

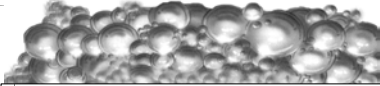
# Cleaning of Reusable Medical Devices

Dr. Michelle Alfa

A Webber Training Teleclass

Slide 1

**CLEANING OF REUSABLE MEDICAL DEVICES**



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Hosted by Paul Webber [paul@webbertraining.com](mailto:paul@webbertraining.com)  
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Slide 2

**Overview:**

- Basic Cleaning Concepts
- Overview of medical device issues
- Impact of suboptimal cleaning

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Slide 3

**What is Proper Reprocessing?**

**1. Cleaning:**

- Physical removal
- Detergent effect
- Temperature
- Rinsing



**2. Disinfection/Sterilization:**

- Killing of organisms

**SAFE to use;**  
no risk of disease transmission

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	<b>Cleaning Process:</b>
	<ul style="list-style-type: none"><li>■ <b>Pre-rinse:</b> remove gross debris (soil)</li><li>■ <b>Detergent (chemical or enzymatic):</b> improves ability to remove soil</li><li>■ <b>Sonication:</b> physically "knocks" soil off device surface</li><li>■ <b>Rinsing:</b> removes loosened soil &amp; detergent</li><li>■ <b>NOTE: Lubrication:</b> (after cleaning, before sterilization; where needed)</li></ul>

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Slide 5

	<b>Step 1: Cleaning Instructions</b>
	<ul style="list-style-type: none"><li>■ Obtain <b>VALIDATED</b> cleaning instructions from Manufacturer</li></ul>

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Slide 6

	<b>Step 2: CRITIQUE device</b>
	<ul style="list-style-type: none"><li>■ ? Can patient secretions enter areas of device you can't visually inspect?</li><li>■ ? Does cleaning process get fluid into <b>ALL</b> areas of device?</li></ul>

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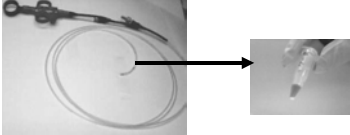
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<b>Device Constraints that Prevent Cleaning:</b>
<b><u>Access of Fluid to ALL areas of device</u></b>


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Slide 8

<b>Step 3: Select Detergent</b>
<ul style="list-style-type: none"><li>■ Chemical (washer/disinfector) vs Enzymatic (sonicator, manual)</li><li>■ Tap water quality will affect choice (treated water source?)</li><li>■ Ensure Contact time is adequate (e.g. Enzymatic; 3-5 min, RT, minimum contact time)</li></ul>

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Slide 9

<b>Step 4: Rinse Water</b>
<ul style="list-style-type: none"><li>■ LOTS OF IT!!!</li><li>■ Tap water is O.K.</li><li>■ Rust/mineral deposits</li><li>■ Final rinse (e.g. Reverse osmosis water if possible)</li></ul>
<small>NOTE: Lubrication: after cleaning but before sterilization (when recommended)</small>

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**Automated Vs Manual**

- Automated is preferred:
  - consistency,
  - large volumes of fluid
  - temperature control
- Machines are only as good as their **DRIVERS!!!**



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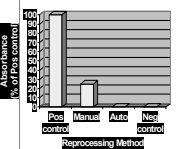
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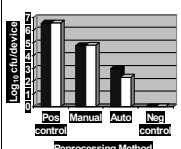
Slide 11

**Manual Versus Automated Cleaning of Ported Laparoscopic devices**

**PROTEIN REMOVAL:**



**BACTERIA REMOVAL:**



Legend: ■ E. faecalis □ B. stearothermophilus

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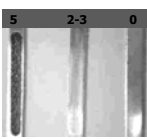
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Slide 12

**Cleaning Machine Test Methods; Available for in-hospital use**

- **TOSI:** Protein/fibrin QA device for washers; visual inspection post-cleaning.



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**Issues:**

- **Complex Device Design:**
  - High Level Disinfection (Low margin of safety)
  - Steam sterilization (False sense of security)

Current Guidelines: "Visibly Clean"

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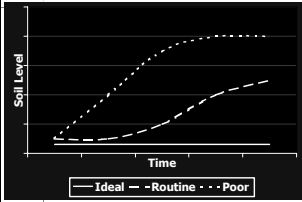
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Slide 14

**Repeated Use Build-up**  
(Device reused thousands of times/year)



■ **Want build-up kinetics as close to ideal as possible**

How can this "Cleanliness level" be assessed??

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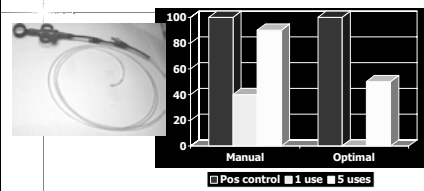
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Slide 15

**Sphinctertomes:**



Rate of build-up dependent on; device complexity & ease of cleaning

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<b>Current Cleaning Benchmarks:</b>	
<ul style="list-style-type: none"><li>▪ Guidelines: "Visibly Clean"</li><li>▪ What is realistic??</li></ul>	

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Slide 17

<b>General Surgery:</b>	
<ul style="list-style-type: none"><li>▪ Surgical instruments:</li><li>▪ Hinges, serrated edges</li></ul>	

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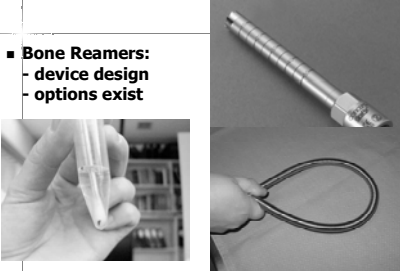
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Slide 18

<b>Orthopaedic Surgery:</b>	
<ul style="list-style-type: none"><li>▪ Bone Reamers:<ul style="list-style-type: none"><li>- device design</li><li>- options exist</li></ul></li></ul>	

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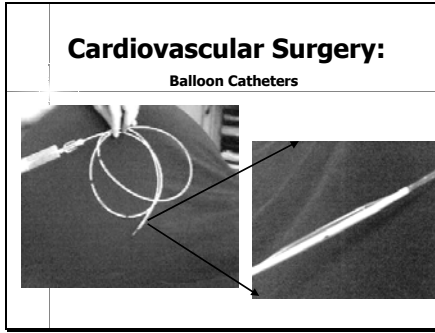
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Slide 20



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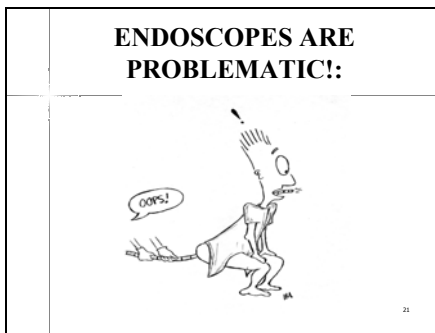
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Slide 21



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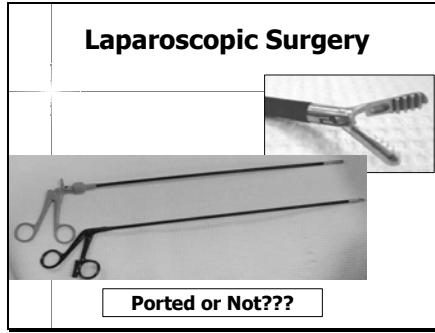
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Slide 23



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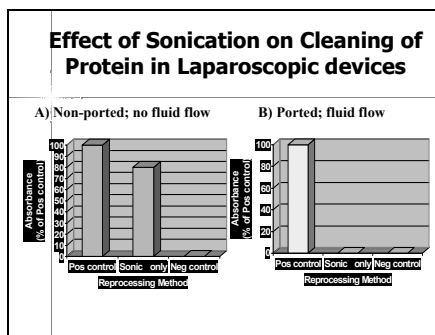
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Slide 24



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	<b>So what if Cleaning is suboptimal???</b>
	<ul style="list-style-type: none"><li>■ Endoscopes: infection transmission</li><li>■ Arthroscopes: increased infection rates</li><li>■ Brain surgery: CJD transmission</li></ul>

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Slide 26

	<b>Value of Cleaning Verification tests for users</b>
	<ul style="list-style-type: none"><li>■ Washing Machine tests:<ul style="list-style-type: none"><li>- confirm proper function (QA)</li></ul></li><li>■ Medical device tests:<ul style="list-style-type: none"><li>- confirm that cleaning protocol used in-hospital is effective</li><li>- confirm staff training and document competency over time</li></ul></li></ul>

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Slide 27

	<b>Guidelines:</b>
	<ul style="list-style-type: none"><li>■ CEN/ISO: working toward standardizing tests for users</li><li>■ AAMI: guideline for manufacturer's<ul style="list-style-type: none"><li>- recommending manufacturers provide rapid tests for users</li></ul></li></ul>
	<div style="border: 1px solid black; padding: 2px; display: inline-block;">How Clean is Clean Enough!??</div>

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<b>Summary:</b>
<ul style="list-style-type: none"><li>■ <b>Device Complexity: Cleaning issues</b></li><li>■ <b>Ensure Proper PROCESS in place</b></li><li>■ <b>Equipment</b><ul style="list-style-type: none"><li>- optimal cleaning capacity</li><li>- monitor for functionality</li><li>- sonication needs FLUID FLOW</li></ul></li><li>■ <b>MANUFACTURER'S responsibilities</b></li><li>■ <b>FLUID FLOW&gt;&gt;&gt;FLUID FLOW!!</b></li></ul>

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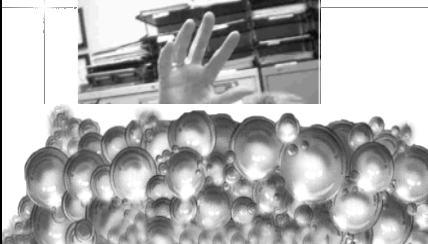
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Slide 29

<b>Drowning in Cleaning Issues!??</b>


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