

# Surgical Instrumentation: Eliminating Chaos

The Complex Process of Surgical Instrument Maintenance  
and Improving the Healthcare Environment

# Knowledge of Surgical Instrument Procedures

Individuals considering or in need of surgery, regardless of procedure type, often ask which surgeon, hospital, or method is the best to ensure the greatest results; but do they ever consider the other associated risks:

- Who has the best surgical instruments?
- Who has the best cleaning process?
- Who is responsible for the patient outcome?

In light of the complexity of surgical instrument maintenance, we present a primer on why these are also important questions, and outline the steps to enhance patient and physician satisfaction.

# Chaos in Healthcare:

*A crisis in healthcare already exists (e.g. access, payment, quality and delivery).*

The U.S. hospital system is in a state of transition. Hospitals face daunting challenges; such as evolving technologies, reimbursement policies, demographic trends, competing fiscal demands and a growing workforce shortage.

Reconsideration of hospital design and workflow processes holds great potential to improve the efficiency and effectiveness of care delivery in the foreseeable future.

Bold changes in the hospital work environment are imperative to ensure sustainability and affordability in the American healthcare delivery system.

Sterile processing personnel have a direct impact on patient safety, infection control and optimal procedure outcomes. Maximizing the efficiency and effectiveness of these professionals is essential to the integrity of hospital surgical functionality and the promotion of quality patient care.

# Chaos Scenarios:

*With even the simplest procedures, a reactive instrument-management plan can severely impact a patient's experience and subsequent quality of life.*

**Scenario 1:** A patient is scheduled for a procedure that requires anesthesia. This procedure will provide the tissue biopsy that the laboratory will use to determine the presence of cancer. The patient is in pre-op holding. Ten minutes before the patient is to arrive in the operating room, the circulating nurse receives a call from the sterile processing department reporting that the instruments for the case are not ready due to "technical difficulties."

In other words, instruments are not in full functional order and are being pieced together at the last moment. The patient and the family anxiously wait. The physician is frustrated. And the hospital is losing money from inefficient OR usage.

**Scenario 2:** The instruments are delivered to the operating room and prepared for the procedure. However, as the surgery begins, the surgeon asks for a pair of scissors to dissect and excise the suspicious tissue from the patient's body only to find that the scissors are dull. She now must ask for another pair. This unexpected need leaves the patient under anesthesia longer than necessary as new equipment is found, prepped and brought to the operating room.



# Eliminating Chaos

Clinical professionals working in the sterile processing department have a direct impact on the quality of life of both patients and physicians. The instrumentation that is reprocessed must be clean, decontaminated and sterilized before it can be used on the next patient.

The way surgical instruments are maintained, cleaned, inspected and packaged for use can have a profound impact on the outcome of any patient procedure and physician satisfaction.

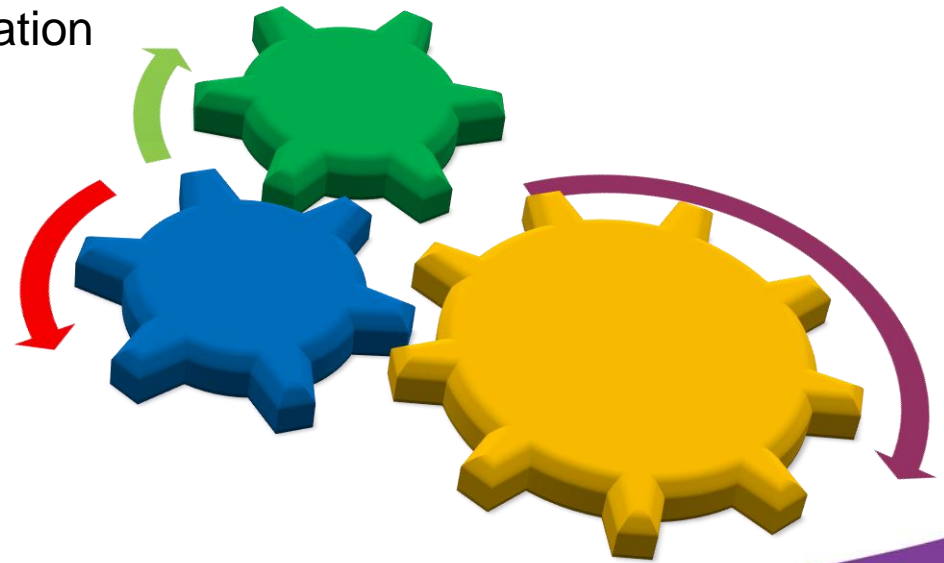
To ensure the positive outcome of a surgical procedure where these instruments are being used, a healthcare organization should implement preventative maintenance and instrument management programs for their surgical instrumentation. This will help safeguard monetary investments and more importantly, patients' safety.

# Surgical Instrument Reprocessing

There are a number of critical factors required in the care and handling of surgical instrumentation from use to storage. A healthcare leadership team must practice due diligence to ensure that their staff follows the appropriate protocols and steps needed to stay current with industry and manufacturing standards and eliminate chaos:

## Steps Needed in Optimal Surgical Instrument Reprocessing Cycle:

- Sorting at Point of Use: Operating/Procedure Room
- Transportation of Contaminated Instruments
- Cleaning and Decontamination
- Assembly and Inspection of Instrumentation
- Packaging of Instrumentation
- Sterilization
- Storage



# Sorting at Point of Use

Once the surgical procedure is complete, it is important to replace or ‘*sort*’ the used or contaminated instruments, placing them back in their original set, container or tray for transport to the decontamination area.

## Steps Involved during Sorting at Point of Use:

***When sorting, it is important to remove as much bio-burden as possible***

- *First and foremost, following the manufacturer’s direction for use, care and handling is paramount to properly processing the instrumentation. Mixed instruments that are not accurately sorted at the point of use can delay the cleaning and decontamination process.*
- Upon completion of procedure, use surgical towels, where available, soaked in sterile water to wrap and separate soiled instruments before placing them in their original sets
- Use enzymatic foam sprays on soiled instruments to prompt the breakdown of blood and body fluids

**Special Consideration:** Containing instruments in their original and secure trays is significant to clinician, patient and general public safety, as cross contamination and inadvertent exposure to bio burden can occur if the instruments are not in a closed container during transport.

# Transportation of Contaminated Instruments



Once the instrumentation has been properly sorted and replaced in appropriate covered containers, they must be transported to the decontamination department.

**Special Consideration:** During transport, it is crucial that instrumentation and equipment is contained in a way that protects staff, patient and general public from inadvertent exposure to bio burden.

## **Steps Involved for Transportation:**

- Secure instruments in appropriate transport containers at point of use (OR suite)
- Ensure container is sealed or closed in a way that prevents exposure to contents
- Transport containers IMMEDIATELY in a closed cart or in an open cart that is completely covered to designated decontamination area/department
- If moving from one floor to another, transport in service elevators that are not for public use
- NEVER let the cart out of your sight!



# Cleaning and Decontamination

Quite possibly the most critical step in patient safety and infection control is the cleaning and decontamination of surgical instruments and equipment.

**Caution:** *All instrumentation received in the decontamination department poses a threat of exposure to pathogenic microorganisms...You MUST ensure appropriate personal protective equipment is used before entering the decontamination area.*

## Basic Steps Involved for Cleaning and Decontamination:

- Prepare sink basin(for hand wash and prep)with enzymatic and water solution
- Sort and identify complex and lumened instruments to be soaked in enzymatic solution
- Disassemble all instruments completely!
- Brush, flush and rinse complex and lumened instruments thoroughly
- Place all instruments back in original sets in fully opened position
- Send instruments through automated thermal washer per manufacturers recommendations

# Assembly and Inspection of Instrumentation

***Once the instrumentation has been properly cleaned and decontaminated, they must be inspected and assembled***

***Dedicated Standard of Practice:*** *Should any improperly decontaminated instruments/sets be discovered in the clean assembly area, they MUST be sent back to the decontamination area for reprocessing.*

## **Steps Involved for Assembly and Inspection:**

- Set up work area to include testing media for all instrument types
- Log in to instrument tracking system, if applicable, and print associated instrument count sheet
- Sort and account for proper numbers of instruments in set. Replace ALL missing instruments
- Test functionality of all instruments using the appropriate testing media
- Reassemble instruments in set using caution and following account/manufacturers guidelines

***Special Note:*** *It is important that the instruments are serviced, repaired and maintained by a competent repair technician in order to ensure they're functioning in 'like new' condition and to minimize unnecessary repair or replacement costs.*

# Packaging of Instrumentation

***Packaging of surgical instruments and equipment is a process that must be conducted with precision and consistency. If not, packaged instruments may not be sterilized properly, increasing the likelihood of cross contamination and patient infection.***

There are a number of ways to package instruments for sterilization from rigid container and sterilization pouches to non-woven wraps. We will review the basic steps that apply to all of them...

## Steps Involved for Packaging:

- Choose appropriate packaging per manufacturers recommendations
- Ensure packaging is intact, dry, clean and in full serviceable condition
- Instruments and sets **MUST** be dry before wrapping
- Ensure you use the appropriate wrap for the instruments and sterilization process
- **CRITICAL STEP:** Make absolutely certain you include a process indicator in the packaging!
- Make sure the indicator is placed in the packaging in a way that challenges the sterilization processes efficacy
- Once properly wrapped, seal where appropriate and mark the contents clearly per standard

# Sterilization

*The next step in processing surgical instruments and equipment is sterilization. There are many types of processes, but they all have one focus; making the instruments safe for aseptic presentation to the surgical field and most importantly, for use on the patient during a sterile procedure.*

## Steps Involved for Sterilization:

- Identify and verify the process matches the instruments and the packaging
- Inspect packaging integrity to see that all is clean, dry, intact and properly sealed
- Document all pertinent information regarding the sterilization event:
  - *Was sterilization unit efficacy testing conducted/documented per policy and did it pass?*
  - *Sterilization date*
  - *Sterilizer number/unit*
  - *Load number*
  - *Data regarding any biological testing for specific load*
  - *All items in load are clearly 'stickered' with the above information*

**Critical Step:** Upon completion of sterilization cycle, make certain the associated parameters for sterilization were met for the load. Just as important: Inspect all items post-sterilization for defects or changes in packaging integrity.

# Storage

*The final step in processing surgical instruments and equipment is storage. Many factors are to be taken into consideration when storing items that have been sterilized. Environmental controls, storage area, traffic flow of staff, and inventory control are some of the critical concerns.*

## **Steps Involved for Storage:**

- Track all instruments and sets, coming and going
- Carefully stock and re-stock all items in specialty-specific designated areas
- Use extreme caution when handling items to ensure package integrity is not compromised
- Place heavy, non-woven wrapped items, Ortho sets, etc. on plastic trays before placing on shelves
- Check items adjacent to the one you are either replacing or pulling for a case for package integrity. This includes checking for broken tamper-proof seals, proper content labels and that the external indicators show that the item has been exposed to a sterilization process

***CRITICAL NOTE:** If you think a packaged item's integrity has been compromised, re-process it!  
AKA: Event Related Sterilization*

# How can healthcare workers verify that instruments have been reprocessed correctly?

It is important that the staff members are able to identify that containerized, wrapped or packaged instruments have been exposed to the appropriate sterilization process and that this process is verified by sterility assurance devices.

Examples of this include external indicators such as sterilization packaging tape, tamper proof seals/locks and internal devices such as chemical indicators/integrators. Next, the integrity of the pack, wrap or container must be carefully examined to ensure it is intact and shows no signs of compromise.

Finally, a thorough knowledge of the instrumentation is also critical to identifying properly reprocessed instruments. Those who handle the instruments in the surgical suite or procedure room must be well trained in identifying proper functionality and handling of the instrumentation. Visual checks for signs of wear, damage and cleanliness are crucial to patient safety and the control of surgical site and hospital acquired infections.

# Enhancing Healthcare Environment

The probability of the previous chaos scenarios occurring in a facility using a qualified repair company or instrument management vendor that provides a surgical instrument maintenance program is dramatically reduced. Odds are, the procedure will go on as planned with no delays related to instrumentation. To best uphold commitments to support patients' quality of life, the healthcare leadership team and its surgical maintenance company must remain *proactive* in the care of surgical instrumentation.

A model for change, especially in surgical instrument maintenance, must be embraced by the customer, regulating bodies, manufacturing and vendors – at all levels. This change in behavior and culture will empower and forge the future of successful healthcare delivery.

## What does that mean?

- Greater Patient Outcomes
- Competitive Advantages
- Greater Openness for Improvements and Change
- Increased Physician and Healthcare Organization Trust

# Enhancing Healthcare Environment-Cont'd

All too often, sterile processing departments run in a state of reactivity. In many cases, the instruments must be completely replaced rather than repaired because of the lack of proper maintenance.

Choosing a company to handle surgical instrument reprocessing or instrument management is a decision that impacts the work flow of an entire operating facility, as well as the patient experience. As such, when deciding on who and what company should be responsible for that part of an organic, efficient, and successful organization, one should consider the following:

- Does this repair company have a dedicated repair facility where the more complex repairs and instrument evaluations can be conducted?
- Do they provide not only a written detail of the inspection and repair, but a customer friendly reporting system that allows for immediate review of current, pending and previous repair activity?
- Do they utilize up to date technology in their on-site repair vans to examine and diagnose instrument problems?



## Thank you for reading about: Surgical Instrumentation and Eliminating Chaos in the Healthcare Environment

PREZIO Health and our employees are committed to solving complex problems in the perioperative environment by reducing those variables that negatively impact patient care. Let us help you chart a course to improve your clinical, financial and operational outcomes.

### PREZIO HEALTH'S CORE BUSINESS SEGMENTS INCLUDE:

- Perioperative Optimization
- Surgical Instrument Management
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- Surgical Instrument Maintenance and Repair Services
- Education and Training

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