We don’t know what it is, but we do know it’s contagious.

The active infection control program should have policies that address the following:

- Measures for prevention of communicable disease outbreaks, especially tuberculosis
- Isolation procedures and requirements for infected or immunosuppressed patients;
Multidrug Resistant Organisms

Critical Access Hospitals

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Nothing to Disclose

OBJECTIVES

• Identify three multidrug resistant organisms of concern for critical access hospitals (CAH).

• List four methods to prevent transmission of multidrug resistant organisms in the CAH setting.

• Describe components necessary for implementation of a hand hygiene program
Determinants of Microbial Pathogenicity

- Adherence characteristics
- Infectious dose (inoculum)
- Virulence-capacity of an organism to produce disease
- Toxin production
- Ability to elude host defenses
- Persistence in the environment
- Genetic variation
Methicillin Resistant S. aureus

- Gram positive cocci
- Colonizes the skin of humans
- Has developed resistance to Methicillin and other beta lactamase resistant penicillins and cephalosporins
- Has developed penicillin binding protein encoded by a chromosomal gene mec-A (not present on sensitive S. aureus)

Methicillin Resistant S. aureus

- 1945 First report of penicillin resistant strain of S. aureus published
- Methicillin resistance 2 years later
- 1960’s MRSA in UK and Europe
- 1968 MRSA in US
- 1990-2000 Increase in CA-MRSA skin infections
- VISA
- VRSA
Methicillin Resistant S. aureus Transmission

- Can colonize anterior nares, skin, wounds and in rare instances, the rectum of infected or colonized patients (Surveillance culture varies anterior nares swab and/or skin culture)

Mode of Transmission

- Healthcare workers hands
- Shared patient care items
- Environment (healthcare and community)

Community Acquired Methicillin Resistant S. aureus

- Classic pt description: a spider bite that became infected.
- Most common manifestation of CA-MRSA is skin and soft tissue infection (77% in observational study)¹
- Carbuncles and furuncles
- More serious infections: Necrotizing fasciitis and myositis

NEJM 2005;352:1436-44
Community Acquired Methicillin Resistant S. aureus

- Rarely causes bacteremia after SSTI
- Infective endocarditis has been described
- Some have fulminant course with rapid valve destruction.

**Pneumonia**

- Becoming an important cause of severe Community Acquired Pneumonia
- Now becoming a *nosocomial* pathogen

Methicillin Resistant S. aureus Control and Preventative Measures

**Surveillance**

- MDRO infection rates
  - Colonization vs. infection
- Asymptomatic colonization
  - Decolonization
  - Suppression
- MDRO incidence base on clinical culture results (# new MRSA isolates/1,000 pt days)

J Siegel, HICPAC, Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006
Multidrug Resistant Organisms
MRSA Decolonization

- entails treatment of persons colonized with a specific MDRO to eradicate carriage of that organism

Several factors limit the utility of this control measure on a widespread basis:

- identification of candidates for decolonization requires surveillance cultures
- candidates receiving decolonization treatment must receive follow-up cultures to ensure eradication
- recolonization with the same strain, initial colonization with a mupirocin-resistant strain, and emergence of resistance to mupirocin during treatment can occur

J Siegel, HICPAC, Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006
**Multidrug Resistant Organisms MRSA Decolonization**

HCP implicated in transmission of MRSA are candidates for decolonization and should be treated and culture negative before returning to direct patient care.

In contrast, HCP who are colonized with MRSA, but are asymptomatic, and have not been linked epidemiologically to transmission, do not require decolonization.

J Siegel, HICPAC, Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006

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**Vancomycin Resistant Enterococci**

- Gram positive cocci
- Colonizes the human intestines and female genital tract

Late 1980s High level vancomycin resistant *E. Faecalis* and *E. Faecium* in Europe

2006-07 NHSN Report associated with 4% of healthcare associated infections
**Vancomycin Resistant Enterococci**

**Transmission**
- Person to person from contaminated hands
- Contaminated surfaces
- Not spread by droplet or airborne route

**Associated infections:**
- UTIs
- Bloodstream Infection
- Wounds (associated with catheters and surgical procedures)

---

**Vancomycin Resistant Enterococci**

**Control and Preventative Measures**

**Surveillance**
- MDRO infection rates
  - Colonization vs. infection
- Asymptomatic colonization
- MDRO incidence base on clinical culture results (# new VRE isolates/1,000 pt days)
- Stool, rectal, or perirectal swabs are generally considered a sensitive method for detection of VRE.
## Current CMS Reporting Requirements/ Timeline for Infection Prevention and Control Measures

<table>
<thead>
<tr>
<th>HAI Event</th>
<th>Facility Type</th>
<th>Reporting Start Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLABSI</strong></td>
<td>Acute Care Hospitals Adult, Pediatric, and Neonatal ICUs</td>
<td>January 2011</td>
</tr>
<tr>
<td><strong>CAUTI</strong></td>
<td>Acute Care Hospitals Adult and Pediatric ICUs</td>
<td>January 2012</td>
</tr>
<tr>
<td><strong>SSI</strong></td>
<td>Acute Care Hospitals Colon and Abdominal Hysterectomy</td>
<td>January 2012</td>
</tr>
<tr>
<td><strong>SSSI</strong></td>
<td>Dialysis Facilities I.V. antimicrobial start</td>
<td>January 2012</td>
</tr>
<tr>
<td><strong>C. difficile</strong> LabID Event</td>
<td>Dialysis Facilities Positive blood culture</td>
<td>January 2012</td>
</tr>
<tr>
<td><strong>CLABSI</strong></td>
<td>Dialysis Facilities Signs of vascular access infection</td>
<td>January 2012</td>
</tr>
<tr>
<td><strong>CAUTI</strong></td>
<td>Long Term Care Hospitals *</td>
<td>October 2012</td>
</tr>
<tr>
<td><strong>CAUTI</strong></td>
<td>Inpatient Rehabilitation Facilities</td>
<td>October 2012</td>
</tr>
<tr>
<td><strong>MRSA Bacteremia</strong></td>
<td>Acute Care Hospitals</td>
<td>January 2013</td>
</tr>
<tr>
<td><strong>C. difficile</strong> LabID Event</td>
<td>Acute Care Hospitals</td>
<td>January 2013</td>
</tr>
<tr>
<td><strong>HCW Influenza Vaccination</strong></td>
<td>Acute Care Hospitals</td>
<td>January 2013</td>
</tr>
<tr>
<td><strong>HCW Influenza Vaccination</strong></td>
<td>ASCs</td>
<td>October 2014</td>
</tr>
<tr>
<td><strong>SSI (TBD)</strong></td>
<td>Outpatient Surgery/ASCs</td>
<td>TBD</td>
</tr>
</tbody>
</table>
**Clostridium difficile Transmission**

- Gram positive anaerobic bacillus
- Toxin producer (exotoxin A and B)
- Shed in feces
- In spore form can survive on surfaces for up to 5 months. Any surface, device or material that becomes contaminated with feces may serve as a reservoir for spores.
- Mode of transmission- fecal oral transmission through contaminated environment and hands of healthcare personnel

**Clostridium difficile**

- Severity of CDI appears to be increasing\(^1\)\(^-\)\(^2\)
- – Increased morbidity and mortality
- Increased infection in “low-risk” populations\(^1\)\(^-\)\(^3\) (e.g., no antimicrobial exposure, hospitalization, underlying illness)
- Emergence of novel, hypervirulent strain reported across the US, Canada, and Europe.

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**Clostridium difficile Laboratory Testing**

- EIA (enzyme immunoassay)- Lab method used to test for antigen or antibody in a sample by forming antigen/antibody complexes.
- GDH (Glutamate dehydrogenase)- Common antigen present in C. difficile organisms in high amounts.
- Molecular Methods- Lab methods that test for presence of a specific genetic sequence in a sample (e.g., PCR, LAMP).

**Clostridium difficile Laboratory Testing**

- Evaluate and optimize test-ordering practices and diagnostic methods.
- Restrict testing to unformed stool only unless ileus due to C. difficile is suspected.
- Limit testing on patients at risk for CDI with ≥ 3 unformed stools within 24 hours.
- If you have a negative test, repeat testing during the same episode of diarrhea is of limited value and should be avoided.
- If you have a positive test, repeat testing should not be used to guide duration of isolation or treatment.
**Clostridium difficile Supplemental Prevention Strategies**

- Extend use of contact precautions beyond duration of diarrhea (e.g. 48 hours).
- Presumptive isolation for symptomatic patients pending confirmation of CDI/presumptive isolation for patients with > 3 unformed stools within 24 hours.
- Implement soap and water for hand hygiene before exiting the room of a patient with CDI.
- Use a sporicidal or hypochlorite cleaning agent for environmental cleaning.

**Extended Spectrum Beta Lactamase (ESBLs)**

- ESBL-enzymes conferring resistance to extended spectrum lactam antibiotics
- Most common ESBL producers
  - *Escherichia coli*
  - *Klebsiella pneumoniae*
  - *Proteus Mirabilis*
  - *Pseudomonas aeruginosa*
**Extended Spectrum Beta Lactamase Mode of Transmission**

- Person to person contact
- Frequently via contaminated medical devices
- Contaminated environment
- Post treatment with broad spectrum cephalosporins

ESBL is capable of hydrolyzing penicillins, cephalosporins (1,2,3 and 4th generation), and monobactams including aztreonam.

*Important to make sure clinical laboratories are routinely detecting ESBL production and report them to Infection Preventionist as soon as identified.*

**Extended Spectrum Beta Lactamase Colonization**

- Lower digestive tract of colonized pts is the main reservoir
- Gastrointestinal carriage can persist for months

*In some US cities nursing homes may be an important reservoir of ESBL producing strains.*
**Extended Spectrum Beta Lactamase**

**Type of Infection**

<table>
<thead>
<tr>
<th></th>
<th>Community Acquired</th>
<th>Hospital Acquired/healthcare associated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organism</strong></td>
<td><em>Escherichia coli</em></td>
<td><em>Klebsiella pneumoniae</em>, but <em>E. coli</em> increasingly common</td>
</tr>
<tr>
<td><strong>Infection</strong></td>
<td>Mostly urinary tract infection; also biliary infection and bacteremia</td>
<td>Bacteremia, pneumonia, intra-abdominal and wound infection</td>
</tr>
</tbody>
</table>
Carbapenem-Resistant *Enterobacteriaceae*

**Surveillance Definition**

- Nonsusceptible- to one of the following carbapenem (doripenem, meropenem or imipenem) AND
- Resistant to all of the following third generation cephalosporins (ceftriaxone, ceotaxime, and ceftazidime)

*Klebsiella species and Escherichia coli* that meet the CRE definition are a priority for detection and containment in all settings; however, other *Enterobacteriaceae* (e.g., *Enterobacter species*) might also be important in some regions.

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**Carbapenem-Resistant *Enterobacteriaceae***

- CRE have been associated with high mortality rates (up to 40-50%)
- In addition to β-lactam/carbapenem resistance, CRE often carry genes that confer high levels of resistance to many other antimicrobials, often leaving very limited therapeutic options. “Pan-resistant” KPC-producing strains have been reported.
- CRE have spread throughout many parts of the United States and have the potential to spread more widely.
**Carbapenem-Resistant Enterobacteriaceae (CRE) screening**

- Screening is used to identify unrecognized CRE colonization among epidemiologically linked contacts of known CRE colonized or infected patients as clinical cultures will usually identify only a fraction of all patients with CRE.
- Stool, rectal, or peri-rectal cultures and sometimes cultures of wounds or urine (if a urinary catheter is present).

**Carbapenem-Resistant Enterobacteriaceae Supplemental Prevention Strategies**

- Contact Precautions for colonization or infection
- Clinical microbiology labs:
  - should follow CLSI guidelines for susceptibility testing
  - Set up systems for prompt notification of IP staff
  - A laboratory protocol for evaluating rectal or peri-rectal swabs for CRE is available however, it is important to note that this procedure has only been validated for E. coli and Klebsiella spp.
Carbapenem-Resistant Enterobacteriaceae Supplemental Prevention Strategies

Surveillance

• **Point prevalence surveys:**
  Point prevalence surveys might be an effective way for facilities to rapidly evaluate the prevalence of CRE in particular wards/units.
  This could be useful in a situation where a review of clinical cultures using laboratory records identifies unreported CRE patients in certain wards/units.
  A point prevalence survey is generally conducted by screening all patients in that ward/unit.
  Point prevalence surveys might be done only once if few or no additional CRE colonized patients are identified or might be done serially if colonization is more widespread or to follow the effect of an intervention.

Carbapenem-Resistant *Enterobacteriaceae* Supplemental Prevention Strategies

Surveillance

• **Screening of epidemiologically linked patients:**
  If previously unrecognized CRE carriers are identified, screening of patient contacts could be conducted to identify transmission instead of a wider point prevalence survey.
  Those patients considered contacts may vary from setting to setting; however, they usually include roommates of the unrecognized CRE patients as well as patients who might have shared HCP.
Multidrug Resistant Organisms

PREVENTION

Hand Hygiene

1. Before touching a patient
2. Before aseptic procedure
3. After non-sterile fluid exposure risk
4. After touching a patient
5. After touching patient surroundings
Core elements of HH Program

- When to perform hand hygiene
- Agents to use in hand hygiene
- Techniques for hand hygiene (depending on the agents used)
- Duration of hand hygiene
- Technique, duration, and instruments for drying hands
- Use of disposable gloves
- Wearing of artificial nails and jewelry
- How to choose hand hygiene agents
- The necessary infrastructure for optimal hand hygiene

How Can We Overcome Problems Associated with Handwashing?

- Active participation in hand hygiene promotion by individuals
- Administrative priority
- Role models/cheerleaders
- What does it mean for me?
- What does it mean for my patient?
- Data to drive the home the message
HH Measurements

- Direct Observation directly measures health care worker adherence to hand hygiene guidelines.

- Electronic hand hygiene ease data collection and may provide visual or auditory cues to the healthcare provider.

- Measuring product use is an indirect approach to measuring hand hygiene adherence, the validity of which has not been well established.

HH Measurements

- Simple charts and graphs can make data—such as data on when health care workers clean their hands and how they clean their hands—easy to interpret and use.

- A quality dashboard can provide an organization’s leadership with a quick, at-a-glance summary of structure, process, and outcome.

- Huddle Boards keep the goal and current progress in the unit daily review of goals.

- Statistical process control charts are useful for revealing trends in data over time and can help you determine whether changes in rates are a result of specific interventions or due to normal variation.
Basics for Prevention of MDROs

**Standard Precautions**

- Precautions designed for the care of all patients, regardless of their diagnosis or presumed infection status
- These precautions are known as Standard Precautions and constitute the minimum acceptable level of practice in infection prevention.
- To be applied to all people accessing health care services regardless of their diagnosis or presumed infectious status, thereby reducing the risk of transmission of organisms from both recognized and unrecognized sources.

Must use:

- Potential for handling or exposure to blood or body substances
- Potential risk of splash to mucous membranes
- Providing care that may induce coughing
- Performing invasive procedures (line insertions, deliveries, surgeries)
- Perform hand hygiene per CDC recommendations
- Prepare, handle and dispose of sharps and biohazardous material according to national and state regulations.
Basics for Prevention of MDROs

*Standard Precautions*

**PPE:**
- Cover cuts or non intact skin prior to donning personal protective equipment (PPE)
- Be familiar with types of PPE
- Know how to don and remove safely
- Know interval for fit testing for respirators

**Safety devices:**
- Know how to use sharps and sharp prevention devices correctly (activate safety mechanisms if not automatic)
- Know how to operate sharps containers

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Basics for Prevention of MDROs

- Promote compliance with CDC (or WHO) hand hygiene recommendations
- Use Contact Precautions for MDRO colonized and infected patients
- Educate health care personnel about MDROs
- Ensure cleaning and disinfection of equipment and environment
- Educate patients and their families about MDROs
  - Engage patients and families and encourage their participation in their care and encouraging healthcare workers and visitors to comply with hand hygiene and contact precautions
- Monitor compliance
  - Hold all healthcare providers accountable for compliance with all recommended infection prevention practices

*J Siegel, HICPAC, Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006*
Basics for Prevention of MDROs

- All healthcare personnel must take responsibility for infection prevention practices.
- Anyone can stop someone or a procedure if infection prevention practices (e.g., hand hygiene, aseptic technique) are not properly followed.
- It is important for healthcare personnel to follow standard patient safety protocols and to ensure that their peers and other healthcare personnel practice the same standards.

Multidrug Resistant Organisms
Transmission Based Precautions Tier One

Acute-care hospitals - implement Contact Precautions routinely for
- patients infected with target MDROs
- patients that have been previously identified as being colonized with target (Category IB)

Ambulatory settings - use Standard Precautions for patients known to be infected or colonized with target MDROs (Category II)

J Siegel, HICPAC, Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006
Multidrug Resistant Organisms
Transmission Based Precautions Tier Two

Acute-care hospitals:
- implement Contact Precautions routinely
- Give highest priority to patient have conditions that can facilitate transmission (uncontained secretions or excretions).
- Develop and implement protocols to obtain active surveillance cultures from patients in populations at risk.
- Conduct serial unit specific point prevalence culture surveys of target MDRO to determine if transmission has decreased or ceased. Repeat at routine intervals.
- Monitor cleaning performance to ensure consistent cleaning and disinfection of surfaces in close proximity to patient.

J Siegel, HICPAC, Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006

Multidrug Resistant Organisms
Contact Precautions

- Perform hand hygiene before touching patient and prior to wearing gloves
- PPE use:
  - Don gloves upon entry to the room or cubicle
  - Don gown upon entry to the room or cubicle.
- Perform hand hygiene after removal of PPE; note: use soap and water when hands are visibly soiled (e.g., blood, body fluids), or after caring for patients with known or suspected infectious diarrhea (e.g., Clostridium difficile, norovirus)
- If common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before use on another patient
- Environmental measures Ensure that rooms of patients on Contact Precautions are prioritized for frequent cleaning and disinfection (e.g., at least daily) with a focus on frequently-touched surfaces (e.g., bed rails, overbed table, bedside commode, lavatory surfaces in patient bathrooms, doorknobs) and equipment in the immediate vicinity of the patient
Multidrug Resistant Organisms Antibiograms

“Goal- Judicious use of antimicrobial agents”

• monitoring of clinical microbiology isolates resulting from tests ordered as part of routine clinical care
• useful to detect emergence of new MDROs not previously detected
• can be used to prepare facility- or unit-specific summary antimicrobial susceptibility reports
• useful to monitor for changes in known resistance patterns that might signal emergence or transmission of MDROs
• provide clinicians with information to guide antimicrobial prescribing practices

J Siegel, HICPAC, Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006

Multidrug Resistant Organisms Communication

• In all healthcare organizations, establish systems to ensure that clinical microbiology laboratories (in-house and out-sourced) promptly notify infection prevention staff or a medical director/ designee when a novel resistance pattern for that facility is detected.

Category IB
Multidrug Resistant Organisms Communication

Mycobacterium Tuberculosis

Mode of Transmission:
- Acid Fast Bacilli
  - Airborne
  - ~10% persons exposed will develop active TB
- S & S
  - Unexplained cough
  - Unexplained weight loss
  - Blood tinged sputum
  - Night sweats
  - Fever
Mycobacterium Tuberculosis

**Infectious period**

- Patients with positive Acid Fast Bacilli (AFB) sputum smear results should be considered infectious 3 months before the collection date of the first AFB or the onset date of the first symptom.

- Patients with negative AFB smear results should be considered infectious 1 month before the symptom onset date.

**Definitions**

- **MDR TB** - TB isolate resistant to both isoniazid and rifampin
- **XDR TB** - MDR + resistant to fluoroquinolone and 1 of the three injectable drugs (amikacin, kanamycin, capreomycin)
Mycobacterium Tuberculosis
Clinical factors promoting resistance

• Delayed diagnosis and isolation
• Inappropriate drug regimen.
  – Inadequate initial therapy
  – Incomplete course of treatment
  – Inappropriate treatment modifications
  – Adding single drug to a failing regimen
  – Inappropriate use of chemoprophylaxis
• Poor adherence and incomplete F/U
• Failure to isolate MDR TB patients
• Failure to employ DOT
Mycobacterium Tuberculosis Diagnostic Testing

Tuberculin Skin Test (Low risk HCWs)

- a baseline result of >15 mm of induration (instead of >10 mm) might possibly be the cut point
- When 15 mm is used as the cut point, TST results of 10–14 mm can be considered clinically negative.
- These HCWs should not have repeat TST, and the referring physician might not recommend treatment for latent tuberculosis infection (LTBI)."
**Mycobacterium Tuberculosis**

Diagnostic Testing

Tuberculin Skin Test (Medium risk HCWs)
- a baseline TST result of >10 mm is considered positive.
- For HCWs who are known contacts to a person with infectious TB disease (i.e., HCWs who are tested during contact investigations), and for HCWs who are infected with HIV, a TST result of >5 mm is considered positive.

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**Mycobacterium tuberculosis**

Diagnostic Testing

**Acid Fast Bacilli smear microscopy**
- can produce results in 24 hours
- Culture which requires 2-6 weeks to produce results

**Nucleic acid amplification test (NAA)**
- can provide results within 24 to 48 hours
- Use with AFB smear positive respiratory specimens

All should be used in conjunction with risk assessment, radiography, and other medical and diagnostic evaluations as needed.
**Mycobacterium tuberculosis**

**Screening**

**Blood Assay for M. Tuberculosis (BAMT)**

**Interferon Gamma Release Assays (IGRAs)**

- Cell mediated immune response to peptides from two *M. tuberculosis* proteins
- QFT-GIT, QFT, and T Spot

Useful for HCW and contact investigation involving persons:
- not likely to return for follow up/reading of TST at 48-72 hours
- History of BCG (as a vaccine or cancer therapy)

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**Mycobacterium tuberculosis**

**Personal Protective Equipment**

**Respiratory Protection Program**

OSHA requires health-care settings in which HCWs use respiratory protection to develop, implement, and maintain a respiratory-protection program. All HCWs who use respiratory protection should be included in the program.

**Type of respiratory Personal Protective Equipment**

- certified by CDC/National Institute for Occupational Safety and Health (NIOSH) as a nonpowered particulate filter respirator (N-, R-, and P-series 95%, 99%, and 100% filtration efficiency), including disposable respirators, or PAPRs with high efficiency filters
**Mycobacterium tuberculosis**

**Personal Protective Equipment**

**Fit Testing**
- A fit test is used to determine which respirator fits the user adequately and to ensure that the user knows when the respirator fits properly. After a risk assessment is conducted to validate the need for respiratory protection, perform fit testing during the initial respiratory-protection program training and periodically thereafter in accordance with federal, state, and local regulations.

The frequency of periodic fit testing should be determined by:

1. risk for transmission of *M. tuberculosis*
2. a change in facial features of the wearer
3. medical condition that would affect respiratory function
4. physical characteristics of respirator (despite the same model number), or 5. a change in the model or size of the assigned respirator

**Mycobacterium tuberculosis**

**Airborne Isolation**

**Environmental Controls**
HEPA filtration- can be used to supplement other recommended ventilation measures by providing a minimum removal efficiency 99.97% of particles.

Airborne Infection Isolation room- a room designed to maintain airborne isolation, single occupancy room. All rooms should provide negative pressure of 6-12 ACH, and direct exhaust of air from the room to the outside of the building or recirculation of air through a HEPA filter.
**Mycobacterium tuberculosis**

**Airborne Isolation**

- Place in an AIIR that has been constructed in accordance with current guidelines.
- Provide at least six (existing facility) or [12] (new construction/renovation) air changes per hour.
- Whenever an AIIR is in use for a patient on Airborne Precautions, monitor air pressure daily with visual indicators (e.g., smoke tubes, flutter strips), regardless of the presence of differential pressure sensing devices (e.g., manometers).
- Wear a fit-tested NIOSH-approved N95 or higher level respirator for respiratory protection when entering the room.
- Keep the AIIR door closed when not required for entry and exit.
- When an AIIR is not available, transfer the patient to a facility that has an available AIIR.

**Mycobacterium tuberculosis**

**Personal Protective Equipment**

- When surgical procedures (or other procedures that require a sterile field) are performed on patients with suspected or confirmed infectious TB, respiratory protection should be worn by HCWs to protect the sterile field from the respiratory secretions of HCWs and to protect HCWs from the infectious droplet nuclei generated from the patient. *When selecting respiratory protection, do not use valved or positive-pressure respirators, because they do not protect the sterile field.* A respirator with a valveless filtering facepiece (e.g., N95 disposable respirator) should be used.
In Summary

• MDROs have important infection control implications.

• All healthcare settings are affected by the emergence and transmission of MDROs.

• The prevention of MDROs requires all healthcare facilities and agencies assume responsibility.

BREAK
OBJECTIVES

- Define and distinguish between cleaning, disinfection and sterilization
- Describe and give examples of critical, semi-critical, and non-critical devices
- Differentiate between low-level disinfection, intermediate-level disinfection and high-level disinfection
- List the storage requirements for endoscopes and sterile items
CMS Requirements:

• Tag A-0747; §482.42 The hospital must provide a sanitary environment to avoid sources and transmission and communicable diseases. There must be an effective program for prevention, control, and investigation of infections and communicable diseases.
• Tag A-0951; §482.52(b) Surgical Services must be consistent with needs and resources. Policies governing surgical care must be designed to assure the achievement and maintenance of high standards of medical practice and patient care.

Why are we here today?

In the United States:
• 1 out of every 20 hospitalized patients will contract an HAI.
• ~ 46.5 million surgical procedures
• 5 million gastrointestinal endoscopies

Each procedure involves contact of a medical device to a patient’s sterile tissue or mucous membranes.

RD Scott II, Direct Medical Costs of HAIs in US Hospitals and the Benefits of Prevention, Detection, and Control of Infectious Diseases Coordinating Center for Infectious Diseases Centers for Disease Control and Prevention March 2009
OSHA [www.osha.gov](http://www.osha.gov)

- Occupational Safety and Health Administration

EPA [www.epa.gov](http://www.epa.gov)

- Environmental Protection Agency

FDA [www.fda.gov](http://www.fda.gov)

- Food and Drug Administration

CMS [www.cms.gov](http://www.cms.gov)

- Center for Medicare & Medicaid Services
Must check

- Germicides are EPA registered.
- Germicides are used according to label directions.
- Disinfectants should have broad spectrum & adequate kill claims.
- Bleach is considered an acceptable disinfectant but is not EPA registered and has limited kill claims.

EPA
Regulations for:
- Pesticides and Medical Waste incinerators
- Disinfectants and Sterilants used on inanimate objects and environmental surfaces.

FDA
- Issues recall notices and safety alerts
- Publishes guidance, answers questions
- Reports problems
- Issues drug and device approvals and clearances

http://www.fda.gov/Safety/MedWatch/default.htm
Infection Prevention for CAHs

CMS

Federal agency

Administers Medicare and Medicaid

HIPAA (Healthcare Insure Portability and Accountability Act of 1996)

Enforces federal quality standards for various healthcare settings

CMS

- Oversight of Ambulatory Surgery Centers, long term care facilities, ESRD’s, home health agencies, intermediate care facilities, mental health facilities, comprehensive outpatient rehab facilities, and hospitals.
- Outlines Conditions of Participation (CoP) (CAHs)
- Outlines Conditions for Participation (CoP) (Hospitals)

http://www.cms.gov/default.asp

Spreading knowledge Preventing infection™
Infection Prevention for CAHs

CMS Survey

Survey
• Will be unannounced.
• CAH has swing beds, a distinct part rehabilitation unit, and a distinct part psychiatric unit, the team will use all three modules to conduct the survey of those activities.

Cleaning & Disinfection Principles and Practices

Patients deserve safe care anywhere healthcare is provided.
Goal

Target ZERO for the prevention of healthcare associated infections.

• Prevent infections in pts undergoing procedures.
• Provide a clean and sanitary environment.
• Eliminate risks associated with reprocessing of patient items and cleanliness of the environment.

§ 485.725 Condition of participation: Infection control.

• Tag: A-0747; §482.42: The hospital must provide a sanitary environment to avoid sources and transmission and communicable diseases. There must be an effective program for prevention, control, and investigation of infections and communicable diseases.
• Tag: A-0940; §482.51: If the hospital provides surgical services, the services must be well organized and provided in accordance with acceptable standards of practice. If outpatient surgical services are offered the services must be consistent in quality with inpatient care in accordance with the complexity of services offered.
Infection Transmission

Patient

Hand Hygiene
Standard Precautions
Transmission based Precautions

Environment

Hand Hygiene
Cleaning and Disinfection

Healthcare Workers

Hand Hygiene
Standard Precautions
Transmission based Precautions

How can you tell if this room is clean?
Cleaning and Disinfection

- Routine cleaning and disinfection of environmental surfaces
- Monitoring and measuring compliance
- EPA registered products
- Careful use of disinfectants
- Manufacturer’s guidelines
  - Amount
  - Dilution
  - Contact time
  - Safe use
  - Safe disposal

CDC Guideline for Environmental Infection Control in Healthcare Facilities, June 6, 2003

In the absence of a manufacturer’s cleaning instruction:

- Clean noncritical medical equipment surfaces with a detergent/disinfectant. This may be followed by an application of an EPA registered hospital disinfectant with or without a TB claim.
- Do not use alcohol to disinfect large environmental surfaces
- Use barrier protective coverings as appropriate for non critical surfaces that are touched frequently with gloved hands during delivery of pt care (computer keyboards).

CDC Guideline for Environmental Infection Control in Healthcare Facilities, June 6, 2003
Housekeeping Surfaces (floors, walls, table tops)

- Use one step process and EPA-registered hospital detergent/disinfectant designed for general housekeeping purposes in pt care areas
- Detergent and water are adequate for cleaning surfaces in nonpatient-care areas (administrative offices)
- Clean and disinfect high touch surfaces on a more frequent basis than minimal housekeeping surfaces
- Clean walls, blinds, and window curtains in a pt care area when they are visibly dusty or soiled

CDC Guideline for Environmental Infection Control in Healthcare Facilities, June 6, 2003

What is a high touch surface?

- Bed rails
- Carts
- Chairs
- Bedside tables
- Bedside commodes
- Door knobs
- Faucet handles
- Call cancel lights
- Call light controls
Environmental Risks

HIGH TOUCH SURFACES

- reservoir for pathogens
- Can reside and multiply
- Vehicle for hand contamination and further transmission

FAILURE

- Risk of employee to patient transmission (MDRO, CDI)
- Risk of transmission of environmental pathogens (e.g., pseudomonas)

CMS –CoP Infection Control

Are you?

- Using standardized method/procedure for containing, cleaning, and disinfecting after a blood spill on environmental surfaces?

Methods

- Review of current procedure
- Assure persons responsible for blood spill procedure are aware of the procedure and proper supplies and process to complete task
Objective Methods for Evaluating Environmental Hygiene

- Direct Practice Observations
- Swab Cultures
- Agar Slide Cultures
- Fluorescent Markers
- ATP Bioluminescence

- TDC Score -
  \[
  \text{# objects met clean criteria} \times \frac{100}{\text{total # objects evaluated}}
  \]

- Communicate TDC score with Housekeepers and establish goals.

CDC Environmental Cleaning Evaluation Tool Kit

Decreasing Order of Resistance of Microorganisms to Disinfectants/Sterilants

- **Most Resistant**
  - PRIONS
    - Spores (C. difficile, B. subtilis)
    - Mycobacteria (TB)
    - Non enveloped Viruses (small)
    - Fungi (Tricophyton spp)
    - Bacteria (S. aureus)

- **Most Susceptible**
  - Enveloped viruses (medium sized)
Instrument Reprocessing
Sterilization Principles and Practices

Patients deserve safe care anywhere healthcare is provided.

Invasive Procedure

- The introduction of pathogens that can lead to infection.

Failure
- to properly disinfect or sterilize equipment carries
  - Risk associated with breach of host barriers
  - Risk of person to person transmission
  - Risk of transmission of environmental pathogens
Decontamination

- Removal of pathogenic organisms from objects so they are safe to handle.
- Enzymatic cleaner/detergent
- Check label to assure the product has cleaning properties.
Decontamination
Don’t cut corners or multitask!

Classification of Devices

Critical (enters sterile tissue or vascular system) Implant, scalpels, needles, other surgical instruments
- Sterilization: Sporicidal, chemical, prolonged contact
- Sterilant/high level disinfectant

Semi Critical (touches mucous membranes)
- Flexible endoscopes, laryngoscopes, endotracheal tubes, and other similar instruments.
- High Level disinfection: Sporicidal chemical; short contact
- Sterilant/disinfectant

Non Critical (touches intact skin)
- Stethoscopes; table tops, floors, etc.
- Intermediate level or low level disinfection
- Hospital grade disinfectant with label claim for tuberculocidal activity
- Low level-no TB activity
GENERAL PRINCIPLES

• Soil acts to protect microorganisms from contact with disinfectants and sterilants
• Physical cleaning eliminates large numbers of organisms associated with the soil
• Sound cleaning practices are important in reducing microbial load on environmental surfaces
• Manufacturer’s recommendations for operating and cleaning of equipment must be followed carefully.

Cleaning

• Removal of all foreign material inorganic and organic materials (protein) such as soil or blood and body fluids from an item by use of water, mechanical action, detergents and/or enzymatic products.
• Thorough cleaning is essential before high level disinfection and sterilization
Types of Cleaning

Manual

Automated

Germicides

An agent that can kill microorganisms, particularly pathogenic organisms (germs)

Antiseptic
- Used on living tissues and skin

Disinfectant
- Applied only to inanimate objects (can harm living tissue)
Ultrasonics

• May be used on delicate instruments or those with tiny lumens
• Sonic waves generate minute bubbles on the instrument surface
• Bubbles expand and then implode
• Implosion generates localized vacuum and pulls the soil off the device

Disinfection

• A process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects.
• In health-care settings, objects usually are disinfected by liquid chemicals or wet pasteurization. Each of the various factors that affect the efficacy of disinfection can nullify or limit the results of the process.
Low Level Disinfectants

Kills most bacteria, some viruses, some fungi (not reliable for killing resistant microorganisms such as tubercle bacilli or bacterial spores)

USE: with Non Critical items
Items that touch intact skin
Stethoscopes, IV poles, bedside tables, etc.

• Ethyl or Isopropyl alcohol
• Quaternary ammonium germicidal detergent
• Sodium hypochlorite (premixed solutions, 5.2% household bleach)*
• Phenolic germicidal detergent
• Iodophor germicidal detergent

* Used in special circumstances- approved by Infection Control

Low/Intermediate Level Cleaning

• Apply solution with wet cloth, pre-saturated cloth product
• Right dilution of product
• Allow to air dry
• Contact time of product
• Right product for right device
Intermediate Level Disinfectants

- CDC designates any EPA registered hospital disinfectant with a tuberculocidal claim as an intermediate level disinfectant.

Kills M Tb, vegetative bacteria, viruses, fungi (does not necessarily kill bacterial spores)

USE: with Non Critical items
Items that touch intact skin
Hydrotherapy tanks, pulse oximeters, etc.

http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a2.htm

Semi-Critical items requiring HLD

- Touches mucous membranes, except dental

Endoscopes
Laryngoscope blades
Bronchoscopes
ET tubes
Respiratory therapy equip
Anesthesia equip

PRODUCT CLASSIFICATION:
Sterilant and/or HL disinfectant
**High Level Disinfectants**

Kills destroys all organisms with the exception of spores.

**USE:** with semi critical items & items that are temperature sensitive

- 0.55% Ortho-Phthalaldehyde (OPA)
- Glutaraldehyde (> 2.0%)
- Hydrogen Peroxide (HP) – 7.5%
- Peracetic Acid (PA)
- HP (1.0%) and PA (0.08%)
- HP (7.5%) and PA (0.23%)

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**Selection of Disinfecting Agent or Process**

- Equipment or instruments being reprocessed
- Intended use of equipment
- Manufacturer’s recommendations
- Degree of disinfection need (HLD vs sterilization)
- Ability to meet requirements for safe use of the disinfecting agent (location, physical layout)
- Turnaround time
**High Level Disinfection**

- Check the label
- Check your temperature
- Check the immersion time required
- Adjust AER to meet manufacturer’s recommendations

**Quality monitoring**

- MEC test strips
- Expiration date of test strips
- Temperature check

**Endoscopes**

Diagnostic and therapeutic device

- 1 in 1.8 million procedures infection rate
- More healthcare associated outbreaks than any other medical device
- Flexible endoscopes acquire high levels of microbial contamination during each use.
Endoscopy reprocessing

**Manual**
- Wipe outside immediately
- Wear appropriate PPE
- Leak test
- Thorough Cleaning, remove all valve covers
- Brush all lumens
- Fill all channels, lumens, immerse in HLD
- Follow manufacturer’s recs
- Rinse thoroughly (sterile vs nonsterile)
- Flush with 70% IPA
- Blow with compressed air

**AER**
- Wipe outside immediately
- Wear appropriate PPE
- Leak test
- Thorough Cleaning, remove all valve covers
- Brush all lumens
- Follow manufacturer’s recs
- Check to see that all steps will be done with AER
- Check to assure correct connectors
- Check to assure correct temp and time for HLD in AER

**Store**
- In area or cabinet to prevent recontamination
- Hung vertically
- Ventilated cabinet
- Carrying case to transport to healthcare facility
**Liquid chemical sterilant processing**

- Peracetic acid
- Devices are wet and unwrapped
- High level disinfection
- Safe for urologic scopes

Validated critical and semi-critical heat sensitive devices are ready for immediate use.

**Hydrogen Peroxide Gas Plasma processing**

- Low temperature
- Use on heat stable, heat sensitive instruments that have to be sterile (e.g., Cystoscopes in surgical suite)
- Rapid cycle
- No fumes and no aeration required.
- Dry, packaged terminally sterile instruments can be used immediately or stored for later use

GI endoscopes, which typically have more than one lumen channel and may be longer than 850 mm, are not acceptable for processing. Likewise, multi-channel flexible endoscopes cannot be processed in the sterilizer.
Critical items requiring Sterilization

Enters sterile tissue or vascular system

PRODUCT CLASSIFICATION:
Sterilant – sporicidal chemical; prolonged contact

Factors affecting the Efficacy of Instrument Reprocessing

• prior cleaning of the object
• organic and inorganic load present
• type and level of microbial contamination
• concentration of and exposure time to the germicide
• physical nature of the object (e.g., crevices, hinges, and lumens)
• presence of biofilms
• temperature and pH of the disinfection process
• in some cases, relative humidity of the sterilization process (e.g., ethylene oxide)
Sterilization

"process that destroys or eliminates all forms of microbial life and is carried out in health-care facilities by physical or chemical methods. Steam under pressure, dry heat, EtO gas, hydrogen peroxide gas plasma, and liquid chemicals are the principal sterilizing agents used in health-care facilities."

Sterilization

- Steam
  - Immediate Use
- ETO
- Hydrogen Peroxide Gas Plasma
- Liquid chemical sterilants
  - Cleaning precedes treatment
  - Concentration
  - Contact time
  - Temperature
  - pH
Sanitizing instruments

- Pay special attention to serrated edges and other areas where blood, oil, or grease may collect
- Using hot water, thoroughly rinse all detergent off the instruments
- Remove the excess moisture from the instruments by rolling them in a towel
- Check working condition of all instruments prior to cleaning
- Wrap the instruments for sterilization
- When instruments cannot be cleaned immediately after use, soak in solution of water and an effective blood solvent. *Never soak instruments in saline.*

Inspection of Instruments

*Purpose:* to ensure instruments are in good working order/alignment before they are processed.
- Use a well-lit clean area
- Instruments should be dry before you check them
- Check the serrations of each instrument meet evenly
- Check that the ratchets close easily and that they do not spring open.
- Check that the instrument opens and closes easily
- Check for all parts of the instrument (screws of the speculum are in place).
Inspection of Instruments

- Coat instruments with a water-soluble lubricant (instrument milk) to protect from corrosion and to provide lubrication for the hinges.
- Air dry following manufacturer’s guidelines (at least 20 minutes)
- If imperfections are found, separate out and follow agency policy for dealing with broken equipment.
  - corrosion
  - pitting
  - burrs or nicks
  - free moving box lock
  - hinges should not be stiff
- Instruments are now ready for processing
Damage to surgical instruments

Spotting - lies loosely on the surface
Staining - is integral with the surface
Corrosion - penetrates the surface

Disinfection and Sterilization ASC 2011
Protective Coverings must suit Sterilization Process

- Cloth wraps
- Paper
- Glassine-type paper
- Two way crepe paper
- Non woven wraps
- Total plastic film pouches & spun-bound polyethylene
- Paper/plastic peel-down package and/or pouch
Are your processes working correctly?
Factors that affect indicator results

- Sterilizer performance
- Preconditioning variations—are the set points achieved for sterilization purposes?
- General condition of the sterilizer
- Load configuration
- Steam quality
- Sterilizer chamber size

Sterilization Process Monitoring

Monitoring Tools

- Physical Monitors
- Chemical Indicators (CIs)
- Biological Indicators (BIs)
- Process Challenge Devices (test packs or challenge packs)
Infection Prevention for CAHs

Four Levels of Testing

- **Routine Load Test**
  - Each non-implant and implant load

- **Routine Sterilizer Monitoring**
  - Regular pattern of testing the efficacy of the sterilization process of machine

- **Sterilizer Qualification Test**
  - Sterilizer test after an event

- **Periodic product testing**
  - Test routinely processed items to ensure the effectiveness of the sterilization process.

ANSI/AAMI ST79 Section 10 Quality Controls

Physical Indicator

- cycle time
- temperature
- pressure
Class 1 Process Indicators

- Used with individual units to indicate that the unit has been directly exposed to the sterilization process.

- Designed to react to one or more of the critical process variables.
Class 2 Indicators used for specific tests

- Equipment Control
- Testing Sterilizer Performance

Example: Bowie Dick Test
Measures efficacy of air removal and steam penetration

Class 3 Single Variable
- Pack control (internal chemical indicators)
  Designed to react to one of the critical variables (time or temperature)

Class 4 Multi Variable
- Pack control (internal chemical indicator)
  Designed to react to two or more of the critical variables (time and temperature) or (time and pressure)
Class 5 Integrating Indicators

- Internal chemical indicators
- Designed to react to all the critical variables of sterilization cycle over a range of temperatures (response correlates to a biological indicator)

Class 6 Emulating Indicators

- Cycle specific
- Designed to react to all the critical variables (Response does not correlate to a BI)

Cannot be used to replace a biological indicator
“Biological indicators should be used within Process Challenge Devices (PCDs) for routine sterilizer efficacy monitoring at least weekly, but preferably every day that the sterilizer is in use.

-AAMI ST79

“An air-removal test (Bowie-Dick Test) must be performed daily in an empty dynamic-air-removal sterilizer (e.g., prevacuum steam sterilizer) to ensure air removal.

BIOLOGICAL INDICATORS

Use biologic indicators to monitor the effectiveness of sterilizers at least weekly with an FDA-cleared commercial preparation of spores (e.g., *Geobacillus stearothermophilus* for steam) intended specifically for the type and cycle parameters of the sterilizer. Category IB.


Class I
External CI on every package unless the internal CI is visible

Class 4 or 5
Internal CI on every package

When should I use them?

Class 5 CI PCD
may be used to release a non-implant load

Class 5 CI
may be used to release an implant prematurely before the BI result is known only in defined medical emergencies
Immediate Use/Flash Sterilization

Certain parameters should be met:
- Item decontamination
- Exogenous contamination prevented
- Sterilizer function is monitored by physical, chemical, and biological monitors

Do not use flash sterilization for reasons of convenience, as an alternative to purchasing additional instrument sets, or to save time.

Immediate Use/Flash Sterilization

Process designed for the steam sterilization of patient care items for immediate use.

Then
- Originally defined as sterilization of unwrapped object at 132°C for 3 min at 27-28 lbs pressure in gravity.

Now
- Sterilization involves a high temperature (270-275°F) with minimal or no dry time.
- May be either gravity or dynamic air-removal cycles (e.g. prevacuum).
History of Flash Sterilization

Then

Now

the type of packaging includes perforated, mesh-bottomed, open surgical trays, rigid sterilization container systems, protective organizing cases; and single-wrapped surgical trays.

Immediate Use/Flash Sterilization

- Flash is used for items that must be used immediately.
- Acceptable for processing items that cannot be packaged, sterilized and stored before use.
- Because of potential for serious infections, implanted surgical devices should not be flash sterilized unless unavoidable (e.g., orthopedic screws).
- The processed items(s) must be transferred immediately, using aseptic technique, from the sterilizer to the actual point of use, usually the sterile field in an ongoing surgical procedure.
- Regardless of whether the items are wrapped, there is no storage or shelf life of flash-sterilized items.
Immediate Use/Flash Sterilization

AORN (2010)
- should be kept to a minimum
- should be used only in selected clinical situations and in a controlled manner
- only when there is insufficient time to process by the preferred wrapped or container method.
- Flash sterilization should not be used as a substitute for sufficient instrument inventory
- Proper decontamination is essential for removal of bioburden.

The cycle is preprogrammed based on:
- type of sterilizer control (i.e., gravity-displacement, dynamic-air-removal)
- the configuration of the load (i.e., the presence or absence of porous materials).

The items to be processed are usually unwrapped, a single wrapper, and some rigid container systems have been designed and validated by the container manufacturer for use with flash cycles.

Implant considerations
- Vendor coordination so implant can be processed safely and in a timely manner.
- Should be fully traceable
- Should not be flash sterilized:
- Premature release of implant device load record must be completed and tracked.
Infection Prevention for CAHs

Note to self

Never, never google images for “implants” again

Sterilizers
Care and Maintenance

- Instruction Manuals
- Installation
- Routine Care (inspected and cleaned daily according to manufacturer’s instructions)
- Preventative maintenance
- Calibration (if necessary according to manufacturer’s recommendations)
- Record keeping
Event related shelf life
- Recognizes that the product remains sterile until an event causes it to become contaminated

Time related shelf life
- Considers items sterile for varying periods depending on the type of material used to wrap the item/tray. Once the expiration date is exceeded the pack should be reprocessed

Documentation
Every reprocessed medical device, especially implants, should be fully traceable to the patient on whom it is used or in whom it was implanted and that “traceability can be accomplished by recording the sterilizer load identifier on the patient chart or the name of the patient on the load record”

Items to be documented:
- Date
- Sterilizer number
- Patient ID
- Surgeon
- Device
- Documentation that the device was cleaned (immediate use)
- CI included in load
- BI run (to document first BI of the day plus any implant cycles)
WASHINGTON, DC / October 21, 2010 — Today, the U.S. Office of Special Counsel (OSC) transmitted to the President and Congressional oversight committees findings of a Department of Veterans Affairs (VA) investigation confirming that improperly cleaned and poorly sanitized instruments were distributed to clinics and operating rooms at the VA’s G.V. (Sonny) Montgomery Medical Center (Jackson VAMC) in Jackson, Mississippi.

OSC received these allegations from a whistleblower and referred them to the Secretary of the VA for further investigation. The report of that investigation, which was conducted by the Veterans Health Administration (VHA), confirmed that dirty and rust-stained instruments, such as scalpels, blade handles, tissue and nail nippers, hemostats, and bone cutters, were issued for use within the Jackson VAMC. The report noted that generally, on occasions when dirty instruments were distributed, staff discovered them prior to use and replaced them with clean instruments. The report also stated that prior to 2006, providers specifically in the Jackson VAMC podiatry clinic experienced frequent instrument shortages, resulting in the reuse of unsterilized instruments. The agency stated that this problem was resolved by the purchase of additional instruments.

In response to the sterilization problems that the investigation identified within the podiatry clinic, the agency convened a Pre-Clinical Risk Assessment Board (Pre-CRAAB) to determine whether the possible exposure to veterans prior to 2006 required that notice be given regarding possible infection. The Pre-CRAAB was comprised of VA staff from VA headquarters in Washington, D.C. and local staff from the...
Reprocessing Failure Recalls

Recalls : ANSI/AAMI ST79 2010 &A1 & A2:
- Written policies and procedures for recall of items from issued or stored loads should be developed in cooperation with ICP committee and risk management of the facility
- P&P’s should be documented and records maintained
- Whenever there is evidence of a sterilizer failure, the ICP professional should be notified so that follow up surveillance of patients can be conducted.
- Written P & Ps should be developed to be in compliance with the Safe medical Device Act of 1990 as it pertains to failures of reusable medical devices

Reprocessing Failure Recalls

- Procedure should be written
- Outline criteria for recall process to be initiated
- Identify persons able to authorize a recall
- Identify person(s) that can execute the recall process

Recall process:
- Confirm disinfection or sterilization reprocessing failure
- Embargo any improperly processed items
- Do not use the questionable reprocessing device
- Inform key stakeholders
- Conduct complete and thorough evaluation of the cause of disinfection
Reprocessing Failure Recalls

Recall Process:
• Prepare a line listing of potentially exposed individuals
• Assess whether disinfection/sterilization failure increases the risk of patient infection.
• Inform expanded list of stakeholders of the reprocessing issue
• Develop a hypothesis for the disinfection/sterilization failure and initiate corrective action
• Develop a method to assess potential adverse patient events
• 11. Consider notification of State and Federal authorities
• Consider patient notification
• Develop long-term follow-up plan
• Perform after action report

Reprocessing Failure Recalls

Recall Report:
• Identifies the circumstances that initiated the recall order
• Identifies corrective action (s) to prevent a recurrence
• State the number of items identified to be recalled and the actual number of items located.
In Summary:

- Failure to properly disinfect or sterilize equipment carries risks to our patients.
- Healthcare associated infections are associated with significant patient morbidity and mortality.
- Improved compliance with infection prevention recommendations is needed to prevent HAIs.

Questions?

“...the courage, hard work, and commitment of doctors, nurses, and others in health care are today the only real means we have of stemming the flood of errors that are latent in our health care systems.”

(Crossing the Quality Chasm, p4)