Infection Prevention & Control in Ambulatory Surgical Centers

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www.health.state.mn.us/divs/idpc/dtopics/infectioncontrol/

Objectives

• Describe infection prevention measures in Ambulatory Surgical Centers (ASC)

• Outline safe injection practices in ASC

• Identify multi-drug resistant organisms (MDRO) of concern in ASC and how antimicrobial stewardship can reduce their risk

• Identify resources and consultation available from MDH
Ambulatory Surgical Centers

• Providing more complex, invasive care

• Procedures performed in ASC:
  – 1996: 32 million
  – 2006: > 53 million

• From 1996 to 2006:
  – 273% increase in spinal cord injections (increase of 1.5 million)
  – 200% more colonoscopies (increase of 4 million)

Data from the National Survey of Ambulatory Surgery
GAO. HHS Has Taken Steps to Address Unsafe Injection Practices, but More Action Is Needed.

ASCs in Minnesota - 2014

• 65 licensed ASCs
  – 60 state-licensed and CMS certified
  – 5 state-licensed only
Increased Awareness of Infection Prevention & Control Needs in ASCs


“The increasing volume of procedures and evidence of infection control lapses in ASCs create a compelling need for current and nationally representative data on healthcare-associated infections (HAI) in ASCs in order to reduce their risk…”

Summary of Regulations for ASC:
http://www.ascassociation.org/federalregulations

Quality Reporting for ASCs

Federal (CMS) Measures for CY 2016 Payment Determination

| ASC-1  | Patient Burn                |
|ASC-2   | Patient Fall                |
|ASC-3   | Wrong Site, Wrong Side, Wrong Patient, Wrong Procedure, Wrong Implant |
|ASC-4   | Hospital Transfer/Admission |
|ASC-5   | Prophylactic Intravenous (IV) Antibiotic Timing |
|ASC-6   | Safe Surgery Checklist Use  |
|ASC-7   | ASC Facility Volume Data on Selected ASC Surgical Procedures |
|ASC-8   | Influenza Vaccination Coverage among Healthcare Personnel (via NHSN) |
What is the National Healthcare Safety Network (NHSN)?

- Secure, internet-based system for monitoring healthcare-associated events (infections, immunizations, etc.) and processes (central line insertions, etc.)
- HAI surveillance gold standard
- Compare facility-level data to CDC’s national data
- Guide prevention efforts

ASC Reporting via NHSN

- Starting 2014-2015 influenza season CMS-licensed ASCs required to report healthcare personnel vaccination summary data via NHSN
- Five step NHSN enrollment process
  
  http://www.cdc.gov/nhsn/ambulatory-surgery/enroll.html

- Modules:
  - Surveillance for Healthcare Personnel Vaccination
  - Surveillance for Surgical Site Infection (SSI) Events
CMS Surveyor Worksheet: Part 1

ASC Characteristics

- Questions 1 – 15: descriptive questions about the facility
- Questions 15 – 20: infection control program
  - Does the ASC have an explicit **infection control program**?
  - Does the ASC’s infection control program follow **nationally recognized infection control guidelines**?
    - CDC/HICPAC Guidelines for Isolation Precautions; Hand hygiene; Disinfection and Sterilization in Healthcare Facilities; Environmental Infection Control in Healthcare Facilities
    - AORN Perioperative Standards and Recommended Practices
    - Guidelines issued by a specialty surgical society / organization (List)
  - Does the ASC have a **licensed health care professional qualified through training in infection control** and designated to direct the infection control program?
  - Does the ASC have a **system to actively identify infections** that may have been related to procedures performed at the ASC?
  - Do staff members receive **infection control training**?
  - How many procedures were observed during the site visit?
CMS Surveyor Worksheet: Part 2

Infection Control & Related Practices

I. Hand Hygiene; Standard + Transmission-based Precautions

II. Injection Practices (injectable medications, saline, other infusates)
   - Applies to staff preparing and administering medications and performing injections (e.g., anesthesiologists, certified registered nurse anesthetists, nurses)

III. Single Use Devices, Sterilization, and High Level Disinfection

IV. Environmental Infection Control
   I. Includes surgical techs, cleaning staff, etc.

V. Point of Care Devices (e.g., blood glucose meter)

Infection Prevention & Control (and Related) Strategies in ASC

- Standard Precautions
  - Hand hygiene
  - Transmission-based Precautions

- Cleaning and high-level disinfection/sterilization of reusable medical equipment

- Injection safety
  - Point of Care Devices (e.g., blood glucose meter)
Standard Precautions

• Basic level of infection prevention for all patients – always!
  – Applies to:
    • blood and all body fluids, secretions and excretions
    • non-intact skin
    • mucous membranes

• Personal protective equipment (PPE)
  – As indicated by patient / procedure / situation
  – Protect healthcare worker AND patient

• Hand hygiene

Transmission-based Precautions

Standard Precautions +

  – **Contact**
    • Direct (skin to skin, fecal-oral) and indirect (environmental)
    • Gloves, gown (if splashing contamination is possible)
    • E.g. MRSA, CRE

  – **Droplet**
    • Large droplets: respiratory secretions, coughing, sneezing
    • Surgical mask within 3-6 feet of patient
    • E.g. Pertussis, influenza

  – **Airborne**
    • Pathogens suspended in air as small particles
    • N95, PAPR, negative pressure room
    • E.g. Tuberculosis, varicella
Hand hygiene

- Perform hand hygiene:
  - After touching blood, body fluids, secretions, excretions, etc.
  - Whether or not gloves were worn
  - Immediately after removing gloves
  - Between patient contacts

- Antimicrobial soap and water / friction

- Alcohol-based hand rubs

Caveat: Organic material inactivates alcohol, must wash to remove visible soil
Reusable medical equipment must be appropriately cleaned and disinfected / sterilized prior to each use:

- Endoscopes
- Surgical instruments

Assign responsibilities; ensure annual competency training and education

Use appropriate PPE when handling/reprocessing contaminated equipment
Infections Associated with Reprocessing

“Failure to adhere to established reprocessing guidelines accounts for most, if not all, of the reported cases of bacterial and viral transmissions.”


Endoscope Reprocessing Breaches Reported to MDH, 2010-2011

<table>
<thead>
<tr>
<th>Healthcare facility type</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory surgical center</td>
<td>1</td>
</tr>
<tr>
<td>Clinic</td>
<td>1</td>
</tr>
<tr>
<td>Hospital</td>
<td>5</td>
</tr>
</tbody>
</table>

| Breaches that resulted in patient notification | 4   |

| Number of patients affected           | 6 - 2,600 |

<table>
<thead>
<tr>
<th>Cause of breach</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of communication between reprocessing departments within facility</td>
<td>1</td>
</tr>
<tr>
<td>Endoscope owned by physician; facility did not take responsibility for regular maintenance and staff training</td>
<td>1</td>
</tr>
<tr>
<td>Reprocessing of single use device following incorrect instructions provided by vendor representative</td>
<td>1</td>
</tr>
<tr>
<td>Failure to follow manufacturer instructions resulted in use of incorrect AER connector</td>
<td>1</td>
</tr>
<tr>
<td>Piece of cleaning brush dislodged into patient's colon procedure</td>
<td>1</td>
</tr>
<tr>
<td>Use of improper AER connector due to incorrect manufacturer instructions</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
</tr>
</tbody>
</table>
Key Endoscope Reprocessing Steps

Best approach = primary prevention

- Don’t let biofilms establish a “foot hold”
- Manual pre-cleaning
- Brush accessible channels
- High level disinfection
- Thorough drying
- Proper storage (always vertical!)

www.health.state.mn.us/divs/idepc/dtopics/infectioncontrol/scope/
What is Injection Safety?

• Set of measures for performing safe injections
  – IV administration (e.g., chemotherapy, saline flush)
  – Spinal injection procedures (e.g., intrathecal chemotherapy)
  – Vaccinations

One needle: One time
One syringe: One time
Single use vials only

18 Outbreaks of Viral Hepatitis Associated with Unsafe Injection Practices in Ambulatory Settings, 2001-2011

<table>
<thead>
<tr>
<th>Healthcare Setting</th>
<th># of Outbreaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain management clinics</td>
<td>5</td>
</tr>
<tr>
<td>Endoscopy clinics</td>
<td>5</td>
</tr>
<tr>
<td>Alternative medicine clinics</td>
<td>3</td>
</tr>
<tr>
<td>Hematology-oncology clinics</td>
<td>2</td>
</tr>
</tbody>
</table>

• 2 common unsafe injection practices that resulted in BBP transmission (both can transmit infections, even if the needle is changed):
  – Reuse of a syringe for multiple patients
  – Accessing a medication vial used for multiple patients

Source: CDC
**Invasive Staphylococcus aureus Infections Associated with Pain Injections and Reuse of Single-Dose Vials — Arizona and Delaware, 2012**

**MRSA Outbreaks Blamed on Unsafe Injection Practices**

A new CDC report detailing 2 MRSA outbreaks reiterates the CDC’s recommendation for using single-use and single-dose vials for 1 patient only, even when facing medication shortages.

According to the report, at least 10 patients contracted life-threatening staph or MRSA infections and had to be hospitalized as a result of providers using medication from single-dose or single-use vials on multiple patients in a pain management center in Arizona and an orthopedic center Delaware.

Another patient died, and while a multiple-drug overdose was reported as the cause of death, an invasive MRSA infection couldn’t be ruled out, says the CDC. In both investigations, clinicians reported difficulty obtaining the medication type or vial size.

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**CDC Guide to Infection Prevention in Outpatient Settings: Minimum Expectations for Safe Care**

Summary of existing guidance that provides basic infection prevention recommendations for nearly any outpatient setting.

<table>
<thead>
<tr>
<th>Injection safety</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Needles and syringes are used for only one patient (this includes manufactured prefilled syringes and cartridge devices such as insulin pens)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>B. The rubber septum on a medication vial is disinfected with alcohol prior to piercing</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>C. Medication vials are entered with a new needle and a new syringe, even when obtaining additional doses for the same patient</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>D. Single-dose (single-use) medication vials, ampules, and bags or bottles of intravenous solution are used for only one patient</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>E. Medication administration tubing and connectors are used for only one patient</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>F. Multi-dose vials are dated by HCP when they are first opened and discarded within 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

*Note: This is different from the expiration date printed on the vial.*
CDC One and Only Campaign

- Promote safe injection practices
- Provide information to clinicians in all types of healthcare settings

Unsafe injection practices = never events


CDC injection safety FAQs from providers [www.cdc.gov/injectionsafety/](http://www.cdc.gov/injectionsafety/)
Infection Control Breaches Which Warrant Referral to Public Health Authorities

- If State Survey Agency or Accrediting Organization “identify any of the breaches of generally accepted infection control standards…refer them to appropriate State authorities for public health assessment and management.”

CMS Memo May 30, 2014

Breaches to Be Referred

- Same needle for more than one individual

- Same (pre-filled/manufactured/insulin, other) syringe, pen or injection device for more than one individual;

- Re-using a needle or syringe which has already been used to administer medication to an individual to subsequently enter a medication container (e.g., vial, bag), and then using contents from that medication container for another individual;

- Same lancing/fingerstick device for more than one individual, even if the lancet is changed.
How Can MDH Help?

• Assist in assessing details of the breach
• Provide additional laboratory testing, if indicated
• Consult regarding patient notification
• Engage CDC experts for further consultation and lab testing as needed
• Please contact us at 651-201-5414 or toll free 1-877-676-5414.

P. aeruginosa       A. baumanii
ESBL               VISA
CRE                MRSA
Concern for        VRE
Multi-drug         VRE
Resistant          VRSA
Organisms (MDRO)   VRSA
XDRTB              PNSSP
C. difficile        QRNG
Carbapenem-resistant Enterobacteriaceae

• Enterobacteriaceae: large family of Gram-negative bacilli (GNB)
  – Normal human gut flora
  – Clinical infections: bloodstream/wound/urinary tract infections

• Carbapenems: Class of broad-spectrum β-lactam antibiotics
  – Ertapenem, doripenem, imipenem, meropenem
  – Mainstay of treatment targeting resistant GNB

• CRE: highly resistant GNB

Clinical and Epidemiological Importance of CRE

• Invasive infections associated with high mortality

• Resistance is highly transmissible
  • Between organisms (i.e. plasmids)
  • Between patients (e.g. hands of healthcare workers)

• Limited treatment options

• Emergence of pan-resistant strains

• Potential for spread into community (E. coli – urine)
MDH Recommendations for Management of CRE

- Isolation precautions – regardless of resistance mechanism

- Lab: Review micro records for previous 6 months to identify any previously unrecognized CRE cases

- Inter-facility and intra-facility communication

- Active surveillance testing:
  - Single round active surveillance testing among patients with epidemiological links
  - Repeat surveillance testing weekly until no new cases

- Contact MDH (651-201-5414)
Who is at increased risk for infection with CRE?

• Risk factors:
  – Co-morbid conditions
  – Frequent or prolonged hospitalizations
  – Invasive devices
  – Antimicrobial exposure (vancomycin, fluoroquinolones, penicillins, and extended-spectrum cephalosporins)

Infection Prevention and Control Recommendations

• MDH Recommendations for the Management of CRE in Acute and Long-term acute Care Facilities
  • http://www.health.state.mn.us/divs/idepc/dtopics/cre/cre.pdf

• MDH Recommendations for the Management of CRE in Long-term Care Facilities
  • http://www.health.state.mn.us/divs/idepc/dtopics/cre/rec.pdf

• CDC Guidance for Control of CRE
  • http://www.cdc.gov/hai/organisms/cre/cre-toolkit/
**Clostridium difficile (C. difficile)**

*C. difficile* bacteria:
- Anaerobic gram-positive, spore-forming rod
- Major cause of antibiotic-associated diarrhea
  - > 90% cases occur during or after antibiotic therapy
- Elderly are at highest risk for morbidity and mortality

**Risk Factors for C. difficile Infection**

*Main modifiable risk factors*

- Antimicrobial exposure
- Acquisition of *C. difficile*
- Advanced age
- Underlying illness
- Immunosuppression
- Tube feeds
- Gastric acid suppression
- Use of nasogastric or gastrostomy feeding tubes
- Use of proton-pump inhibitors
Infection Prevention for CDI Positive Patients

• Standard + Contact Precautions (gloves, gown)
• Dedicate patient care equipment
• Hand hygiene with soap and water (Alcohol-based hand products not effective against C. difficile spores)
• Clean/disinfect environmental surfaces and reusable devices after each use
  – Bleach-containing/sporicidal EPA-registered product
  – Follow manufacturer recommendation for dilution, application and contact time
• Routine environmental testing is not recommended

Guideline for Environmental Infection Control in Health-care facilities, 2003
http://www.cdc.gov/ncidod/hip/enviro/guide.htm

Methicillin-Resistant S. aureus (MRSA)

• Resistant to beta-lactam antibiotics (all penicillins and cephalosporins)
• Identified by presence of specific genes
• Antibiotic use encourages the growth of these bacteria
MRSA Clinical Spectrum

- Severe / Invasive Infections
- Skin Infections
- Colonization

Environmental Cleaning

- Standard facility cleaning and disinfection procedures
  - Follow manufacturer’s recommended application procedures and contact times
- No special recommendations for:
  - Trash disposal
  - Dishes, glasses, eating utensils
  - Laundry
  - Bathroom and shower cleaning/disinfection
  - Cleaning/disinfecting recreational and physical therapy equipment
What is Antimicrobial Stewardship?

A multidisciplinary approach to optimizing antimicrobial use through appropriate selection, dosing, and duration while minimizing unintended consequences.

Correct Drug  Cure/Prevent Infection
Right Dose     Minimize Toxicity
Right Duration Prevent Resistance

Strategies for Stewardship

- Multidisciplinary approach: prescribers, pharmacist, infection prevention, microbiologist, information specialists, nursing
- Guidelines and clinical pathways
- Optimization of: Drug/dose/duration
- Review of microbiology results / revision / de-escalation of empiric prescribing
SAVE THE DATE!!!!

• 3rd Annual Minnesota Antimicrobial Stewardship Conference

• Thursday October 16, 2014

• Location: Mall of America – Great Room
• Register at: http://events.constantcontact.com/register/event?llr=voutogmab&oeidk=a07e9klapwb468e882

• Antimicrobial stewardship strategies in LTCF, Emergency Departments, across transitions of care
Summary

• Compliance with infection prevention measures is critical in ASC

• Unsafe injection practices are never events

• Reusable medical device reprocessing is complex and an essential component of infection prevention

• Antimicrobial stewardship contributes to MDRO prevention

• MDH is available for consultation for injection or reprocessing breach situations

CDC Resources

• CDC Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006  www.cdc.gov/hicpac/mdro/mdro_0.html


• Get Smart: Know When Antibiotics Work  www.cdc.gov/getsmart/
Thank you!

Questions?
Minnesota Department of Health website
www.health.state.mn.us/divs/idepc/diseases/mrsa/index.html

MDH Acute Disease Investigation and Control
651-201-5414 or
toll-free 1-877-676-5414