AANA Infection Control Guidelines & Your Practice

New England Assembly of Nurse Anesthetists

October 25, 2014

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AANA Senior Director, Professional Practice
Timely Objectives

Discuss aspects of your practice that you will change to improve patient safety and minimize risk of infection.

Describe safe injection practice.

Disclosures: None
AANA’s Position

Standards for Nurse Anesthesia Practice

CRNAs shall adhere to infection control policies and procedures to minimize the risk of infection to the patient, the CRNA, and other healthcare providers

Safe Practices for Needle and Syringe Use
Reduce Infection Risk

Patient safety first

Integrate best practice into your practice

If you don't have time to do it right, when will you have time to do it over?
Vigilance

Hallmark of Nurse Anesthesia Practice
Ebola (Ebola Virus Disease)

2014 West Africa Outbreak

The 2014 Ebola epidemic is the largest in history, affecting multiple countries in West Africa. One imported case from Liberia and associated locally acquired cases in healthcare workers have been reported in the United States. CDC and partners are taking precautions to prevent the further spread of Ebola within the United States.

Latest CDC Outbreak Information
Updated October 20, 2014

What’s New

- October 20, 2014 Nigeria is now free of Ebola virus transmission
- October 20, 2014 Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing)

http://www.cdc.gov/vhf/ebola/index.html
Ebola Virus Disease

Information for Healthcare Workers and Settings

U.S. Healthcare Settings

- **Guidance & Recommendations**
  - Infection Prevention and Control for Hospitalized Patients with Known or Suspected Ebola in U.S. Hospitals
  - Environmental Infection Control in Hospitals for Ebola Virus - Interim Guidance
  - Safe Handling of Human Remains of Ebola Patients in U.S. Hospitals and Mortuaries
  - Medical Waste Management

- **Patient Evaluation**
  - Algorithm - Evaluating Returned Travelers for Ebola, US [PDF - 1 page]
  - Checklist for Patients Being Evaluated for Ebola in the U.S. [PDF - 1 page]

- **Laboratory (specimen collection, transport, testing, submission)**
  - Specimen Collection, Transport, Testing, and Submission for Persons Under Investigation for Ebola in the U.S. - Interim Guidance
    - Factsheet - Visual format [PDF - 1 page]
    - Packaging and Shipping Clinical Specimens Diagram

Resources for non-U.S. Healthcare Settings

Medscape Commentary

Infection Prevention and Control of Ebola Virus Disease in US Hospitals

Posting date: Wednesday, August 20, 2014

Examiner: David E. Kuby, MD
Anesthesia Care of the Ebola Patient
Practice Considerations

In light of the recent care of Ebola patients and transmission of Ebola within the U.S., the AANA continues to monitor the ongoing situation in the U.S. and abroad. Ebola virus disease (EVD) is characterized by a high viral load, high rate of morbidity and mortality when infected, risk of human-to-human transmission and no FDA-approved vaccine and treatment.\(^1,2\)

Excellence in care, safety and continuous improvement of care are the hallmarks of the anesthesia profession. Nurse anesthetists may be called upon to care for patients infected with the Ebola virus. The AANA is committed to support CRNAs and the healthcare team in safe delivery of patient care, to maintain the health of the nurse anesthetist, and the safety of families and community.

Information and guidelines are being frequently updated. Please refer to the CDC Ebola Outbreak and www.aana.com/ebola for current information. Please contact the AANA at practice@aana.com or call 847-655-8870 with questions, concerns or new learning that we may share.
EBOLA TRANSMISSION

• Person to person by very close contact with an infected person or with their body fluids
• Virus spreads through contact with infected body fluids on the patient, their cloths or linens, bedrails, side tables, floor, thermometers or other virus-contaminated medical equipment
## Ebola Virus Containing Body Fluids

<table>
<thead>
<tr>
<th>Fluids</th>
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<tbody>
<tr>
<td>Blood</td>
</tr>
<tr>
<td>Breast milk</td>
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<tr>
<td>Organs and tissues</td>
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<td>Saliva</td>
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<td>Semen</td>
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<td>Stool</td>
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<td>Sweat</td>
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<td>Urine</td>
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<tr>
<td>Vaginal secretions</td>
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<tr>
<td>Vomit</td>
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<tr>
<td>Amniotic fluid (possibly)</td>
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</tbody>
</table>

**Note:** Ebola virus has been isolated from semen 61 days after the initial symptoms of infection appear. Transmission through semen has occurred 7 weeks after clinical recovery.

Kimberly-Clark Ebola Virus Disease (EVD) Precautions Brief: September 19, 2014
Incubation Period

• 2-21 days before symptoms occur, typically 4-9 days

• Not contagious until symptoms appear

• Hemorrhage begins to present 4-5 days after symptom onset
Clinical Characteristics

- Acute infection begins as a non-specific febrile illness (fever, myalgia, malaise, progresses to include GI symptoms)
- Small vessel increased permeability
- Multisystem compromise
- Hemorrhage may occur in the second week
- Poor prognosis associated with shock, encephalopathy, hemorrhage, high viral load
Clinical Characteristics

- Hypovolemia with body weight increases, volume loss 5-10 liters/day
- Marked electrolyte abnormalities and nutritional deficiency
- Viral RNA found on skin, in blood, urine, semen, endotracheal suctioning, vomitus, and stool
Ebola Virus Survival & Transmission

• **Virus Survival**
  - Ebola virus can survive and remain infective in liquid or dried organic matter at room temperature for days

• **Transmission**
  - Physical contact, splash, spatter, spray, aerosol

• **Entry into the body**
  - Cuts – small or large, rash or abrasion
  - Mucosa – eyes, mouth, nose, throat, lungs, urinary track, vagina, intestines
High Risk Exposure

- Percutaneous (e.g., needle stick) or mucous membrane exposure to blood or body fluids of EVD patient.

- Direct skin contact with, or exposure to blood or body fluids of, an EVD patient without appropriate personal protective equipment (PPE).
Low Risk Exposure

- Other close contact with EVD patients in health care facilities or community settings.
- Being within approximately 3 feet (1 meter) of an EVD patient or within the patient’s room or care area for a prolonged period of time (e.g., health care personnel, household members) while not wearing PPE.
- Direct brief contact (e.g., shaking hands) with an EVD patient while not wearing recommended PPE.
How Contagious is Ebola?

The number of people that one sick person will infect (on average) is called $R_0$. Here are the maximum $R_0$ values for a few viruses.

- Hepatitis C (2)
- Ebola (2)
- HIV (4)
- SARS (4)
- Mumps (10)
- Measles (18)

Doucleff, M. No, seriously, how contagious is Ebola? NPR Shots. October 2, 2014
Five Pillars of Safety

Facility leadership has responsibility to provide resources and support for implementation of effective prevention precautions.

Designated onsite Ebola site manager responsible for oversight of implementing precautions.

Clear, standardized procedures where facilities choose one of two options and have a back-up plan.

Trained healthcare personnel: practice numerous times to make sure they understand how to use the equipment.

Oversight of practices donning and doffing PPE to identify errors in real time.

http://www.cdc.gov/media/releases/2014/fs1020-ebola-personal-protective-equipment.html
Facility Planning

- Standard Precautions at home and at work
  - Meticulous hand hygiene
  - PPE
- Anyone remember comprehensive Y2K or CJD response planning?
- Every facility area who may be involved was represented
- Review existing policies, CDC guidelines
- Work with first responders and community
- Communication plan
Facility Planning

- Identify staff volunteers
- Activities of team members involved in patient care must be monitored by other team members, team coordinator
- Team training, communication and ongoing learning as care processes improve

- Volunteers train
- Use disposables whenever possible
- Patient dedicated equipment
Team Training: PPE

• Team must practice using PPE monitored by qualified trainers
  o Practice includes donning and removal the PPE. The care required for safe doffing of PPE can present unique challenges.
  o The challenges performing procedures while wearing this equipment must be anticipated and team member must practice performing anticipated procedures while the PPE is donned.
Ebola armor: Protective gear for healthcare workers

Doctors Without Borders
Personal Protective Equipment (Non-disposable)

- Goggles or face shield
- Hood covers the neck and shoulders, worn over mask
- Disposable suit is secured with front zipper
- Second pair of surgical or rubber gloves
- Apron covers from neck to below the knees
- Surgical gloves
- Rubber boots

Ebola armor: Protective gear for healthcare workers
Team Training: Safety

• Use of checklists where appropriate to minimize variability of care and optimize outcomes
• Daily team meeting to review plans, protocols, discuss observations, and new information
• Log all staff who enter the isolation area
• Electronic entry of all staff twice daily temperature and symptom review for 21 days after last day working in the unit
Sharps & Drug Safety

Safe injection practices

• Needle, sharps safety
  ▪ Needless drug administration and IV access

• Drug safety
  ▪ One vial, one needle, one patient
  ▪ Discard all multidose vials
OUR HISTORY

Fall 2007—cluster of new HCV infections southern Nevada outpatient endoscopy center
• CRNA Re-USE *SDV* of Propofol, *needles* and *syringes*
• 6 patients were infected with HCV
• 40,000+ patients were informed of potential exposure
  AANA notified all members of the event.
• One & Only Campaign: One Patient, One Needle, One Syringe, One Time

Summer 2012: 2 CRNAs & gastroenterologist indicted for 2\textsuperscript{nd} Degree Murder for death of endoscopy patient
Summer 2013: anesthesiologist convicted June 2013
ONE patient
ONE needle
ONE syringe
ONE single-dose vial
ONE TIME

ONLY ONE TIME

http://oneandonlycampaign.org/

AANA
AMERICAN ASSOCIATION OF NURSE ANESTHETISTS

www.aana.com
Post Sharps Exposure

• Follow facility policy following personal sharps injury or exposure to blood, body fluids, or secretions.
  ▪ Stop working and immediately wash the area with soap and water
  ▪ Irrigate eyes or mucous membranes with copious amounts of water or eye wash solution

• Report and immediately contact Infectious Disease consultant for evaluation and care
Ebola signs and symptoms

- Fever
- Severe headache
- Muscle pain
- Weakness
- Diarrhea
- Vomiting
- Abdominal pain

- Unexplained hemorrhage (bleeding or bruising)
- Symptoms may appear from 2-21 days post exposure to Ebola, average is 8-10 days.
Anesthesia

- In patient’s room, TIVA, ICU ventilator
- Use of anesthesia machine is discouraged due to decontamination challenges
  - Disposable circuit, viral filters on the inspiratory and expiratory limbs of the circuit.
  - Do not open the patient circuit during active ventilation
- Point of care testing, when available

Sterile Technique
- Maintaining sterile technique may be challenging while PPE is donned
Airway Management, Oxygenation & Ventilation

Aerosol Generating Procedures

- Intubation
- Naso/oropharyngeal/endotracheal suction
- Bronchoscopy
- Nebulizer therapy
- Ventilation

Anex 14 ICU management for ebola viral disease www.moh.gov.my
Airway Management, Oxygenation & Ventilation

- CDC Ebola PPE
- Disposable respiratory/airway management equipment
- Non-humidified O$_2$ therapy for non-intubated patients requiring – do not use bubble-through humidification
- Ventilators identified for EBV
Airway Management, Oxygenation & Ventilation

• ICU Ventilator identified for EBV
  • A viral filter between the distal end of the expiratory tubing and the ventilator (protect ventilator)
  • Second viral filter placed on the expiratory outlet of the ventilator (protect environment)

• Disposable circuit
Airway Management, Oxygenation & Ventilation

- Do not break circuit routinely.
- If necessary to break the circuit, place vent in standby mode or turn vent off
- Use HME. Water humidification should not be used
Professional Practice Documents

AANA Document Definitions and Policies
Code of Ethics
Scope of Practice
Standards
Guidelines
Infection Control Guide for Certified Registered Nurse Anesthetists
Quality of Care in Anesthesia
Supporting Documents in Anesthesia Practice
Position Statements
Practice Considerations
Considerations for Policy Development
Advisory Opinion
Joint Position Statement
Forms and Resources

AANA Document Definitions and Policies
Introductory documents to the Professional Practice Manual for the Certified Registered Nurse Anesthetist. The table of contents, document definitions, and policies governing...
Hand Hygiene

Before and after as often as safety allows

- >60% Ethyl Alcohol hand rubs—not for grossly contaminated hands.
- Rub it all over your hand surfaces

Soap and water x 15s to kill spores (C difficile)

WHY DON’T WE DO HAND HYGIENE?

- Number of clinical interventions poses a hand hygiene problem for anesthetists

Poor H.H. is “culturally acceptable” anesthesia???

Artificial fingernails, rings, jewelry

No artificial nails
Rings are a source of contamination
  - Can’t effectively clean beneath them
In the clinical setting
  - Jewelry turns into fomite
  - Contaminated objects that spread pathogens

Occupational Exposure and Prophylaxis

Hepatitis B: vaccination series, HBIG, revaccinate
Hepatitis C: pegylated interferon + ribavirin + 2 other antivirals curative > 50% cases
IV: combination of reverse transcriptase and protease inhibitors within 72 hours
TB: take antiTB drugs; annual and post-exposure PPD

Standard Precautions

- Hand hygiene before and after patient contact
- Gloves for any patient contact; change after each contact
- Protective eye shields
- Protective facemasks

Transmission-Based Precautions + Standard Precautions

Contact
Surgical gown with any direct contact

Droplet
Face mask within 6-10 feet

Airborne
N95 respiratory 5μ filter

Spongiform
Prion destruction measures, e.g. extreme temp, disposable equipment incinerated after case

Airway Management and Asepsis

- Double glove - remove outer to adjust gas after intubation or instrumentation
- Maintain separate clean and contaminated areas in your anesthetizing area
- Monitor environment, clean afterward
Regional Anesthesia

≥ 0.5% Chlorhexidine + 70% alcohol skin prep solution is superior to povidone-iodine in reducing skin flora

Mask during neuraxial blocks: documented meningitis outbreaks in parturients

Clinical Reminder: Spinal Injection Procedures Performed without a Facemask Pose Risk for Bacterial Meningitis: Centers for Disease Control and Prevention; March 31 2011.
Arterial Line Insertion

- Chlorhexadine prep, infiltrate site with local anesthetic
- Use aseptic technique. Prep and drape
- Sterile gloves. Sterile Field. Sterile Catheter
- Insert catheter, connect aseptically to infusion system

Central Line Insertion

• Choose site: subclavian>neck>femoral, in order of less likely infection, use ultrasound
• Prep site with chlorhexidine or povidone iodine
• Open sterile tray
• Full sterile barrier technique: gown, gloves, cap, mask. Sterile sleeve for PA catheters
• Maintain sterile field with wide draping

Central Line Access

- Site dressing: clear, transparent adhesive
- Cleanse skin chlorhexidine dressing changes; avoid ointments except for dialysis
- Hand hygiene prior to access; **scrub hub**
  **alcohol 15 sec prior to access**
- Antiseptic-impregnated polyurethane catheters
- Avoid unnecessary access or manipulation
- Remove ASAP

Vascular Lines * IV Bags * Ampules

*SCRUB THE HUB*

- Cleanse line ports and stopcocks with alcohol prior to entry (15 seconds)
- Flip top vials and ampules
- Do not use IV solution as diluent
- Use individually wrapped saline syringes for line flush flushes and diluents

Surgical Care Improvement Project (CMS) Measures

Preop antibiotic within one hour prior to incision, 2 hours for Vancomycin and fluoroquinolones.

Proper hair removal methods use clippers.

Blood glucose < 200 mg/dL.

Maintain normothermia > 36° C.

Preventive Measures: Procedural
Disinfection and Sterilization

Disassemble equipment
Remove visible contaminants
Follow individual manufacturer guidelines
Proper technique must be followed and documented for each piece of equipment that contacts patients
Infection Risk: Spaulding Class

Critical
• Contact sterile body tissues, sterilize, keep sterile (e.g. vascular catheters)

Semi-critical
• Contact mucous membrane, high level disinfection/sterilization (e.g. laryngoscope blades)
• Store laryngoscope blades in package

Non-critical
• Contact intact skin - must be clean

For Joint Commission accreditation, facilities must use evidence-based national guidelines to develop infection control activities

Anesthesia Workspace Surfaces

Machine surfaces, knobs, pumps, glucometers, blood, fluid warmer, mobile device, computer keyboards, etc. are contaminated

Clean between cases with EPA-approved low or intermediate-level disinfectant

Follow manufacturer recommendations

Keep materials for next case in clean place, confined and covered

Anesthesia Delivery System

Personnel responsible for regular cleaning on a daily schedule

To disinfect each component, follow manufacturer guidelines
Heat/Moisture Exchangers

HME may not be filters

Filter should be placed on the inspiratory and expiratory limbs of the circuit or at the patient end of the circuit
Airway Equipment

Oral/nasal airways; stylets, bougies, connectors are single use or require high level disinfection

Reprocessed LMA: difficult to remove all protein

Laryngoscopes
  Handles are contaminated, clean with disinfectant between cases
  Blades must be disinfected/sterilized, stored in a manner that prevents recontamination—clean, covered, confined—not open in the drawer
Anesthesia Circuits and Breathing System Filters

Single Use Items, Re-use?

Items labeled “SINGLE USE”, when reused, impose liability on the individual and institution for proper functioning.

Re-use “multiple-use” circuits with new breathing filter is permissible if manufacturer recommendations are followed.

Outer surfaces of multiple use circuits must be cleaned with disinfectant between patients.
Preventive Measures: Environmental
Housekeeping Practices for Environmental Surfaces

- Facility schedule for regular cleaning according to OSHA
- NON-critical surfaces—floors, counters, keyboards, phones, bins, waste receptacles, protective covers—low-level disinfection
- No alcohol or mist-producing agents for large surfaces—approved non-toxic detergents
Laundry

• Handle contaminated laundry as little as possible

• Bag soiled linen according to facility policy

• Transport carefully, avoiding environmental contamination
Personal Protective Equipment

Eye protection
Gown
Gloves
Mask, hat

OR Scrubs—home vs. institutional laundry

Change Glove, Gown & Mask between cases/contacts; scrubs if contaminated
Sharps Safety

No recapping sharps

Double gloving does decrease risk of needle stick injuries

Follow facility policy, local/state/federal regulations
And the beat goes on…..

April 2013---7000 patients Outpatient Oral Surgical Clinic Oklahoma exposed BBP……5/3/13: Cost of probe into Tulsa Hepatitis exposure >700K; 3 more patients sue; 74 Hepatitis C +

Radiology Technician diverting opioids and intentionally exposing thousands of patients to Hepatitis C in 10 states

6/19/13 Tri-County Spinal Care Center, SC, 50 patients Hepatitis B + after injections

5/21/13 Catskill Hospital, single use insulin pens re-used


Reprioritize Infection Control

Infection control is just as important as cardiovascular stability.
Discussion

Contact the Professional Practice Division with questions or recommendations at:

practice@aana.com

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Thank You & Work Safely!!