Introduction of a Standardized Decontamination Process in a Sterile Processing Department

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Outline

- **Background**
- **Methods**
  - Initial Observations
  - Introduction of Standard Process
- **Implementation & Impact**
  - Audits
  - Decontamination Supervisor
- **Conclusions & Next Steps**
  - Future Work, Research & Policy
Key Terms

Surgical Instrument Reprocessing
Reusable Surgical Instrument Cycle
Reprocessing procedure
## Key Terms & Abbreviations

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>Operating Room</td>
</tr>
<tr>
<td>CSPD</td>
<td>Central Sterile Processing Department</td>
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<tr>
<td>Bioburden</td>
<td>&quot;debris&quot; (e.g. blood, bone, tissue) on instruments from previous use</td>
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</tbody>
</table>
• Efficient reprocessing is a critical challenge for hospitals nationwide

• Involves multiple disciplines, resources, and stakeholders

• **UMHS:**
  – Over 54,000 cases in FY16
  – 65-70 cases/day
  – Up to 15,000 items processed/day
Instrument Lifecycle

From Purchase to Use

1) Instruments Purchased
2) Grouped into Sets
3) Instruments added to tracking system
4) Decontaminated in CSPD
5) Assembled in CSPD
6) Sterilized in CSPD
7) Stored in Assembly
8) Pulled for use in OR

Instruments

Sets
“To have all items required for the proper care of the patient available at the time of surgery, properly cleaned, sterilized, and in working condition – while ensuring the efficient use of resources.”
Reprocessing Procedure

STEP 1 / Sink 1
Pre-Wash / Pre-Rinse
Rinse Set or Pre-Soak Set
- Spray off gross Soil
- Flush Cannulated Items

STEP 2 / Sink 2
Soak for a MINIMUM 5mins in Enzymatic
Scrub Instruments & Flush Lumens Underwater line
Sinks will Auto-Calibrate 1/2 oz. Enzymatic per gallon of water when Red toggle switch on faucet is pushed in.

STEP 3 / Sink 3
Rinse Instruments
Using Water Gun if Necessary

STEP 4 / Sonic
Sonic ALL Machine Washed Sets
Midbrok UltraSonic
- Cannulated Cycle (32min)
- Non-Cannulated Extended Cycle (22min)
- Non-Cannulated Short Cycle (14min)
Steris UltraSonic
- Cycle (15min)

Cannulated items MUST be attached to Lumen Flush Manifold or be filled with water, prior to Sonic cycle regardless of the UltraSonic that will be used.
METHODS

Initial Observations
Key Issues & Challenges
Introduction of Standard Process
Our Approach

Objective 1: Understand University Hospital’s reprocessing procedure

Methods

• Observations
• Video
• Interviews with Technicians
Our Approach

- Observed and documented instrument **reprocessing procedures** for sterile processing departments to identify variability in practices
  - 29 video recording across 3 commonly used sets
  - Time studies and process mapping
  - Quantified the compliance by different cleaning steps
Key Issues & Challenges

• Reprocessing procedure NOT enforced or standardized
• Steps not always followed correctly

Standard: All instruments need to be fully submerged underwater
Introduction of Standard Process

**STEP 1:** Rinse off gross soil and enzymatic foam and flush cannulated items

**STEP 2:** First-soak for a MINIMUM of 5 minutes in enzymatic solution

**STEP 3:** After 5-minute soak is completed, brush/scrub instruments and flush lumens while immersed and until visibly clean

**STEP 4:** Rinse all instruments Using Water Gun if Necessary

**STEP 5:** Sonic ALL machine-washed sets

If ANY Visible Soil is Remaining on Instrumentation:

Repeat Steps 2 – 4 Until Visibly Clean PRIOR to UltraSonic Cleaning

Verify the Ringed Instruments are Strung

Prior to Entering the UltraSonic

– Step by step direction posted on top of the sinks lanes

– Technicians were trained on new process

– Competency assessments performed one month post - training
IMPLEMENTATION & IMPACT

Technician Audit
Decontamination Supervisor Audit
Findings
Our Approach

Objective 2: Verify compliance to new CSPD standard

Methods

• Audits
• Observations
<table>
<thead>
<tr>
<th>START TIME</th>
<th>Observer</th>
<th>Technician</th>
<th>Instrument Set</th>
<th>Date</th>
<th>Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soak (Brush / Flush)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Rinse</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sonic (including setup)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>FINAL END TIME</td>
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**STEP 1: Pre-Wash / Pre-Rinse**

Sprayed off gross soil?  
Flushed cannulated items?  
In order?  
In Sink 1?  
____ out of ____

**STEP 2: Soak >= 5 mins**

All instruments completely submerged?  
Duration? (from last instrument)  
Used timer? (note device, if self-evident)  
In enzyme? (red button pushed in)  
In order?  
In Sink 2?  
____ min, ____ sec

**STEP 3: Brush & Flush**

All brushed instruments submerged?  
All lumens of cannulated items flushed?  
All cannulated items submerged?  
All lumen-flushed instruments submerged?  
In order?  
In Sink 2?  
____ out of ____  
____ out of ____  
____ out of ____

**STEP 4: Rinse**

All items rinsed?  
In order?  
In Sink 3?  
Q / A CHECK  
Any steps repeated?  
All ring-handled instruments stained?

**STEP 5: Sonic**

All instruments included?  
Lumen instruments attached to manifold?  
Set run time  
Actual run time  
IFU-mandated run time  
In order?  
____ out of ____  
____ min  
____ min  
____ min
Audits

- Generally better compliance by morning shift than afternoon shift
- Still opportunities for improved performance
- 27% of observations satisfied all applicable criteria

Metric | AM | PM
---|---|---
1. Prewash | 71% | 40%
2. Soak | 90% | 90%
3a. Brush | 100% | 60%
3b. Lumen Brush | 100% | 33%
3c. Lumen Flush | 67% | 14%
4. Rinse | 75% | 40%
5. Sonicate | 70% | 50%

N = 36, Audits conducted from July – December 2017
Decontamination Supervisor Audits

- Better overall compliance
- 60% of observations satisfied all applicable criteria

<table>
<thead>
<tr>
<th>Metric</th>
<th>AM</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prewash</td>
<td>80%</td>
<td>79%</td>
</tr>
<tr>
<td>2. Soak</td>
<td>40%</td>
<td>86%</td>
</tr>
<tr>
<td>3a. Brush</td>
<td>100%</td>
<td>86%</td>
</tr>
<tr>
<td>3b. Lumen Brush</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>3c. Lumen Flush</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>4. Rinse</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>5. Sonicate</td>
<td>100%</td>
<td>93%</td>
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N = 19, Audits conducted April 2018
There is more to compliance than just standardizing a process
Future Work

• Performing periodic audits
• Revision of CSPD standard process
• Manufacturers’ Instructions for Use analysis
Acknowledgements

- UM College of Engineering
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- Michigan Medicine
Questions?

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