, its legs attach to the surface. Then it injects DNA from its "head" directly into the bacterium. What happens next depends upon whether the phage is temperate or lytic.

Temperate phages colonize the bacterial cell and just hang out. Later, if the bacterium is threatened—by an antibiotic or a change in its environment—the temperate phage may choose to exit the cell. Its DNA takes over the genetic machinery of the bacterial cell, forcing it to make "daughter" phages instead of more bacteria. The daughter phages burst through the bacteria cell wall and destroy it. Then the daughter phages search for another more hospitable bacterial cell.

Lytic phages, on the other hand, burst the bacterial cell almost immediately. As soon as the bacterium begins to replicate, the new lytic phages take over, creating as many as 200 daughter phages that go on to new bacterial cells, injecting them with phage DNA and destroying them by lysis, too.

It's as if these bacteriophages are on a mission to control bacteria. What a marvelous process of ecological balance! It's easy to see how the right lytic phage can quickly clean up a bacterial infection with no side effects and no resistance. Virtually every strain and species of bacteria appears to be targeted by lytic bacteriophages that have evolved specifically and precisely to attack it. For example, a lytic Staph aureus phage will quickly destroy a Staph aureus bacterium but have absolutely no effect on Salmonella enteritidis.

### The Discovery of Bacteriophages

Once upon a time there were no antibiotics and people died of all kinds of infections. In the middle of World War I, many French soldiers who survived battle were killed by bacterial infection. Bacteria invaded their wounds, their food and their drinking water. In addition, the great influenza pandemic was taking its toll on soldiers and civilians. Many who survived the influenza virus succumbed to secondary bacterial respiratory infection.

Antibiotics were not discovered until the 1930s, and so doctors could only treat infected battlefield wounds by cleaning them. If that failed, limbs were amputated and often the patient died.

In 1917, Félix d'Hérelle, a Canadian-born physician working in Paris, discovered what seemed to him to be a medical miracle, a powerful substance that could wipe out bacteria. It was a microbe that attacked bacteria but not animals, humans, or plants. D'Hérelle had been investigating an outbreak of dysentery (an intestinal infection cause by shigella or parasites that results in severe diarrhea with blood and mucus in the feces) among French soldiers. He passed the stool of infected soldiers through a filter. The pores of the filter were so small that the shigella bacteria could not pass through. D'Hérelle took the clear filtered fluid and added fresh shigella and spread the mixture on petri dishes.

The shigella began to grow, but within hours he noticed clear spots in the colonies. He drew samples from the clear spots and mixed them with shigella again, producing more clear spots. He concluded that there was another microbe killing the shigella and leaving behind translucent corpses. He named these amazing microbes bacteriophages meaning "eaters of bacteria." Today they are often called phages for short.

This concept of viruses infecting bacteria was so strange and so new that many scientists couldn't believe it. A Nobel Prize-winning Belgian immunologist, Jules Bordet, became d'Hérelle's most outspoken critic after he failed to find phages on his own. Instead of using shigella, Bordet used a non-pathogenic strain of E. coli and followed the same process of filtering and introducing the fluid to fresh E. coli. (Note that reproducibility is a major principle of the scientific method.) The first batch of E. coli seemed to be immune. Bordet concluded that his failure to kill the bacteria meant that the filtered fluid did not contain bacteriophages. Instead, he theorized that the E.coli contained a protein that was toxic to other bacteria but not the ones that made it.

D'Hérelle and Bordet debated their theories for years until the 1940s, when electron microscopes became powerful enough to see viruses and provide visual proof that d'Hérelle was right. As scientists learned more about phages, it became clear that there was no single species of phage. Different phages behave differently to sabotage their hosts. D'Hérelle had discovered the vicious lytic form of phage that kills its host as it multiples. Bordet had found a more benign form known as a temperate phage.

D'Hérelle was so driven to prove his hypothesis that he even swallowed some phages to be sure they were safe. He also injected phages into his skin with no side effects. Confident that phages were safe, d'Hérelle was anxious to use them to treat sick patients. When four passengers on a French ship in the Suez Canal came down with bubonic plague, d'Hérelle gave them phages. All four recovered.

d'Hérelle's cures made him famous. American writer Sinclair Lewis made his radical research the basis of his 1925 best-selling novel, "Arrowsmith," which Hollywood made into a movie in 1931. Meanwhile, d'Hérelle developed phage-based drugs sold by a company now known as L'Oreal. His phages were used to treat skin wounds and cure intestinal infections.

By 1940, the phage craze came to an end. The idea of antibiotics was more appealing to doctors because they were artificial chemicals and not alive. Pharmaceutical companies abandoned d'Hérelle's phages and began to produce antibiotics. With the success of antibiotics, there was not much interest in investigating the expansion of phage therapy. D'Hérelle helped establish the Eliava Institute of Bacteriophage, Microbiology, and Virology, which is still functioning today in Tbilisi, Georgia. D'Hérelle died in 1949.

**Phage Therapy**

In the United States, phage therapy has not been approved for humans. This is due to insufficient research and the fact that antibiotics are readily available and cover more than one bacterium. The role of bacteriophages in human health is still not fully understood. Preliminary studies indicate that common bacteriophages are found in 62% of healthy individuals. But their prevalence was reduced by 42% in patients with ulcerative colitis, and 54% in those with Crohn's disease. This indicates that phages might be required to control the population of both normal and pathogenic bacteria in the human gut.

After antibiotics became widely available, phage therapy declined in most countries. But the former Soviet Union and some eastern European countries continued to use it to treat surgical wound infections, infected burns, and complicated wound infections. (Burns are rapidly colonized by cutaneous bacteria which can produce biofilms to protect the bacteria from antibiotics). The rise in multi-drug-resistant bacteria across the globe, though, has sparked new interest in phage therapy as a possible alternative to antibiotics, or at least as supplemental treatment for complicated infections.

**Antibiotic Versus Phage Therapy**

There are definite benefits of phage therapy over antibiotic therapy. Antibiotics are chemicals that have been created with a specific mechanism of action. The development of an antibiotic can take years. When bacteria develop resistance to an antibiotic, we are left without backup. But phages are more responsive, rapidly evolving with the bacteria. Bacteriophages can be administered locally, by cutaneous injection into a wound, and orally.

They can also be administered with antibiotics. In many documented cases, bacteriophages stimulated faster recovery and resolution of the infection. This is probably because of their ability to destroy biofilms in the wound. They can clean up wounds faster and facilitate granulation and healing without deforming scars.

Despite the promising results of phage therapy over the past 100 years, there are still no approved recommendations or therapeutic regimens for the use of bacteriophages in the U.S. Skeptics argue that even if we could design effective phage therapy, the evolution of phage-resistant bacteria would allow infections to rebound. However, advocates for phage therapy point out that phages can evolve too. As they replicate, they pick up mutations that allow them to infect resistant bacteria. And scientists can help phages improve their attack by tinkering with phage DNA.

Bacteriophages are very specific for certain strains of bacteria, but a "cocktail" or mixture of several phages, can be effective. Unlike antibiotics, there are no side effects such as the destruction of the gut microbiome.

**DYK?**

Geneticists can put genes of their own choosing into temperate phages and allow the phages to inject those genes into the host bacterium. The bacterium then takes up the substitute genes and, when stimulated by an environmental change, starts replicating them. In this way, geneticists can "manufacture" as many genes as they need. This is the basis of genetic engineering, as outlined in Michael Shnayerson and Mark J. Plotkin's book, "The Killers Within: The Deadly Rise of Drug-Resistant Bacteria."



**Use of Bacteriophages in the Food Industry**

Bacteriophages can be widely applied to the food industry. They can be used for the protection of food products at the pre- and post-harvest stage, as preservatives to extend the expiration dates of food products, and to keep the surfaces and equipment clean.

The Food and Drug Administration (FDA) has approved some mixtures of bacteriophages to help stop foodborne pathogens from growing in foods. They target salmonella, listeria, E. coli, campylobacter and pseudomonas. The phages are added to some processed foods to help prevent bacterial growth. Because of their high specificity, bacteriophages can destroy targeted foodborne pathogens without disturbing the gut microbiome in humans or the animals we choose to eat.

Phages used in agriculture should be lytic, specific, and stable in the environment. Phage therapy in livestock production involves oral administration to the animal as a probiotic or application to the animal's skin prior to slaughter as a disinfectant. Bacteriophages have also been effectively used for poultry, sheep and pigs. Studies of phage therapy on poultry has shown effectiveness against Campylobacter jejuni. Other studies have shown that phages can reduce the population of salmonella enteritica in pigs during transport and holding prior to slaughter. Bacteriophages have also been used in edible coatings on fish food.

Phages do not change the sensory properties of food products and they are resistant to the stress created during food processing. The formation of biofilms on the surfaces of equipment is one of the main problems in food production plants. Preparations are needed that will eliminate biofilms on plant tissues but are harmless to humans. Bacteriophages give hope for creating safe bio sanitizers.

There are positive and negative issues related to the use of phages in processing of dairy foods. Phages are undesirable with production of food where bacteria are used in the process. In the dairy industry, bacteriophages destroy the fermentation process by lysis of the lactic acid bacteria in starter cultures. This is a problem in cheese factories because whey separation often leads to aerosol-borne phages that can contaminate equipment. But these issues are manageable in factories that address them appropriately.

A new trend in nutrition involves the use of bacteriophages to enhance the effect of probiotics in balancing the human microbiome and also the microflora of animals. In addition, bacteriophages are used as one of the components of biosensors for the rapid detection of pathogens in food. The use of phages in foods seems to be as effective as antibiotics, but safer and more ecological.

According to the United States Department of Agriculture (USDA), the use of a phage preparation will need to be declared as an ingredient on the label of the treated meat or poultry product, e.g., "bacteriophage preparation."

**Bacteriophages for Diagnostic and Military Uses**

In 2011, the FDA cleared the first bacteriophage-based product for in vitro diagnostic use. The KeyPath MRSA/MSSA Blood Culture Test uses a cocktail of bacteriophages to detect staphylococcus aureus in positive blood cultures and determine methicillin resistance or susceptibility. The test produces results in about five hours, compared to a few days for standard microbial identification and susceptibility test methods. This was the first accelerated antibiotic-susceptibility test approved by the FDA. Government agencies in the West have been looking to the nation of Georgia and those of the former Soviet Union for help with exploiting phages to counteract bioweapons and toxins, such as anthrax and botulinum.

**Other Uses for Bacteriophages**

- Spraying plants and vegetables to protect produce from decay
- As biocides for environmental surfaces in hospitals and industrial settings
- As preventative treatment for catheters and medical devices before use in clinical settings
- Application to dry surfaces like uniforms, curtains, and even surgical suture
- As treatment for otitis media in pet dogs (and is being studied for treating otitis media in humans)
- Infusing bandages
- Used in hydrological tracing of river systems, especially where surface water and groundwater interactions occur. Now the use of phages is preferred to the conventional dye marker because phages are not as likely to be absorbed when passing through groundwater, and they can be readily detected at very low concentrations.

**Disadvantages of Phage Therapy:**

- Phages are difficult to prepare and use in humans and animals
- It can be difficult to find the exact phage needed to treat an infection
- The amount (dose) of phages that should be used is not established
- It is not known how long phage therapy may take to work
- Phages may trigger the immune system to overreact or cause imbalance

Bacteriophages are not a panacea, but they offer benefits over antibiotics due to the diversity of phage preparations and the variety in routes of administrations and treatment courses. As antibiotic resistance backs us into an even tighter corner, bacteriophages may emerge as a practical solution to complicated bacterial infections.

**Author's note:** In my research about bacteriophages, I could find no recommendations for the prevention of misuse, overuse, or abuse of these therapeutic agents. This balance technique where one microbe (virus) controls another (bacteria), works now, but maybe not forever. We must be careful lest we repeat our mistakes with the use of antibiotics and resistance. Microbes have been around longer than we have and will probably be here after we are gone. This is because they are constantly evolving to survive.

# Clinical Research

## How a Lack of Support Prevents Nurse Participation

**By Kyle Patton**

Nurses and clinical research—both bedrocks of healthcare—are on paper a match made in heaven. Nurses are at the forefront of patient care, while clinical research helps determine the effectiveness of today's medications, devices and treatments, nearly all of which come under the discerning eye of nurses. Yet, this educated and robust body of potential researchers is, arguably, stuck behind a closed door.

There are feasible solutions to this problem, but implementing them in any meaningful way relies on facing a hard truth: Most nurses don't have the support, motivation or time that clinical research requires.

The integral role patient-care nurses provide should make them a primary resource for clinical research, said Shannon Rucynski, RN, CGRN, a GI service-line coordinator at Ascension St. Elizabeth's Hospital in Menasha, Wisconsin.

"A nursing perspective is crucial in clinical research to best understand barriers to patient care and identify ways to improve so that all patients receive the best care possible in varying situations," Rucynski said. "Beyond direct patient care, there is always a need to enhance efficiency and alter workload in all clinical settings, which presents additional opportunities for research."

According to the National Institutes of Health, clinical research is a "social good" that advances the prevention, diagnosis and treatment of disease. If done ethically and to proper standards, the knowledge gained from this work is of phenomenal societal benefit.

The American Association of Colleges of Nursing considers nursing research a part of clinical research, and furthermore, a staple of professional proficiency (i.e., the more information and experience nurses gain over their career, the better they care for patients).[1] With experience comes greater expertise.

"In nursing school, students focus on foundational knowledge and clinical skills," Rucynski said. "Although we are taught about the importance of nursing research, the common goal is to become a nurse who primarily cares for patients, rather than sitting at the wayside, watching."

When a nurse's knowledge becomes segmented, or confined within a limited circle of minds, the opportunity cost for clinical research is massive. A nurse's acumen is quickened and sharpened over his or her career, which often leads to higher quality treatment and enhanced standard of care. But what would that acumen look like if shared and utilized in clinical research opportunities? And if this enormous potential pool of educated, already-in-the-field researchers is available, then what's the delay? There's no shortage of literature—speculative, editorial or academic—that raises the hinderances, obstacles and challenges.

However, there is a shortage of solutions.

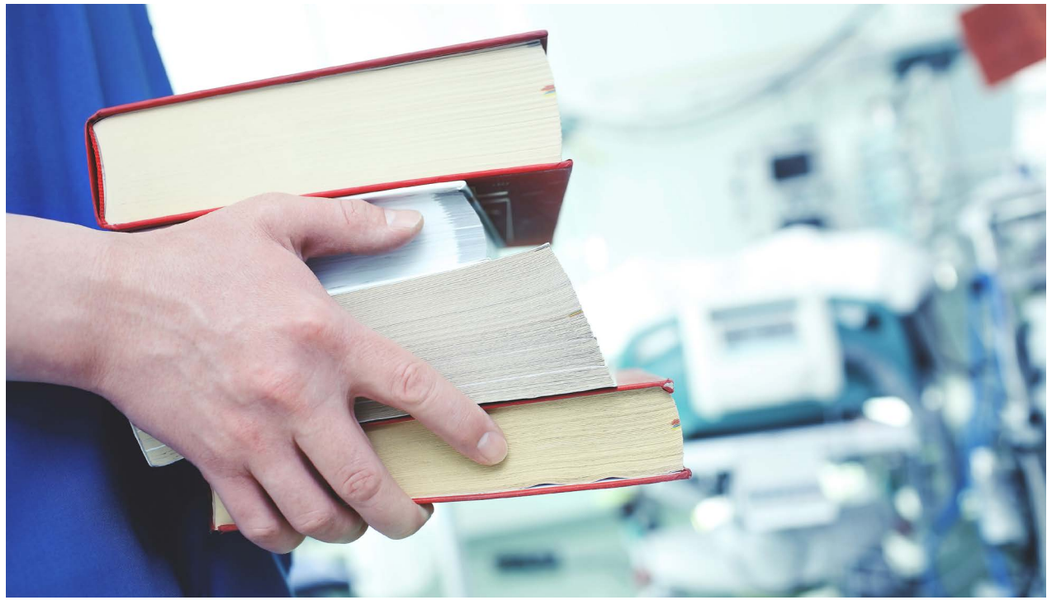
**Value**

A 2018 study from the Health Resources & Services Administration estimated that there are four million licensed registered nurses in the United States and that 80 percent of those held a nursing-related job.[5] Not every nurse is going to be interested, willing or able to participate in clinical research, but as the sheer numbers suggest, nurses provide a pool of potential researchers exponentially larger than other areas within healthcare, outside of asking patients to do the research.

Nurses are the backbone of healthcare regardless of country. In the U.S., registered nurses count for 30 percent of hospital employment.[7] In some countries it's even higher; in Malaysia, nursing positions are more than 50 percent of the total human resources within the country's healthcare system.[2]

Potential researchers are in the field, already doing the very thing that clinical research requires to be successful: interacting and observing patients.

"At the heart of patient care, nurses have the unique opportunity and responsibility to impact clinical research," said Sara L. Clark, MSN, RN. "From identifying issues and problem solving, to trialing new platforms and equipment, nurses should be involved at all levels to guide patient care and



evaluate best practice." Clark is the manager of patient care at Ascension St. Elizabeth's Hospital in Menasha, Wisconsin. "With today's ever-changing healthcare environment, one thing patients can always count on is the presence of the nurse to guide, to support, and to advocate for the patient. It only makes sense that nurses be a central part of clinical research."

**Barriers**

A 2008 feature in Gastroenterology Nursing focused on nurses' attitudes, both personally and professionally, regarding clinical research involvement.[2]

What's stopping nurses from fueling a clinical research revolution?

The answer diverges into three primary factors:

- Missing or minimal institutional support and compensation
- Interdisciplinary barriers (usually experienced as a perceived undersupply of education)
- A lack of time

A comprehensive study in 2018[8] that used an extensive questionnaire, along with a descriptive and analytical cross-section, bolstered similar conclusions. The study questioned 158 nurses at three hospitals and centered around nurse involvement and barriers to participation in research. The findings revealed a lack of cooperation from physicians and colleagues, which contributed to low motivation and interest in research participation.

Data showed that 57 percent of nurses felt there was a distinct lack of support and approval from hospital authorities, and that there was insufficient time to conduct research outside of their regular responsibilities. Twenty-two percent remained neutral on the topic, which means that nearly every four out of five nurses who did express an opinion considered the lack of time and support to be definite barriers of entry into clinical research opportunities.

Further, many nurses feared that more time conducting research would lead to less time actually fulfilling their nursing role.

"I feel there are various barriers to nursing involvement in clinical research," Clark said. "I do not want a specific job relating to research because I am not ready to leave bedside care. When you love what you do, it is hard to branch out in your career. Another barrier is finding time to dedicate to research outside of the busy workday. If more research could take place on-site, nurses could provide greater insight. It seems as though there is a separation between bedside nursing and research, as if they are two separate entities. In my ideal world they would be bridged together and take place simultaneously."

These obstacles are by no means based on proximity, but rather seem to be profession-wide. Whether you're a nurse in a major metropolitan area, or 434 miles out to sea in Maldives, the mitigators remain the same: Nurses who desire to participate in clinical research encounter the same issues.[2-4]

Another survey, that collected 1,104 responses from nurses, reflected the same general feeling, where 50.4 percent of nurses didn't want to participate in research because there was no directive to do so.[9]

If research isn't in the job description, isn't required, pulls them away from their everyday bedside patient care, and isn't paying them for their time, nurses are not likely to participate in clinical research. This pattern remains whether it's a private specialty practice or a country's government-run healthcare system, and at the foundation of the pattern is that practices, hospitals and entire healthcare systems generally don't prioritize clinical research if it is going to draw from pre-existing resources and potentially eat into the budget. On the flip side, though, are countless nurses who would leap at the opportunity to participate in clinical research.

Clark, for instance, as a nurse educator in the outpatient setting, has been able to assess numerous products and evaluate their uses and loves these kinds of opportunities.

"It is satisfying to know I play an integral part in improving product satisfaction for my team," she said. "So often, new technology and products come from some frustration experienced while providing patient care, i.e., 'there has to be a better way.'"

The collaboration with bedside knowledges and creative entities should be the core of nursing research, Clark suggests. Yet, despite having the ability to provide input, she's never had a straightforward research role in her career. For this she points to a lack of integration of nurse involvement in clinical research. In Clark's case, like many nurses, there are no research opportunities in her workplace.

**Solutions**

"Nursing programs should emphasize the importance, opportunities and excitement that accompanies clinical research to spark desire in their upcoming career," Rucynski said. She's unaware of any available clinical research opportunities in her workplace. Rucynski said she's confident that nursing research influenced much of her role as GI coordinator, but since her work isn't a part of an academic center, research opportunities are minimal.

"From scope reprocessing guidelines to ideal cecal withdrawal time, I am sure a nurse was involved in creating best practice initiatives," she said. "I hope the future of clinical research continues to embrace the nurse as an important entity as they discover more ways to enhance patient care."

One piece of literature that looked to bridge the gap between problem and solution with practical steps came in 2009 from The Journal of Continuing Education in Nursing. The study's aim was to "assist critical care nurses to innovate their professional practice by first obtaining confidence in understanding and applying research."[10]

The article's authors concluded that if nurses are going to have the confidence to participate in research and the skills to carry it out, a handful of things need to happen. Foremost, the nurse's organization, however big or small, "must have a 'learning gene' and the shared assumption that learning is a good thing, worth the investment."

However, most organizations don't foster, incentivize or

supplement a learning culture. Getting nurses into clinical research is a problem that starts at the top of an organization's leadership and agenda.

According to the study, the organizational culture that supported this "mastery experience" removed barriers by providing time, access to literature, and leadership, thereby demonstrating a belief in the application of proactive learning to solving problems.[10]

While there's some hope in results like this, there's also the obvious remaining problem. What is the solution when there's little or no internal support, mentorship, time set aside, or access to opportunity? One team of healthcare professionals faced with this problem decided to solve it themselves.

Helen Oldknow, a senior research nurse in England, helped form a team called Grounded Research in 2014, in an effort to address clinical research deficiencies.[6] Oldknow has spent nearly four decades in England's National Health Service and is currently part of Rotherham Doncaster and South Humber Foundation Trust (RDaSH). Oldknow and her team's research uncovered a dwindling number of staff and patient participants and aimed to address the problem, an initiative that went on to net the Grounded Research team a prestigious award in 2019 from Nursing Times, as well as increasing the number of research and study participants to all-time highs within the RDaSH.

along with necessary equipment, office space, IT facilities, and more. This space is a showcase for what kind of work can be accomplished if nurses are given the support and resources required to thrive in the world of clinical research.

For nurses who struggle to gain institutional support, or who know that obtaining resources such as funding is a long shot, there are still avenues of access.

"Nurses can be involved in all levels of research, from being a member of the journal club, [to] learning how to read and appraise publications," Oldknow said. "They can support approved research in their areas. They can help with identification of potential participants, to having an identified role in the study, to being the study's principal investigator who is responsible for the running of the study at site level."

For nurses interested in authorship, Oldknow suggests narrowing down the correct journal. "Often there are web pages that give you advice and often you can contact the journal's editor for support," she said. "It's also helpful to speak to nursing colleagues who have been published, for their advice. It is vital that nurses are involved in clinical research. They are the largest group in healthcare ... working across all specialisms; they have a wide range of skills and knowledge."

Whether nursing programs will alter curriculum to do more than talk about the importance of clinical research remains to be seen. And while each office, institution, or hospital is at

The blueprint Oldknow and her team created and carried out hinges on several key points. First, gaining the support of the organization's leadership team is fundamental. Without the institution's internal support, nurses struggle to gain a footing in the realm of clinical search. From there, communication and collaboration reign supreme in bringing about any successful tie to the research world.

Part of Oldknow's solution was to create a community research hub—the first of its kind in the UK—that offered advice on a variety of research design, conduct, regulation and implantation factors. The hub hosts a clinical treatment room

times a nation unto itself, there is evidence that where there's a will, there's a way.

For now, there remains a partition between nurses and clinical research. Enough literature has come out to explain the why, but the solutions, while also more or less identified, seem slow to arrive, or are altogether not coming—unless nurses force their foot in the door.

*Kyle Patton has worked as a journalist, ghost writer, researcher and editor for more than a decade, with a focus on healthcare.*

# Instructions for Use

## Why They're Important and Where to Begin

**By Julie Johnson and John Sullivan**

As the standard of care continues to change due to new guidelines urging people to begin earlier screenings for diseases such as cancer and diabetes, etc., and with more procedures moving from acute care to ambulatory surgery centers (ASCs), it is critical that surgery centers continue to follow instructions for use (IFUs).

By following IFUs, ASCs can help ensure proper cleaning of scopes, devices and equipment (such as washers, sterilizers and chemistries), putting less pressure on sterile processing departments (SPDs). Luckily, there are a variety of resources and best practices available to help ensure technicians properly reprocess these devices.

Instruments—such as forceps and retractors—are very easy to clean and sterilize, while more complex instruments—such as duodenoscopes—require more than 100 steps to effectively clean and disinfect. Following IFUs for medical devices is critical in reducing and eliminating the spread of infection in a facility. But it is also critical to follow IFUs for equipment care, chemicals for cleaning, and class-two devices, such as sterilization pouches.

As a manufacturer of sterility assurance products, the team at Crosstex was contacted by a facility that thought their sterility assurance products were failing. After investigating and reviewing the sterilized IFUs, it turned out the facility had a steam quality issue. The sterility assurance products were doing what they are supposed to do (which is to fail when one or more of the critical parameters is off). Little things like this are often overlooked when the operating rooms and emergencies are running at a high volume. Facilities must check the water quality and the sterilizer drain or the door gasket daily. Although it may seem minor, these factors are important in keeping potential infection spread under control.

The Crosstex team frequently takes calls from facilities when a reusable high-level disinfectant (HLD) is failing before the actual number of days it should fail when tested according to the IFU. In most cases, after reviewing the IFU for the equipment and conducting a service call, it is determined that the unit is failing, and not the HLD. In both above situations, poor steam quality and HLD failing early can be traced back to water and water quality as the root cause.

**Infection-Control Best Practices**

The following tips can help any facility.

**Pre-cleaning:** It is recommended to use a solution or pre-spray to keep debris from drying, as it will make cleaning that much more effective. For pre-cleaning of critical or semi-critical medical devices prior to terminal sterilization or high-level disinfection, it is recommended to wipe the instrument with a pretreated sponge or wipe. Pre-cleaning at point of use not only makes it easier to clean the instrument when it arrives in the sterile processing department, but pre-cleaning also helps to prolong the life of the instrument.

**Transport and storage:** Going to and from the surgical suite is another concern, as improper transportation of instruments can lead to damage, loss and cross-contamination. This is an

area where the IFUs can help. Most of the instrument IFUs give recommendations on transportation and storage.

**Dilution:** One of the biggest factors to watch for in the sterile processing department is that IFUs for chemicals are followed closely. Manufacturers spend countless months, sometimes years, developing products to work at a specific dilution. Doubling the concentration does not make the product work more effectively. In fact, it is the exact opposite. If an ASC over-dilutes its chemicals, a surgery center could be wasting product, time and money and get incorrect results. On the other hand, under-diluted chemicals can create a high risk of fume injury and/or chemical burns, as well as potentially damaging the instruments. Even for manual cleaning, it is recommended to use a measuring device to achieve the proper dilution. Most chemical manufacturers will provide them.

**Inspection:** One of the steps that cannot be shortened when it comes to reprocessing reusable devices is the proper inspection of all instruments and scopes. This includes proper inspection and cleaning, including hinges and serrated parts of instruments. An important section that should not be overlooked in the IFU is the proper method for drying and storing instruments. When under time constraints, nurses and technicians can often miss these critical steps.

**Sterilization pouching:** Facilities will need to follow the IFUs closely for sterilization pouching. Some departments prefer to double pouch because of the added benefit it gives of keeping that instrument sterile right up to the point of use. Not all pouch manufacturers have gone through the process of validating their product for this practice. The sterile processing department needs to make sure that the proper steps are followed to ensure sterilization. If double pouching is permitted in your facility, pouches must be placed plastic-to-plastic for complete visibility, without any folds, to achieve proper sterilization.

**Loading pouches:** Be careful when loading pouches onto the sterilization cart and into the sterilizer. Placing the pouch on its side, allows the sterilant to enter and exit the pouch from the paper side. Laying a pouch flat will hinder the process. There are holders designed to allow this. When putting instruments into a pouch, ensure that the instrument or device has enough room. The pouch will expand and contract during processing, so make sure there is enough room to avoid punctures, rips or seal breaks.

**Where to Begin:**

Talk to your distributor or manufacturer representative for access to IFUs for sterility assurance, device, and cleaning products. Distributors can also provide education on how to help improve decontamination and workflow challenges, as well as arrange on-site or virtual trainings. In advance of a visit by the Joint Commission on Accreditation of Health Organization, field consultants can help arrange mock audits.

For all these reasons, it's important to have a representative you can rely on to help you deliver the best-quality patient care while ensuring your facility has the proper infection prevention protocols.

A great resource is OneSOURCE, a searchable database where facilities can retrieve and store IFUs for its devices and equipment service manuals. OneSOURCE is also a way to store IFUs for surgical implants. The Food and Drug Administration is another credible source for information, not only for IFUs, but also for manufacturer recalls. You can search by name at accessdata.fda.gov.

Another fantastic resource is the International Association of Healthcare Central Service Materiel Management (IAHCSMM), a national organization that provides education and certification in sterile processing. One of the biggest concerns today is inadequately trained staff, and in many cases your local IAHCSMM contact can help with providing the training needed.

Also, check out the Association of Perioperative Registered Nurses (AORN), which has great tips on the proper way to don and doff personal protective equipment.

The Association for the Advancement of Medical Instrumentation (AAMI) is a go-to resource for best practices in sterile processing. The AAMI ST79 is the comprehensive guide to steam sterilization and sterility assurance in healthcare facilities. This document, which is updated frequently, is the most complete document when it comes to running your SPD.

And remember, the first step in any sterile processing department is to use quality personal protective equipment and to follow the IFUs.

Facilities are busier than ever, which means it's especially important to ask sterilizer product suppliers any questions that arise. A healthcare team should be able to reach out to trusted partners to gather information and/or help take care of the concern they are having. As the liaison between the customer and manufacturer, this team should help healthcare practitioners connect the dots so they do not have to search around for answers themselves. As their trusted advisor, the specialists can also save them time so practitioners can focus on what matters most: the patient.

*Julie Johnson manages the surgical market development for new products and solutions for Henry Schein's ambulatory surgery center and oral surgery businesses. Johnson has a diverse background in account and product management in both the acute and non-acute space, including medical devices. She previously held positions in operations management, new product launch development (sales acquisitions), and business transformation. Johnson is focused on bringing new and innovative products to the surgical market through distribution.*

*John Sullivan is the director of sales for the Alternate Care Division at Crosstex (a member of the Hu-Friedy Group and now part of STERIS). Sullivan began his career as the healthcare channel manager for Reckitt Benckiser, the creator of Lysol, and he has been involved in sterility assurance for more than 20 years. His sales teams are all certified central service vendor partner (CCSVP) certified and work directly with facilities to ensure safe and healthy environments.*

# All Stars

## It's your time to shine!

## Borland Groover

### A Team that Dances Together

**By Lori Millward, RN, BSN, CGRN**

As one of Florida's largest gastroenterology practices, Borland Groover has many specialists, locations, and hospital partnerships. In addition, we have multi-center offices at several hospitals in multiple counties. Borland Groover has its own infusion center and departments for MRI/CT/US, research, pathology, and anesthesia. We perform colonoscopies, panendoscopy, small-bowel capsule procedures, endoscopic EUS, hydrogen breath testing, enteroscopy, and advanced gastroenterology procedures.

The facility I work in is the Jacksonville Center for Endoscopy, in Jacksonville, Florida. On our team there is a dance between the nurses, from pre-op to recovery. We check on each other and support each other during trying times. We perform between 95–140 procedures daily, which requires a lot of coordination. We have eight admission bays and seven endoscopy suites along with multiple recovery bays. There are two scope reprocessing rooms in the center to facilitate prompt high-level scope disinfection.

We must ensure that everyone knows what they are doing and what is going on in the unit, otherwise the excellent care we provide would not be possible. During peak times in our center, we have one to two nurses in the recovery room in addition to the PACU nurses discharging patients, stocking supplies, processing pathology and doing anything necessary to keep our space functional.

We try to inspire our team members to be their best, take on challenges, get certified, continue their education and elevate their craft. We should all be open to learning new things and meeting challenges as they arise. I'm proud to say that our team meets these expectations.

An important intervention that Borland Groover does is to have registered nurses call every patient the day after their procedure. This is to ensure that patients understand their instructions, and so they can share questions and concerns. Afterward, specific questions and needs are communicated to the doctors and their assisting nurses/medical assistants. Our patient surveys demonstrate a very high level of satisfaction, largely because our staff members listen to patient feedback and incorporate it into our acumen. We treat our patients the way we treat our family. Every patient is important and has a voice.

Several of our nurses are certified registered gastroenterology nurses, which provides a layer of confidence and excellence in GI care and knowledge. Our physicians prefer that we obtain our certification. Borland Groover pays for the books and the certification test and passing comes with a raise and recognition. Additionally, one of our doctors, Dr. Ali Lankarani, hosts what he calls the "Gut Club." This includes dinner with colleagues where participants receive education along with CEUs/CMEs on topics related to gastroenterology. This is free for nurses, technicians, and doctors. Additionally, this same doctor pays for the Society of Gastroenterology Nurses and Associates (SGNA) membership for all qualifying staff members. I cannot think of anywhere I have worked where this is so easily accessible and open.

Education is crucial, but fun is important too. The team frequently meets after work and hangs out to decompress and share a meal. For special occasions (or just because) we organize potluck meals and celebrate holidays together. Basically, we love to eat! We even have our own Facebook page where we post schedules, events, and funny

things—especially with regard to poop! We laugh a lot and don't take ourselves too seriously. I love being a GI nurse. Guts and butts to the end! I like to make nicknames for the nurses such as "sisters of the scope" or "brethren of the butt."

There are certainly challenging times though, especially with our high caseload. Lunches might have to be delayed due to difficult cases, and of course with COVID-19 there's a whole other layer of stress. Some of our nurses are in school and there are other scheduling conflicts that arise. However, the team bands together by working late or coming in early to support the clinic and each other.


One of our wonderful doctors, Dr. Bharat Misra, also thinks highly of our staff. "This is a busy ambulatory surgical center which is the pride and joy of Borland Groover Clinic, a 70-plus physician single-specialty gastroenterology group in northeast Florida," Misra said. "We do upwards of 120 cases a day, five to six days a week. Despite the high volume, every patient is made to feel special, largely because of the personal attention of the check-in staff, the nurses, the scope techs and others. They work smoothly as a team."

Whenever any staff member needs additional help—for example in starting an IV, transporting a patient, or for a difficult procedure—he or she immediately gets that assistance, usually with a smile, Dr. Misra said.

"My patients, who have had a procedure at our center, will then refuse to go any other place for their procedure even if they have to pay higher copayments and deductibles," he added. "Recently the retired CEO of a local hospital paid a much higher deductible out of his own pocket so he could have the procedure done at our center—an ultimate compliment to our staff!"

*Lori Millward, RN, BSN, CGRN is a registered nurse at the Jacksonville Center for Endoscopy.*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