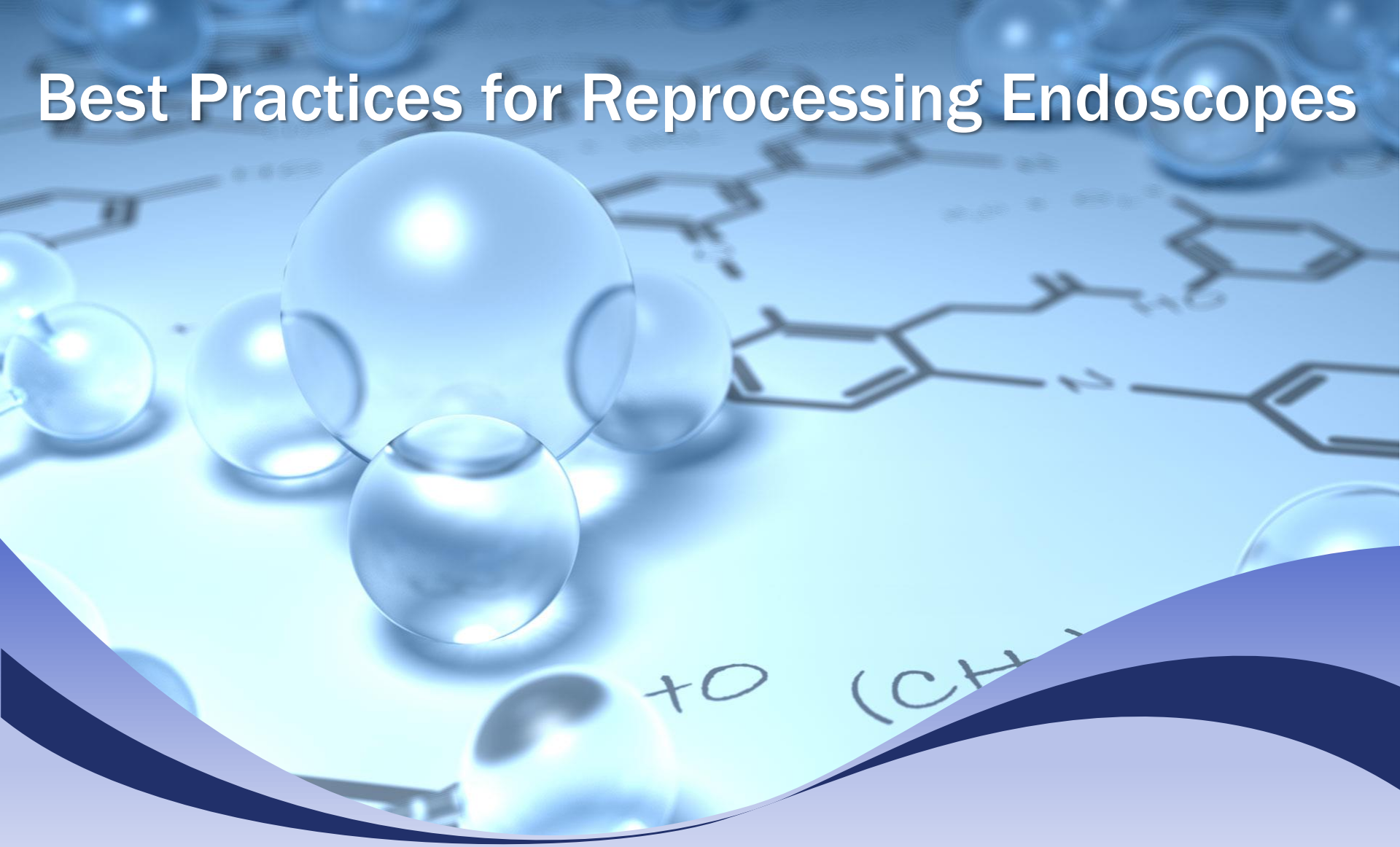
Best Practices for Reprocessing Endoscopes



Vantage
ENDOSCOPY

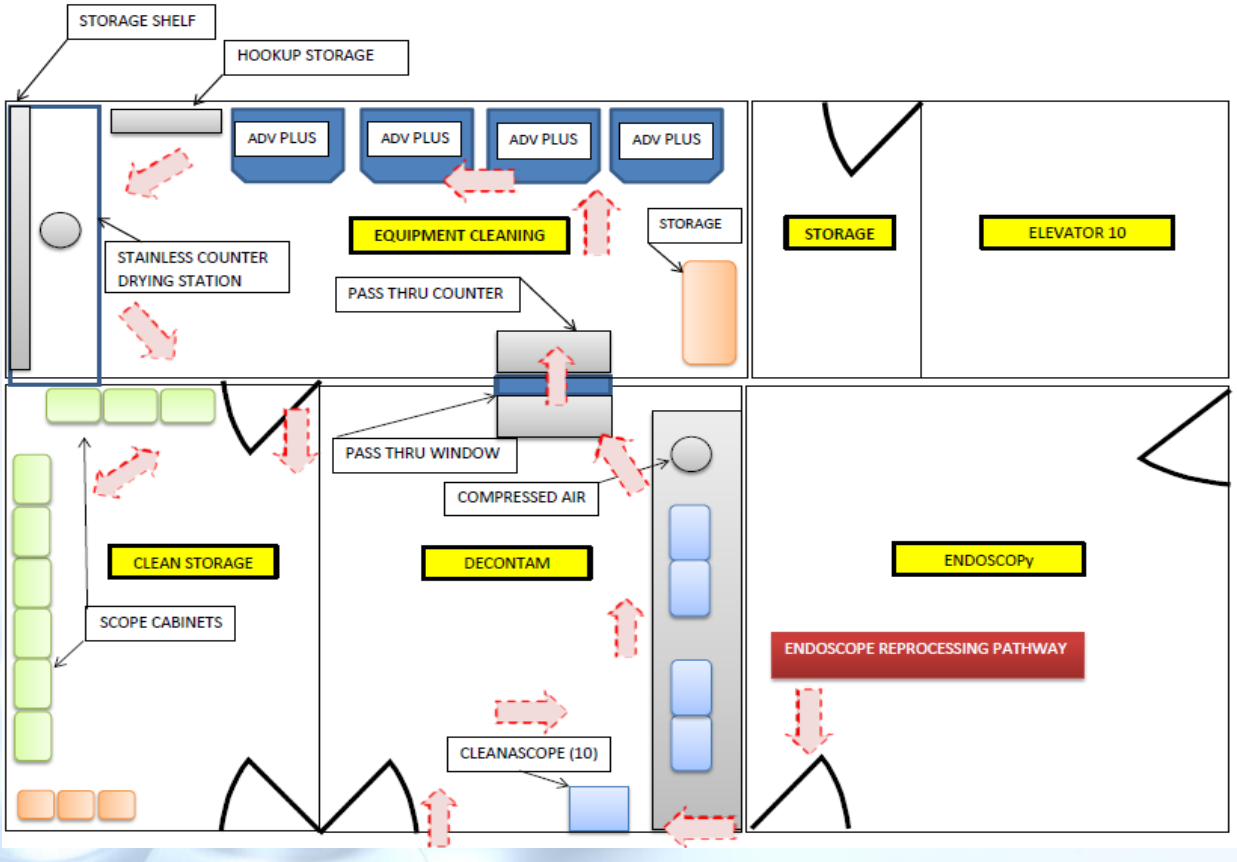
Reprocessing of Endoscopes

Reprocessing Room Standards

The resources referenced include:

- Canadian Standards Association
- Provincial Infectious Disease Advisory Committee (PIDAC)
- Healthcare Infection Control Practices Advisory Committee
- Association for the Advancement of Medical Instrumentation (AAMI)

Reprocessing of Endoscopes



Reprocessing of Endoscopes

Room Standards Highlights

Work Areas and Equipment – goal to minimize bio burden and particulate contamination

- Restricted access between clean & dirty areas
- One-way workflow
- Negative air exchange in dirty area vs. clean area
- Storage of Personal Protective Equipment
- Transportation system for endoscopes
- Storage of clean supplies
- Task lighting (review of distal end of endoscopes where required)
- Work surfaces designed to be storage free & tolerate regular cleaning with disinfectant agents
- 10-12 air exchanges per hour

Reprocessing of Endoscopes

Room Standards Highlights

Reprocessing of contaminated patient equipment should be done in an area designated and dedicated for this function

Reprocessing room separate from where endoscopic procedures are performed

Water that has been filtered through a 0.2micron filter or equivalent quality (Distilled, Reverse Osmosis)

Drying of endoscopes via forced medical grade air

Storage of endoscopes in a ventilated cabinet in an area outside of the reprocessing room

Accessories which are classified as critical devices require sterilization

Critical items labeled for single-use are not reprocessed and / or reused

Tools Required for Reprocessing

Personal Protective Equipment

Gowns – impervious to fluid, long sleeves that fit snugly around the wrist

Gloves –long enough to extend up the arm to protect the forearm or clothing from splashes or seepage

Eye and / or face protection - face shield is recommended

Foot covers – especially in decontamination department

Infection Prevention and Control

Routine infection prevention and control practices within GI endoscopy:

The approach to infection control in which all human blood and body fluids are treated as if known to be infectious

All medical devices received for reprocessing are considered potentially infectious

Key Points

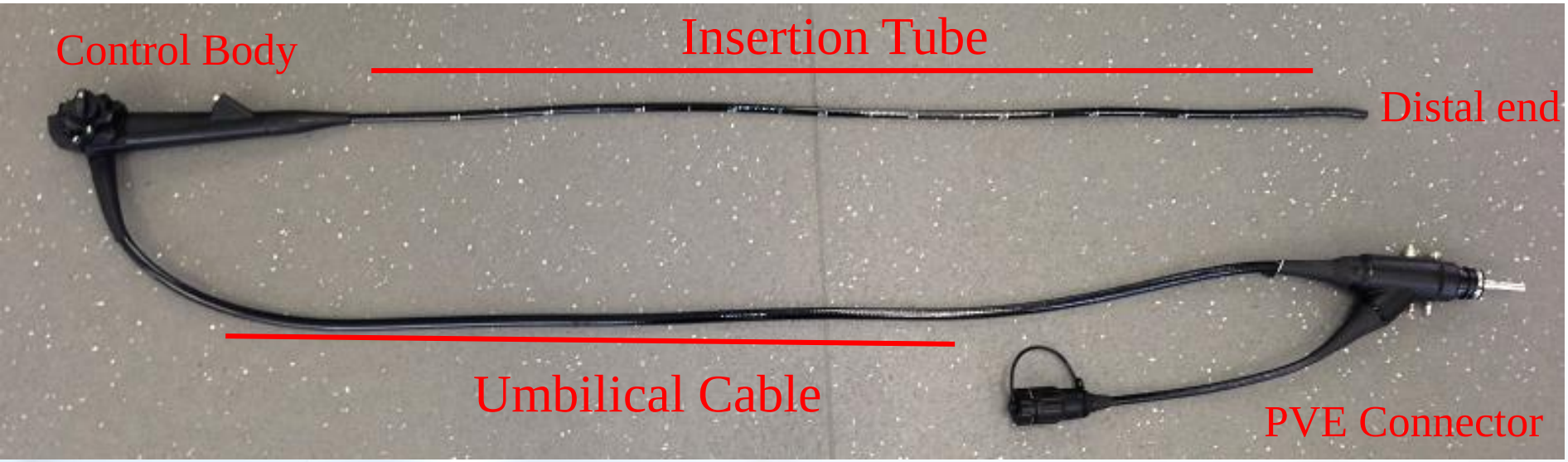
Follow the Manufacturers Instructions for Cleaning

Following the Canadian Standards for Reprocessing Medical Devices

Ensure that you are using your chemistry and equipment properly

Keep documentation of endoscope reprocessing

Endoscope Anatomy



Reprocessing of Flexible Endoscopes Step By Step

Step 1: Bedside Cleaning

Immediately after the procedure, the endoscope will undergo a pre-clean.

1. All debris is wiped from the insertion tube with a cloth or sponge that is moistened with enzymatic detergent

Step 1: Bedside Cleaning

2. The distal end of the endoscope is placed into into the enzymatic detergent

The suction button is pressed, and enzymatic is suctioned through the channel for 5-10 seconds/ 300-500cc

Step 1: Bedside Cleaning

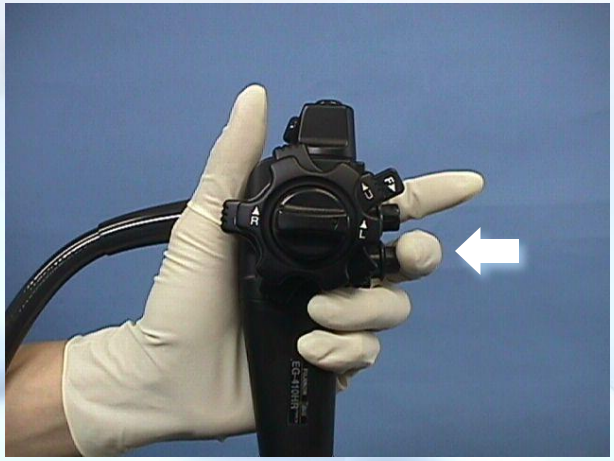
3. The air function is tested

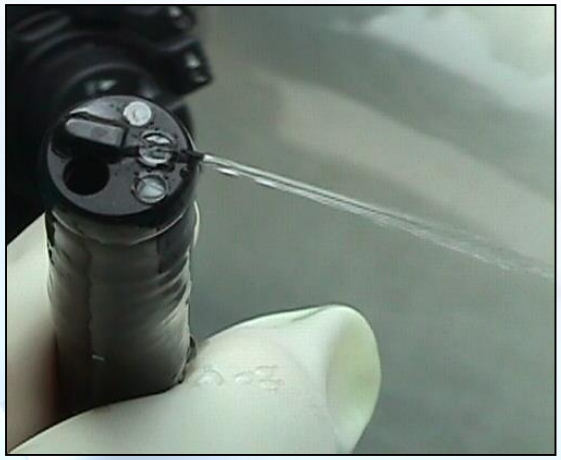
- The distal end of the endoscope is placed in water
- Placing your finger over the air/water (blue) button.
- You are looking for vigorous bubbles

Step 1: Bedside Cleaning

4. The water function is tested

- Depress the air/water button (blue)
- Look for a steady stream of water





Step 2: Transportation to Decontam

1. The endoscope is detached from the light source
2. If applicable, cover the PVE connector with a cap
3. Place in a covered container that is indicated at contaminated, and transport to reprocessing room

Biofilm

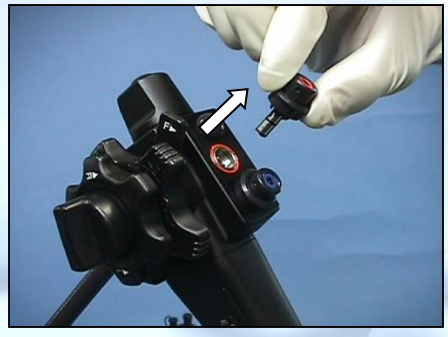
CSA standards outline that scopes shall be placed in an automated endoscope reprocessor within 1 hour post procedure. This is to prevent the formation of biofilm

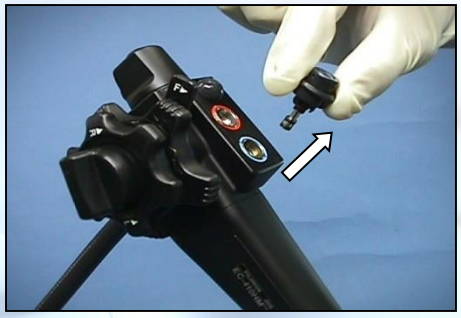
- A **biofilm** is a structured community of microorganisms encapsulated within a self-developed polymeric matrix and adherent to a living or inert surface.
- Formation of a biofilm begins with the attachment of free-floating microorganisms to a surface
- If the colonists are not immediately separated from the surface, they can anchor themselves more permanently using cell adhesion

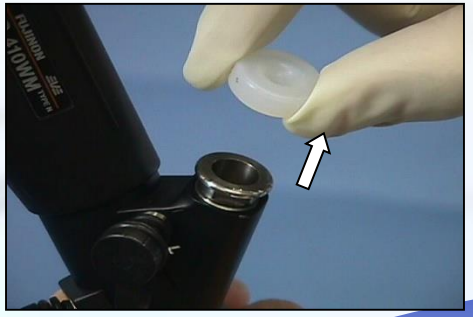
Step 3: Manual Reprocessing

1. Remove Accessories from Endoscope

- Remove Suction Button
- Air/Water Button
- Biopsy Valve







Step 3: Manual Reprocessing

2. Perform Dry Leak Test

- Attach leak tester (manual or automatic)

- Pump the handle bulb to pressurize the internal channels of the scope (Flex the distal end with the angulation knobs)

***DO NOT IMMERSE the scope if the gauge indicator does not remain in the *marked zone* -Send scope for repair

Step 3: Manual Reprocessing

3. Perform Wet Leak Test

•After determining the absence of any major leak in Stage 1 testing, immerse the entire scope in the clean water.

•Only the leakage tester connector and a small portion of its tubing should be immersed. NEVER immerse the entire leakage tester.

Step 3: Manual Reprocessing

3. Perform Wet Leak Test – Continued

•Be sure that no continuous bubbling is observed from a given area.

If a continuous stream of bubbles is observed from the same spot, a leak is indicated. Remove scope from water- send for repair*

Lift light guide out of water → Release pressure → Disconnect leak tester

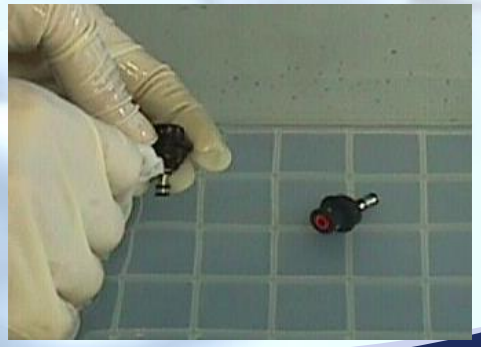
Step 3: Manual Reprocessing

4. Wash the Endoscope

- Add enzymatic to water
- Clean the outside of the endoscope with a lint free cloth

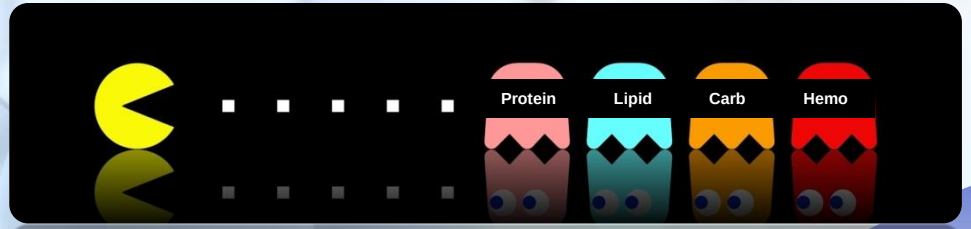
  *Paying special attention to the distal end, bioburden tends to coagulate there
- Using a brush, clean the valves, in the enzymatic solution

  - Be sure to depress the buttons to clean the spring



Enzymatics, Enzymatic Detergents & Detergents

- Class of proteins that catalyze chemical reactions to bring soil and water together during the cleaning process without being destroyed during the process
- Enzymes accelerate a chemical reaction without being consumed by the reaction
- Enzymes break down large, hard to remove materials into smaller, more easy to remove fragments
- Each enzyme targets a certain type of compound



Step 3: Manual Reprocessing

4. Brush the Internal Lumens of the Scope

•Short brush air/water, biopsy and irrigation channe

•Clean debris off the brush after each insertion

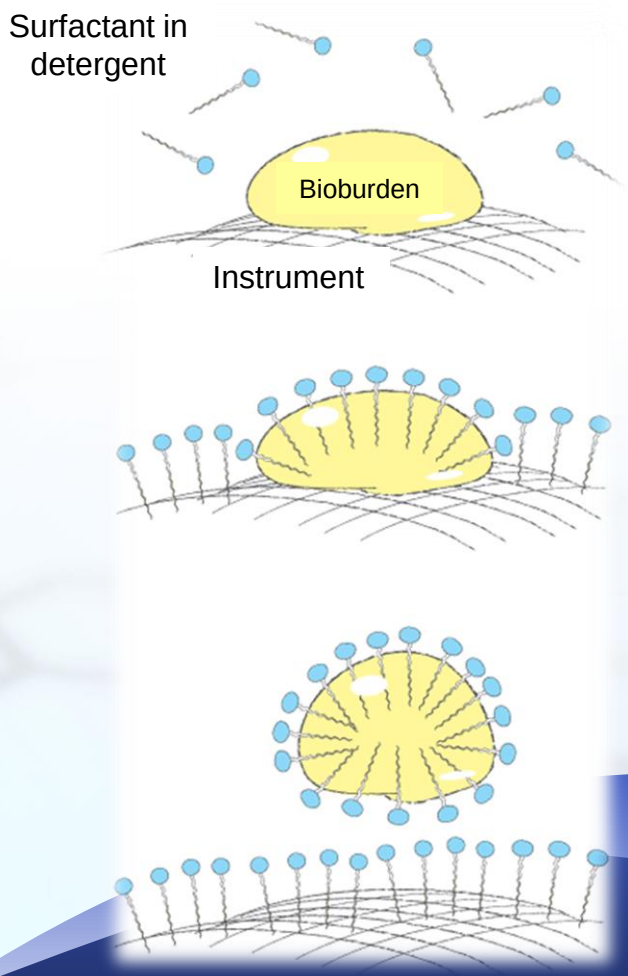
* Three times each or until clean

How do Enzymatic Detergents Work?

Enzymatic Detergents act by reducing the cohesive force within the soil itself

Detergent portion lifts and surrounds fine particles which are mechanically removed (rinsed away)

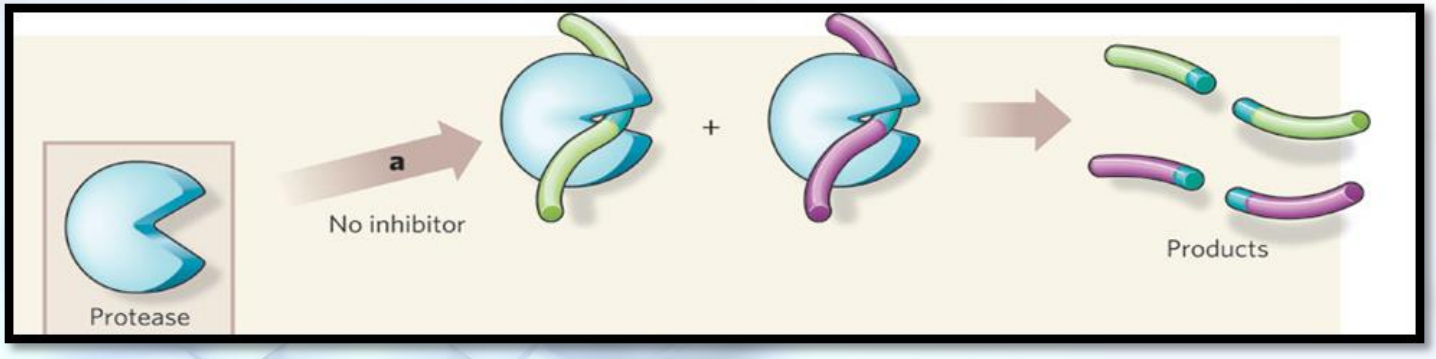
It is the mechanical action (washing, brushing, flushing) in combination with the enzymatic detergent action that is key for removing bioburden during the cleaning process



How do Enzymatic Detergents Work?

Enzymes act like a pair of scissors “cutting off” soils piece by piece

Enzymes target the type of soil which makes it key to choose formulation of product appropriately for the intended use



Reprocessing of Endoscopes

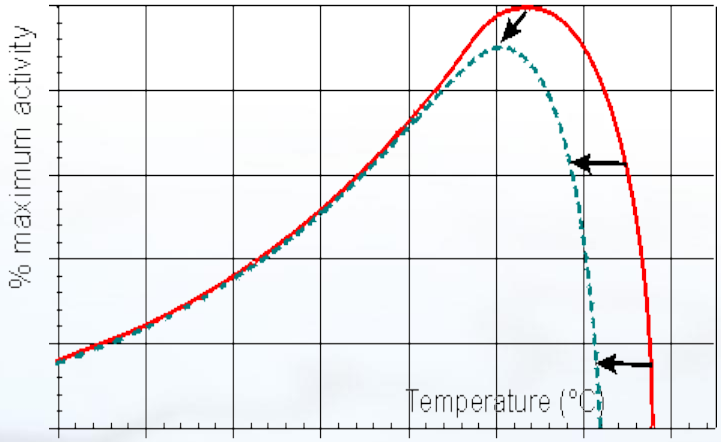
Enzymes have an optimal temperature where they work best

Lower temperatures do not “denature” the enzyme, however it will slow it down

Temperatures that are too high will disable the catalytic activity

All temperatures on the manufacturers directions for use must be strictly adhered

There are specific contact times for each product that must be observed



A schematic diagram showing the effect of the temperature on the activity on an enzyme catalyzed reaction

Step 3: Manual Reprocessing

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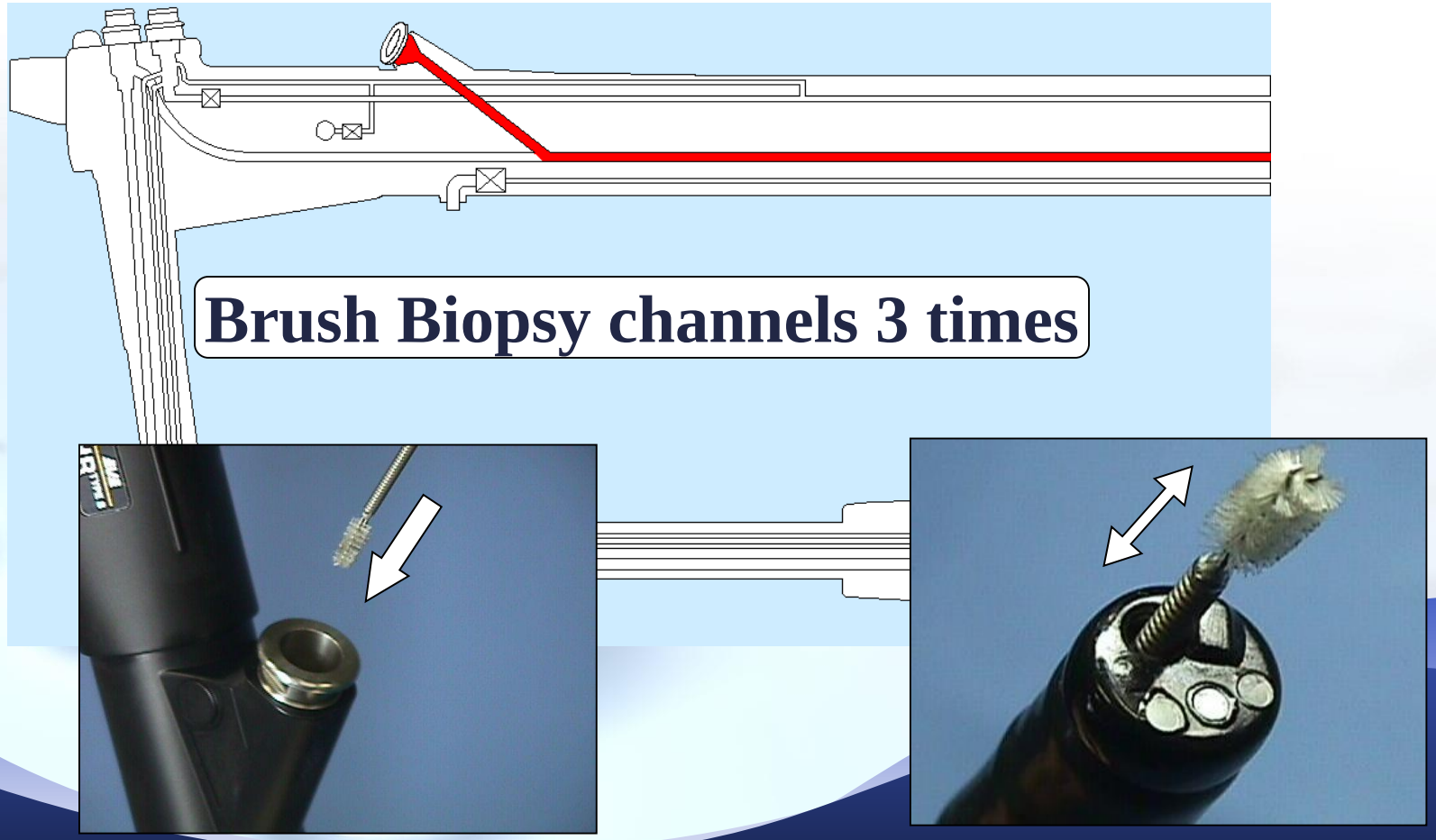

Step 3: Manual Reprocessing

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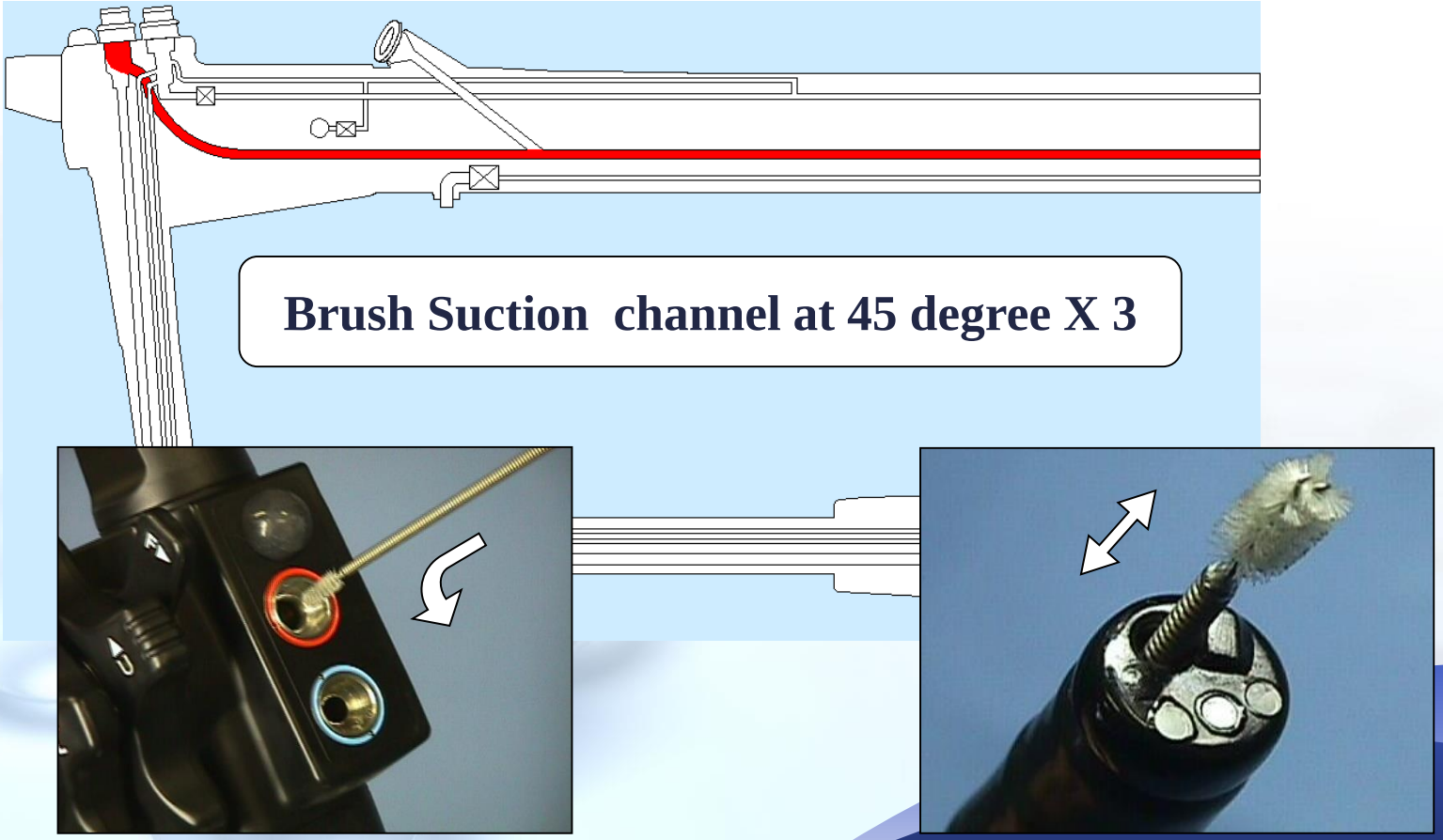

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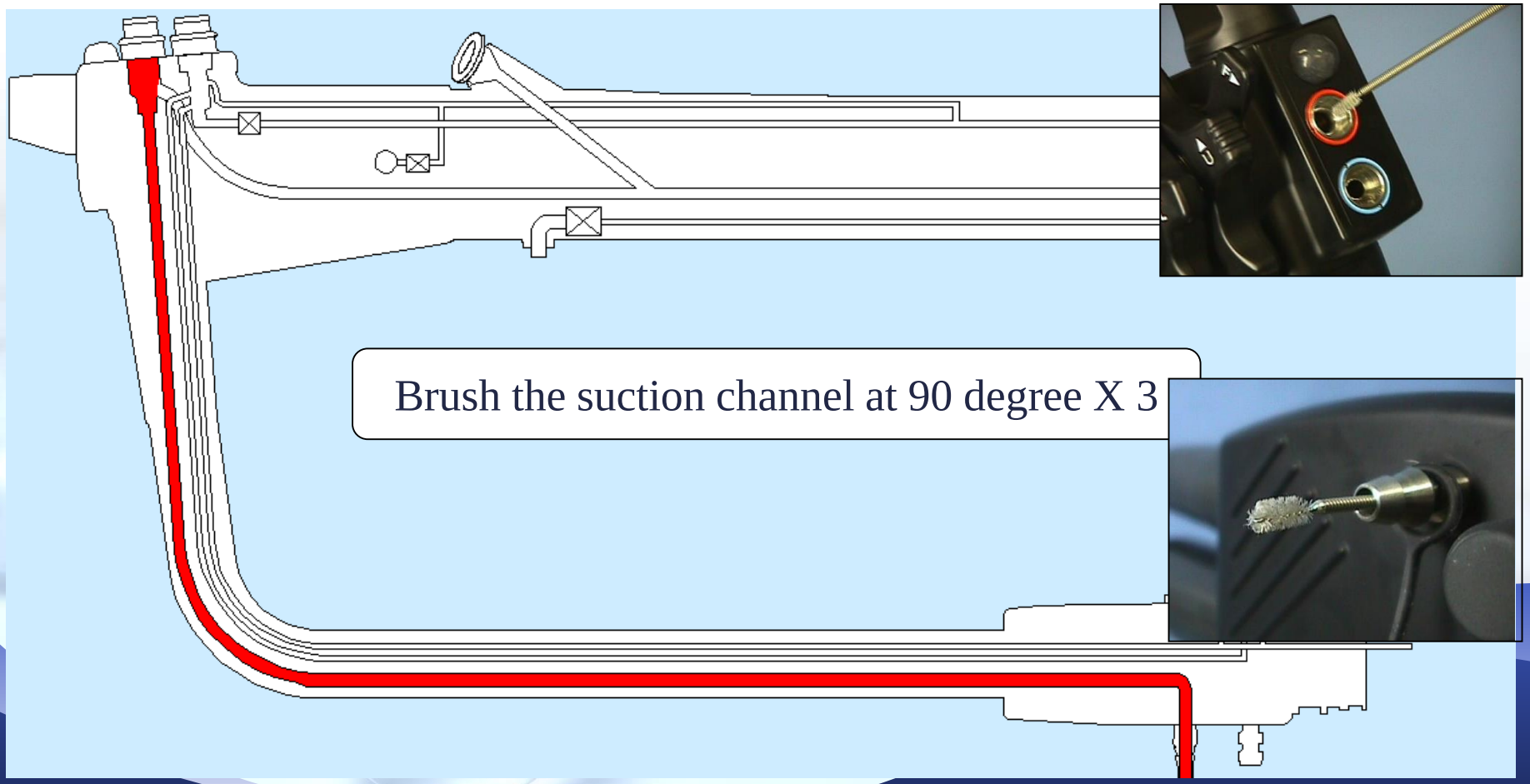
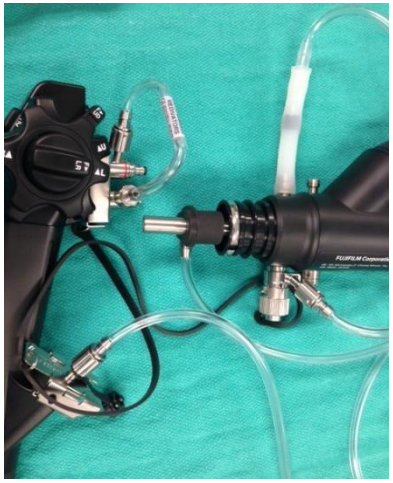


Step 3: Manual Reprocessing



5. Flushing

•Attach the proper adapters to all the channels

•Irrigate the channels with enzymatic solution and leave solution inside for the time recommended by manufacturer

•Rinse all channels with clean water

Step 4: High Level Disinfection

Endoscope is placed in Automated Endoscope reprocessor

- Designed to standardize and automate the preparation of a manually pre-cleaned flexible endoscope
- Leak test, pre-wash, HLD, rinse, air purge, alcohol

Step 5: Post Disinfection

- Flush dry all channels with 70% Alcohol follow by compressed air. (max 165 kpa or 24 PSI)

- Gently dry all external surfaces of the scope with a soft cloth

- Rinse and dry the valves

Step 6: Storage

- Storage room/cabinet - located in low traffic area in the department
- Shall be designed with Hepa Filter
- The insertion tube and light guide should be kept as straight as possible
- Storage cabinets shall be cleaned weekly
- All valves and components have been removed from the endoscopes and stored separately
- NEVER store the endoscope in the carrying case.

Overview

1. Endoscope withdrawal
2. Pre-cleaning at bedside
3. Leakage testing and visual inspection
4. Manual cleaning
5. High level disinfection (Automated or Manual)
6. Rinsing
7. Drying
8. Alcohol flush
9. Air purge
10. Storage of endoscope