**Disinfection, Sterilization and Antisepsis (with an emphasis on reprocessing of semicritical [high-level disinfection] and critical items [sterilization])**

Each year in the United States, there are approximately 53,000,000 outpatient surgical procedures and 46,000,000 inpatient surgical procedures. For example, there are at least 18 million gastrointestinal endoscopies per year. Each of these procedures involves contact by a medical device or surgical instrument with a patient’s sterile tissue and/or mucous membranes. A major risk of all such procedures is the introduction of infection. Failure to properly disinfect or sterilize medical devices and surgical instruments may lead to transmission via these devices (e.g., endoscopes contaminated with carbapenem-resistant *Enterobacteriaceae* [CRE]). Achieving disinfection and sterilization by disinfectants and sterilization practices is essential for ensuring that medical and surgical instruments do not transmit infectious pathogens to patients.

Hand hygiene is a cornerstone of preventing transmission from health care personnel to patients via contaminated hands. In addition, antiseptics are widely used in health care for skin antisepsis for invasive procedures. Low-level disinfectants are used for disinfection of non-critical environmental surfaces and equipment in health care facilities.

This course will capsulize all an infection preventionists or persons reprocessing medical or surgical instruments needs to know to be compliant with current standards and guidelines in disinfection, sterilization and antisepsis.

**Intended Attendees:** This course is intended for infection preventionist and persons responsible for reprocessing semicritical and critical instruments in healthcare (e.g., managers and staff in central sterile processing areas, staff reprocessing semicritical instruments (e.g., GI endoscopes, bronchoscopes, ENT scopes, urologic instruments) and critical instruments (e.g., surgical instruments)

**Proposed Agenda/Content**

**7 May 2020**

**7:45am-8:30am Registration**

**8:30am-9:00am, Infection Transmission Associated with Medical Instruments (Rutala per AJIC 2019)**

* Chain of infection
  + Agent
  + Dose
  + Virulence
  + Pathogen
  + Portal of entry
  + Susceptible host
* Review Spaulding
  + A rational approach to HLD and sterilization
    - Critical, semicritical and noncritical
* Review outbreaks associated with HLD and sterilization
* Current Issues
  + Shift from HLD to sterilization

**9:00am-10:00am, Medical Instrument Reprocessing: Current Issues with Cleaning and Cleaning Monitoring (AJIC 2019)**

* Surgical Instruments
  + Microbial and organic load
  + Manual vs automated cleaning
  + Monitoring cleaning
    - Monitoring tests for washer-disinfector cleaning
      * Verify, TOSI, etc.
* Flexible Endoscopes
  + Microbial and organic load
  + Drying of endoscope channels and biofilm formation
  + Manual vs automated cleaning
  + Role of simethicone residuals
  + Monitoring cleaning of endoscopes

**10:00am-10:15am, Break**

**10:15am-11:00am, High-Level Disinfection: An Overview (1 hour, Rutala, per AJIC 2019)**

* Cleaning-visual, quantifiable methods, correct products (brushes, chemistry)
* HLD-Adv/Disadv of the HLD (overview, microbicidal activity, uses)
  + PA/HP
  + Glut
  + HP (standard, accelerated)
  + OPA
  + PA
* HLD, prepare and change per IFU (mark containers, soak time, etc.), expiration dates
* Review outbreaks associated with HLD-failures
* New Technologies
  + Trophon
  + Current issues
    - Human papilloma virus

**11:00am-12:00am Endoscope Reprocessing (1 hour, per guidelines)**

* Personnel
* Education and training
* Quality assurance
* Procedure rooms
* Reprocessing rooms
* Spill containment plan
* Infection control measures
* Infection control procedures
  + Precleaning
  + Leak testing
  + Manual cleaning
  + Rinse after cleaning
  + HLD (manual, automated)
  + Drying
  + Storing
* Current Issues
  + Preferred drying methods
  + Maximum time of storage before repeat HLD of properly-stored endoscopes
  + Infection risk associated with reprocessed accessories…caps, buttons, valves
  + Transport-use of gloves to handle HLD device
  + Appropriate interval for preventive maintenance

12:00am-1:00pm, Lunch

1:00pm-2:00pm, **Reprocessing Semicritical Items: Outbreaks and Current Issues (1 hour, Rutala per AJIC 2019)**

* Outbreaks
* Reprocessing semicritical items
  + Applanation tonometers
  + Endocavitary probes
  + Ultrasound transducer disinfection for assessment and insertion of peripheral and central catheters
  + Transrectal ultrasound-guided prostate biopsy probes
  + Infrared coagulation laryngoscopes
  + Other channeled endoscopes (cystoscopies, ureteroscopes, hysteroscopes)
* Current Issues
  + Hydrogen peroxide mist system for probes
  + Storage of semicritical items
  + Human papilloma virus
  + Reuse of single-use devices
  + Do sheaths/covers protect from contamination and affect the level of instrument reprocessing

**2:00pm-3:00pm, Assessing Compliance with Reprocessing Instruments in Inpatient Care Areas (1 hour)**

* Monitoring
  + Practices
  + Minimum effective concentration (MEC)
  + MIFU associated with test strips
* Creating an assessment tool
* Implement an assessment tool
* Communicate and correct deficiencies

**3:00pm-3:15pm, Break**

**3:15pm-4:15pm, Step by Step: Reprocessing Instruments (AJIC 2016 and AJIC 2019)**

* via audio-visual
  + Perfusion of channeled instruments
  + Monitoring MEC, mention color blindness
  + Complying with MIFU, HLD log requirements
  + Wrapping technique/wraps/containers (paper/plastic pouches, rigid containers, wrapped containers)
  + Please expand as needed

**4:15pm-5:00pm, Assessing the Risk of Disease Transmission to Patients When There Is a Failure to Follow Recommended Disinfection and Sterilization Guidelines (Rutala, per ICHE paper).**

* Protocol for exposure investigation
* Step 1 through Step 14
* Assessing risk
* Interpreting risk

**5:00pm-5:15pm, QA, Rutala**

**8 May 2020**

**8:30am-9:30am, Sterilization-An Overview (Rutala, 1 hour from AJIC 2019)**

* Sterilization
  + Effectiveness of washer disinfector
  + Methods for verifying cleaning-visual, quantifiable methods-ATP, protein, enzymes, etc.
  + Methods (overview, microbicidal activity, uses)
    - Steam (plus IUSS)
    - HP gas Plasma
    - Ozone and HP
    - Vaporized HP
    - ETO
  + Adv and Disadv of Sterilization Methods
* Issues
  + Challenges (lumens, salt, protein, robotic instruments)
  + CJD/prions
  + TASS
  + IUSS

**9:30am-10:15am, Sterilization-Principles and Practices (per AAMI)**

* Overview
* Physical Facilities (design)
* Personnel considerations
  + Training and ensuring compliance
* Receiving of purchased or loaned items
* Handling, collection and transportation of contaminated items
* Cleaning
  + OR, clean and moisten-no gross
  + Lumen vs non-lumen
  + Monitoring methods
* Decontamination
  + Washer disinfector
  + Monitoring
* Preparation and assembly of instruments
  + Tracking instruments and devices
* Packaging
  + Selection of sterile barrier system
  + Sterilization wraps
    - Woven, nonwoven, paper/plastic pouches
  + Wrapping technique
  + Rigid containers
* Sterilization
  + Loading
  + Unloading
* Monitoring sterilization
  + Physical
  + Chemical
  + Biological indicators
* Storage
  + Handling and inspection
  + Transport of sterile packaged items
  + Expiration (event or time-related)
* Current Issues
  + Biofilms on instruments: Do they interfere with instrument reprocessing
  + Quality monitoring (examples)
    - Instruments with bone, blood, tissue, etc.
    - Missing instrument
    - Wrong instrument
    - Holes/tears in packaging
    - Filter damage (hole, oil, wet, etc.)
  + Risk assessment-organization’s vulnerabilities
  + Appropriate interval for preventive maintenance

**10:15am-10:30am Break**

**10:30am-11:15am, Sterilization-Principles and Practices, continued**

* **Continued from the topics above**

**11:15am-12:00noon, Sterilization-Principles and Practices**

* Video of a Central Sterile Processing Area
* Slides-what’s wrong with this picture

**12:00noon-1:00pm Lunch**

**1:00pm-1:45pm, Special Problems Associated with Reprocessing Instruments in Outpatient Care Facilities (per AJIC 2016, 2019)**

* Physical space
  + Divided into work areas
  + Dirty-to-clean flow (unidirectional flow)
  + Adequate space for tasks (national standards and guidelines)
  + Sinks (number, location)
* Education and training specific to HLD in outpatient areas
* Standardization
* Deficiencies
  + Improperly loaded AERs
  + Blood on instruments
  + Instrument not immersed

**1:45pm-2:45pm Best Practices for Skin Antisepsis (per Boyce papers AJIC 2019)**

* Preoperative bathing
* Surgical site preparation
* Surgical hand antisepsis
* Daily CHG bathing in the ICU
* Daily bathing in the non-ICU patients
* Prevention of infection during intravascular access
* Nasal decolonization: what antimicrobials are most effective
* Current hand hygiene
  + Duration, product volume, hand size, dry times, technique
  + Strategies for improving hand hygiene
  + Monitoring Hand hygiene performance

**2:45pm-3:45pm Best Practices for Disinfection of Non-Critical Environmental Surfaces and Equipment in Health Care Facilities: A Bundle Approach (per AJIC 2019)**

* A Bundle Approach
  + Creating policies and procedures
  + Selecting cleaning and disinfecting products
  + Educate staff on surface disinfection policies and practices
  + Improving room cleaning and disinfection
  + Compliance monitoring and feedback
  + Implementing “no touch” room decontamination technology
* Current topics
  + Mops and wipes
  + Quat Absorption to wipes
  + Floors
  + Biofilms
  + Disinfectant kill time
  + Continuous room decontamination

3:45pm-4:00pm Course evaluations