



Ebola Update for Partners

Friday, October 17, 2014, 2:00-3:30 pm

We will be starting our webcast shortly.

Please stand by...



Ebola Update for Partners

Friday, October 17, 2014, 2:00-3:30 pm

- **Welcome and Introduction**
 - Karen McKeown, RN, MSN
 - State Health Officer and Administrator, Division of Public Health
- **Ebola Virus Disease: Epidemiology, Planning, Surveillance and Laboratory Considerations**
 - James Kazmierczak, DVM, MS, State Public Health Veterinarian
- **Ebola Infection Control in Healthcare Settings**
 - Gwen Borlaug, CIC, MPH, Coordinator, HAI Prevention Program
- **Considerations for EMS**
 - Charles E. Cady, MD, FAAEM
 - Associate Professor of Emergency Medicine Section of Emergency Medical Services and Disaster Medicine
- **Question and Answer Session**



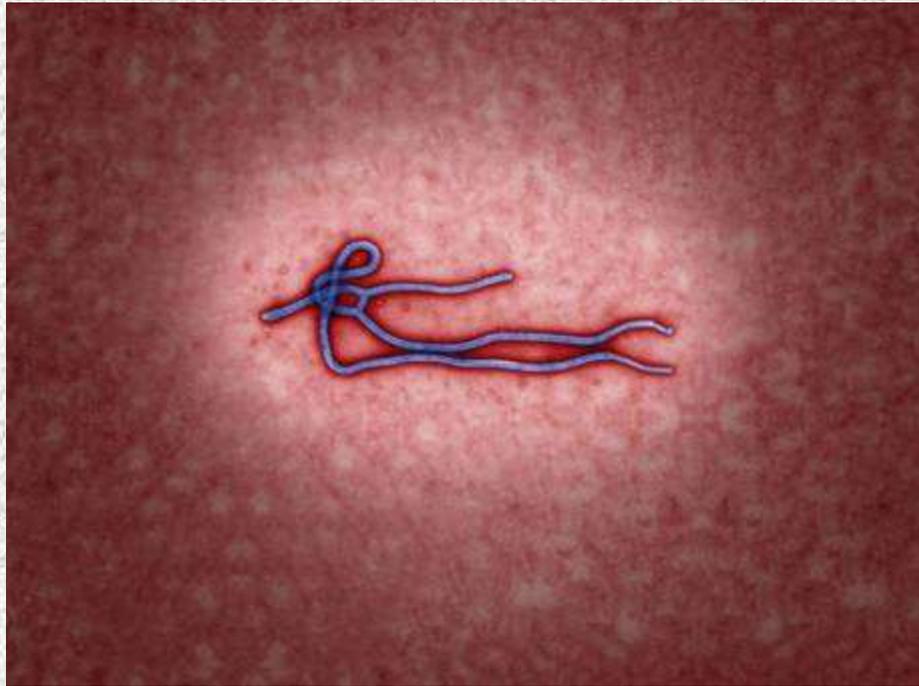
Question and Answer Session

- Please submit your questions during the live webcast to DHSResponse@wisconsin.gov.
- We will get to as many of your questions as time allows during the question and answer period.
- If we are unable to answer your question during the webcast, we will respond later to you via email or provide answers in our Frequently Asked Questions document.
- Thank you for participating.



WI Governor – Scott Walker

Ebola Virus Disease: Epidemiology, Planning, Surveillance, and Laboratory Considerations



Jim Kazmierczak, DVM, MS
Division of Public Health
Wisconsin Department of Health Services



Ebola Virus Disease, Clinical Presentation

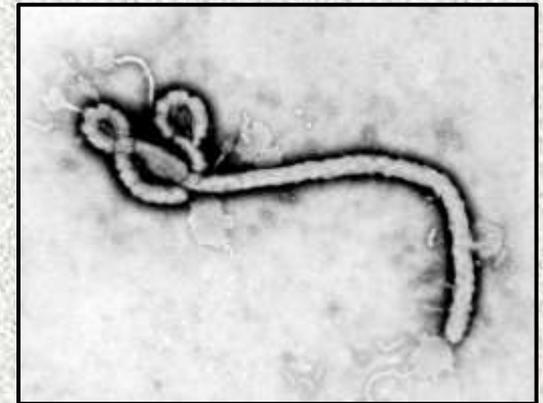
Incubation typically 8-10 days (range 2-21 days)

- Fever
- Headache
- Joint & muscle aches
- Weakness
- Diarrhea
- Vomiting
- Abdominal pain
- Lack of appetite
- Abnormal bleeding

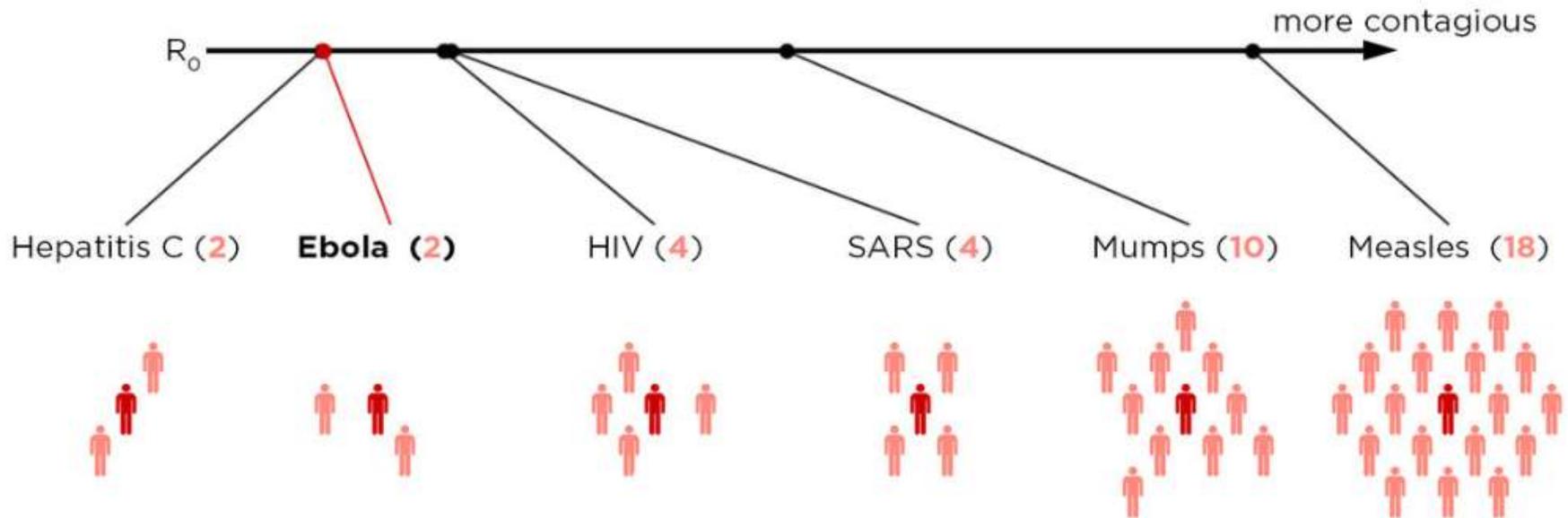


Transmission of Ebola Virus

- Direct contact with the blood or secretions of an infected person who is ill (blood, urine, feces, saliva, sweat, and other secretions)
- Exposure to objects (such as needles) that have been contaminated with infected secretions
- Funeral or burial rituals that require handling the body of someone who has died from Ebola Virus disease
- Contact with infected wildlife – bats and primates
- NOT transmitted via air, food, or water
- **Persons who are not symptomatic are not contagious.**
- R_0 for Ebola = 1.5 to 2



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.



In spite of low R_0 , infectious dose of the Ebola virus is 1-10 virions



Ebola Virus Disease in West Africa

Case Counts as of 10/12/14

Total suspected & confirmed: 8973

Total deaths: 4484

Guinea

Suspected & Confirmed Case Count: 1472

Suspected & Confirmed Case Deaths: 843

Liberia

Suspected & Confirmed Case Count: 4249

Suspected & Confirmed Case Deaths: 2458

~~Nigeria~~

~~Suspected & Confirmed Case Count: 20~~

~~Suspected & Confirmed Case Deaths: 8~~

Sierra Leone

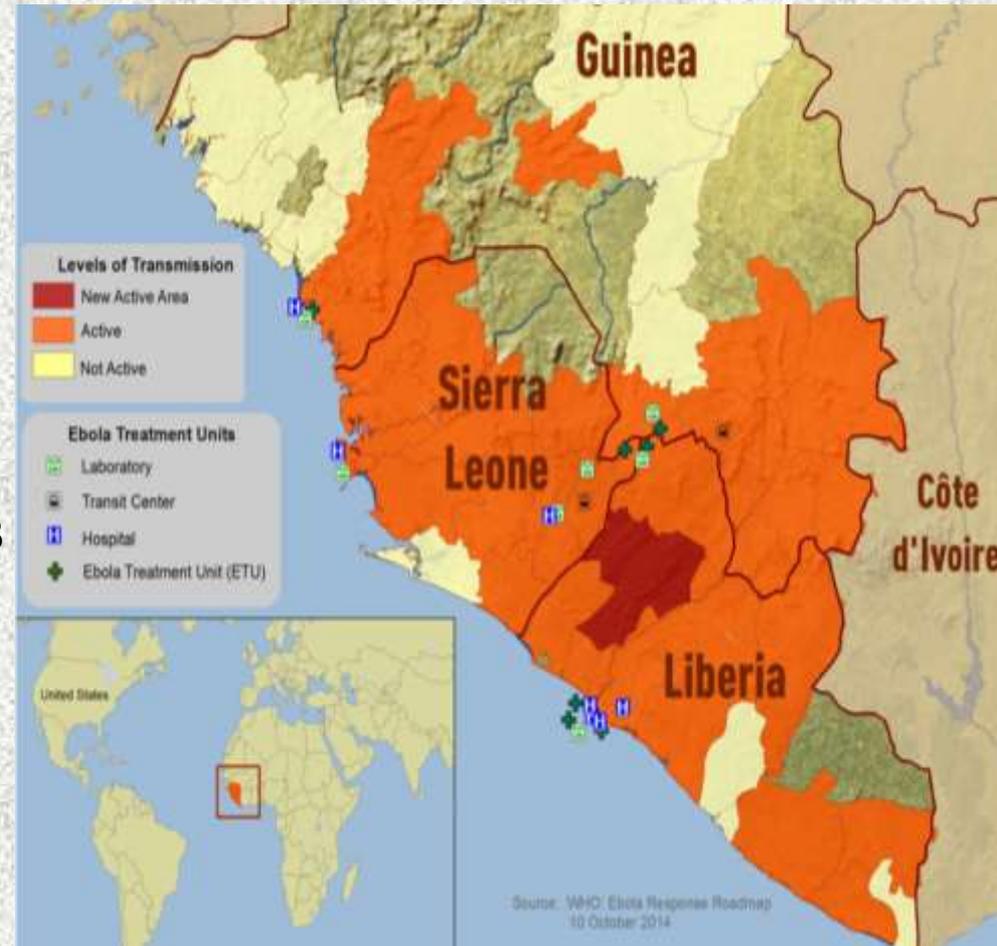
Suspected & Confirmed Case Count: 3252

Suspected & Confirmed Case Deaths: 1183

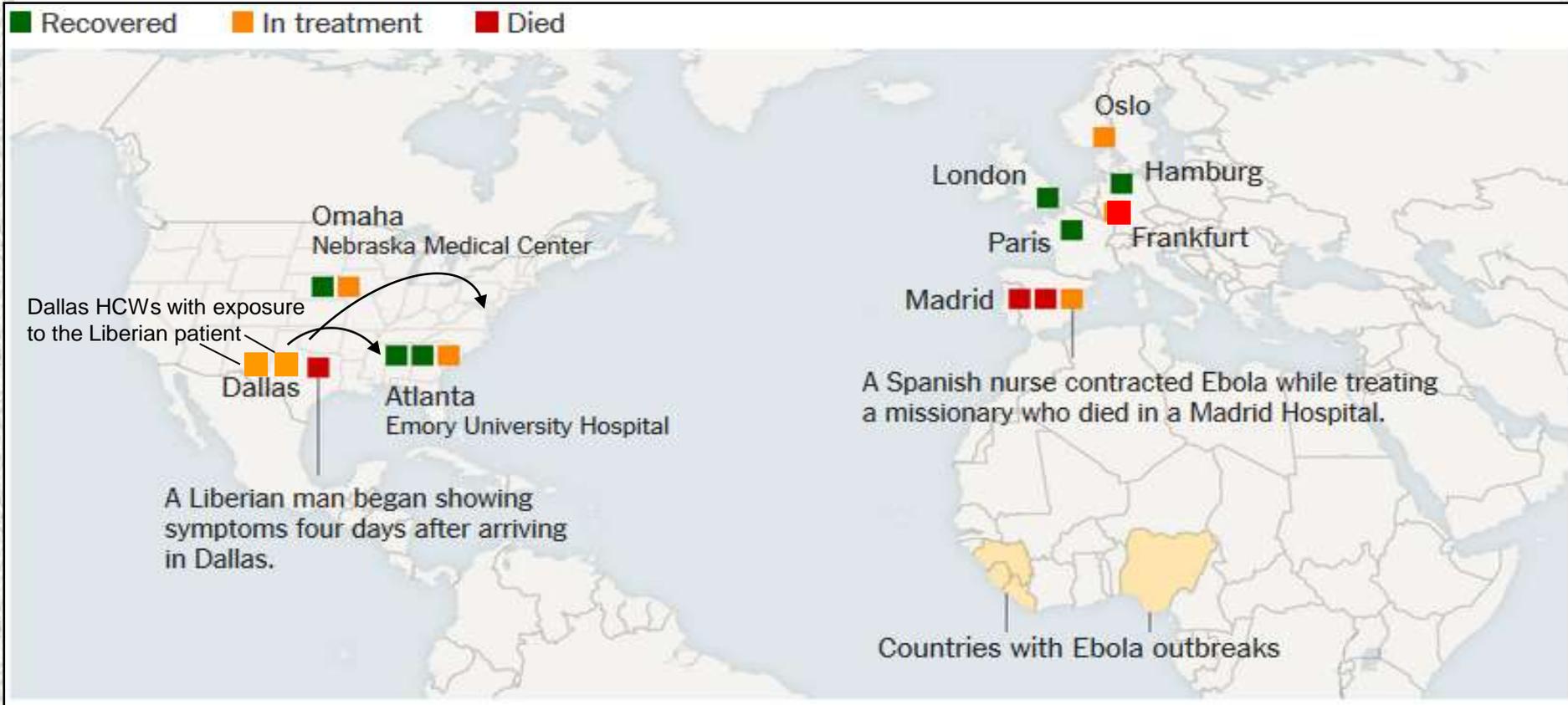
~~Senegal~~

~~Suspected & Confirmed Case Count: 1~~

~~Suspected & Confirmed Case Deaths: 0~~



Cases of Ebola Outside of West Africa



Cases of Ebola Outside of West Africa (as of Oct. 8, 2014)

United States		
	Arrival date	
Aid worker	Aug. 2	Recovered
Missionary	Aug. 2	Recovered
Doctor	Sept. 5	Recovered
Doctor	Sept. 9	In treatment
Visitor	Sept. 30*	Died
NBC cameraman	Oct. 6	In treatment
France		
Nurse	Sept. 19	Recovered
Britain		
Nurse	Aug. 24	Recovered

Spain		
	Arrival date	
Missionary	Aug. 7	Died
Priest	Sept. 22	Died
Nurse	Oct. 6*	In treatment
Germany		
Doctor	Aug. 27	Recovered
Doctor	Oct. 3	In treatment
Norway		
Aid worker	Oct. 6	In treatment

*Date of Ebola diagnosis.



Airline Travel

- Exit screenings performed for outbound passengers at airports in Guinea, Sierra Leone, Liberia, and Nigeria including a fever check and visual screening
- In the last two months since this exit screening began, of 36,000 people screened, 77 people were denied boarding a flight because of the health screening process. None of the 77 passengers were diagnosed with Ebola
- CDC has issued a level 3 travel warning - notice for U.S. citizens to avoid nonessential travel to Guinea, Liberia, & Sierra Leone



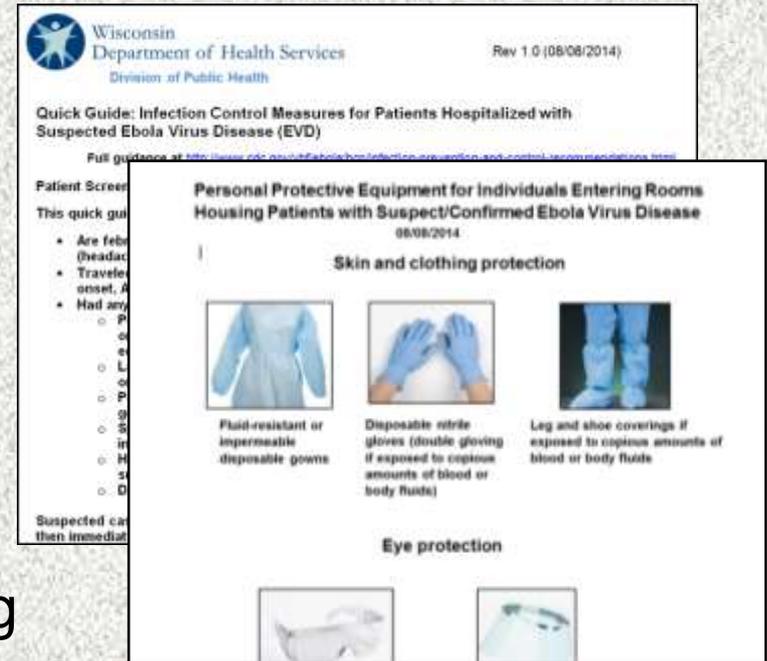
Airline Travel

- CDC and its partners at five U.S. airports will perform enhanced screening of passengers traveling from the affected countries: New York's Kennedy Airport, New Jersey's Newark, Washington's Dulles, Chicago's O'Hare and Atlanta's Hartsfield-Jackson
- These account for > 94% of travelers arriving in the US from Guinea, Liberia, and Sierra Leone
- Enhanced screening consists of visual and temperature checks along with a health questionnaire and distribution of a fact sheet



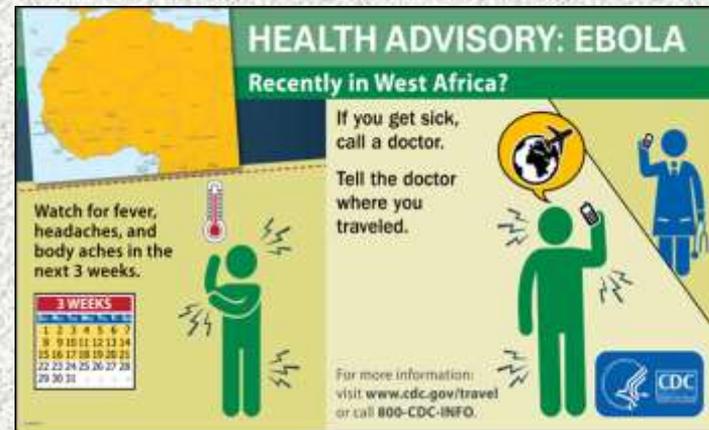
Overview: What is Wisconsin DPH doing?

- **Recommendations to HCWs**
 - ✓ Clinical guidance
 - ✓ IC precautions
 - ✓ EMS recommendations
 - ✓ Coroners and MEs
- Recommendations and talking points to **LHDs**
- Established **surveillance** for returning travelers with assistance from LHDs and college health services
- Respond to inquiries from HCWs, media and others



Wisconsin DPH Surveillance Activities: Monitoring of recent travelers arriving from endemic areas

- Asymptomatic travelers' health status monitored for 21 days; possible movement restrictions may be imposed based on level of exposure risk in West Africa
 - Travelers identified and reported by various mechanisms: employers, college health services, LHDs, health care workers, self-report
 - **The true percentage of recent travelers to West Africa being identified is unknown**
 - Once identified, travelers are interviewed to determine dates and location of travel, risk factors and health status
 - LHDs, college health services perform active surveillance
- 41 travelers have been monitored and have passed 21 days
- 3 additional travelers are still being monitored as of 10/16/14
- None have had high risk exposures; none required movement restrictions



Wisconsin DPH Surveillance Activities: Preparing for cases

Interim internal DPH guidelines for management of asymptomatic travelers from endemic countries are based on nature of exposure

- High risk exposures
 - Percutaneous or mucous membrane exposure to body fluids of Ebola patient
 - Direct care of an Ebola patient or exposure to body fluids without appropriate PPE
 - Laboratorian processing body fluids of confirmed Ebola patients without appropriate PPE or standard biosafety precautions
 - Participation in funeral rites which include exposure to remains without appropriate PPE
 - Household member of an Ebola patient
 - Providing patient care in healthcare facilities in which Ebola patients were treated (regardless of whether PPE was used)
 - Contact with bats or non-human primates in Africa
- Public health actions: Restriction from work/school; restriction from public gatherings (e.g. church, theaters, shopping malls) except to obtain essential items like food and medicine; local public health to monitor for fever and other symptoms twice daily for 21 days after last exposure; travel by public conveyance (bus, taxi, airplane) not permitted



Wisconsin DPH Surveillance Activities *Preparing for cases*

Interim internal DPH guidelines for management of asymptomatic travelers from endemic countries are based on nature of exposure (continued)

- Low risk exposures
 - Defined as casual contact to a patient with EVD without high-risk exposure
 - Public health actions/restrictions on a case by case basis
- No known exposures except for travel to endemic countries
 - Self-monitoring to be reported by traveler to local public health for 21 days after leaving West Africa



Wisconsin DPH Surveillance Activities (continued): Preparing for cases – reporting and contact tracing

- Clinicians and LHD staff should notify us immediately re. any suspected case
 - Office (608/267-9003) and after-hours # (608/258-0099)
 - DPH must approve of specimen testing for Ebola virus prior to submission
 - DPH will inform LHD
- Toolkits being prepared for LHDs regarding identification, evaluation, and monitoring of case contacts
- The need for quarantine of close contacts must be considered. Mechanism and quarantine orders being prepared



Wisconsin DPH Activities: Plans and Pending Issues

- Development of waste disposal guidance
- Contingency for alternate housing if needed for quarantined contacts
- Outreach to correctional facilities
- Development of quarantine guidance/orders that include defining roles, DPH and LHD authority, and legal templates

252.06(1) The department or the local health officer acting on behalf of the department may require isolation of a patient or of an individual under [s. 252.041 \(1\) \(b\)](#), quarantine of contacts, concurrent and terminal disinfection, or modified forms of these procedures as may be necessary and as are determined by the department by rule.

- Better define conditions impacting quarantine and movement restrictions for case contacts. Consider: need to obtain food & medicine, who will monitor compliance, etc.



Hospital/Clinic Preparedness

- **You need a plan – now**

- **Your plan needs to be:**

- ✓ Detailed and in writing
- ✓ Inclusive of all stakeholders and address their roles (MDs, RNs, laboratorians, phlebotomists, housekeeping, hospital administration, security, media relations)
- ✓ Needs to be exercised – esp the donning/doffing of PPE
- ✓ Needs to be individualized for the specific facility while adhering to general IC recommendations, concept of minimizing the number of staff potentially exposed, and effective patient care delivery



Hospital Preparedness

- Excellent and detailed resource:

www.cdc.gov/vhf/ebola/pdf/hospital-checklist-ebola-preparedness.pdf

- Very comprehensive
 - ✓ Policy development
 - ✓ Staff education
 - ✓ Communication
 - ✓ Media
 - ✓ Ensuring adequate PPE inventory
 - ✓ Staff drills & exercises
 - ✓ IC details
 - ✓ Consideration of designating staff who would manage a patient with EVD and training those staff extensively



Checklist for Patients Being Evaluated for Ebola Virus Disease in the USA – 6 steps*

1. Upon arrival to clinical setting/triage:

- Does patient have fever (subjective or $\geq 100.4^{\circ}\text{F}$)
OR

- Does patient have compatible EVD symptoms such as headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain or hemorrhage?

AND

- Did the patient travel to an Ebola-affected area or have contact with a person with known EVD in the 21 days before illness onset?

If both compatible clinical signs/sx and epi risk factors, proceed to next steps



* Source: www.cdc.gov/vhf/ebola/pdf/checklist-patients-evaluated-us-evd.pdf



Checklist for Patients Being Evaluated for Ebola Virus Disease in the USA (continued)

2. Upon initial assessment:

- Isolate patient in single room with a private bathroom and with the door to hallway closed
- Implement standard, contact, & droplet precautions
- Notify your hospital infection control program
- Report to DPH at 608/267-9003 (office) or 608/258-0099 (after-hours)

3. Conduct a risk assessment for potential exposures patient sustained (e.g., percutaneous or mucosal contact with body fluids from EVD patient, direct contact with EVD patient, unprotected contact with corpse of Ebola patient, household member of a case, HCW, etc.)



Checklist for Patients Being Evaluated for Ebola Virus Disease in the USA (continued)

4. Use of PPE, IC precautions

a) Before entering patient room, wear:

- ✓ Gown (fluid resistant or impermeable)
- ✓ Facemask
- ✓ Eye protection (goggles or face shield)
- ✓ Gloves



b) If likely to be exposed to blood or body fluids, additional PPE may include but isn't limited to: Double gloving, Disposable shoe covers, Leg coverings

c) Upon exiting patient room:

- ✓ PPE should be carefully removed without contaminating one's eyes, mucous membranes, or clothing
- ✓ Discard disposable PPE
- ✓ Re-useable PPE gets cleaned & disinfected per the manufacturer's instructions
- ✓ Hand hygiene should be performed immediately after removal of PPE

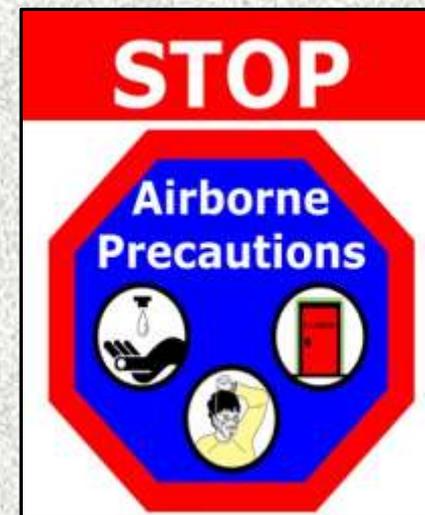


Checklist for Patients Being Evaluated for Ebola Virus Disease in the USA (continued)

4) Use of PPE, IC precautions (continued)

d) During aerosol-generating procedures

- ✓ Limit number of personnel present
- ✓ Conduct in an airborne infection isolation room
- ✓ PPE as already described but requires fit-tested N95 respirators or PAPRs instead of facemask



5) Patient placement and care considerations

- ✓ Maintain log of all persons entering patient's room
- ✓ Use dedicated disposable equipment (if possible)
- ✓ Limit the use of needles and other sharps
- ✓ Limit phlebotomy and lab testing to essential procedures
- ✓ Carefully dispose of needles and sharps in puncture-proof sealed containers
- ✓ Avoid aerosol-generating procedures if possible
- ✓ Wear PPE during environmental cleaning and use an EPA-registered hospital disinfectant with a label claim for non-enveloped viruses



Checklist for Patients Being Evaluated for Ebola Virus Disease in the USA (continued)

6. Initial patient management:

- ✓ Consult with DPH about diagnostic EVD RT-PCR testing
- ✓ Consider, test for, and treat (when appropriate) other possible infectious causes of symptoms (e.g., malaria, bacterial infections)
- ✓ Provide aggressive supportive care including aggressive IV fluid resuscitation if warranted
- ✓ Assess for electrolyte abnormalities and replete
- ✓ Evaluate for evidence of bleeding and assess hematologic and coagulation parameters
- ✓ Consider antibiotic coverage for secondary bacterial infections
- ✓ Symptomatic management of fever, nausea, vomiting, diarrhea, and abdominal pain
- ✓ Consult CDC regarding other treatment options



Laboratory and Biosafety



Ebola Virus Characteristics

- Infectious dose 1-10 viruses
- Infectivity stable at room temp for several days in liquid or dry material
- Moderately thermolabile
 - 30-60 min at 60°C, boiling for 5 minutes
- Safety Data Sheet
www.msds-online.com/resources/msds-resources/free-safety-data-sheet-index/ebola-virus.aspx/



Specimen Collection and Transport

- 4 ml EDTA whole blood in plastic tube X2
 - SPS, citrate, and clot activator tubes acceptable
- Ship as category A Infectious Substance
 - Assure availability of trained and certified personnel for Cat A packaging and shipping
 - Responsibility of the healthcare facility/laboratory
- Specimens will be shipped directly from the healthcare facility to CDC or designated LRN laboratory



Ebola Virus Laboratory Testing

- Testing at CDC and 15 LRN laboratories
 - May be made available at additional PHLs in future
- Testing methods
 - **RT-PCR primary method**
 - Virus isolation (BSL4 Lab required)
 - **Clinical laboratories must not perform viral cultures on specimens from suspect Ebola patients**
 - IgG and IgM Serology
 - Immunohistochemical staining



Risk Assessment for Laboratories

- Thorough biohazard risk assessment should be performed for your facility, taking into account:
 - Resources
 - Procedures
 - Training and experience of staff
 - Physical facilities
 - Equipment and instruments
- Implement appropriate procedures for risk mitigation
- Exercise your lab plan – do a walk through

Guidance Documents:

www.asm.org/images/PSAB/Ebola9-10-14.pdf

www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html



ASM Recommendations - Biosafety

- Routine standard precautions
- Enhanced precautions which institutions may choose to adopt in “abundance of caution”
 - Do not use pneumatic tube system
 - Additional PPE---gowns, double glove, eye protection, N-95, shoe covers
 - Specimen processing in negative pressure room
- Detailed guidance on blood cultures, malaria testing, etc.
- ASM: Consider point-of-care testing (iSTAT)
- Consider down time if a spill occurs and decontamination is required



Emory Laboratory Testing Approach

- Established a small point-of-care lab within the isolation unit
- Staffed by lab volunteers – pathologists, tech staff
- Nurses performed all venipunctures and other specimen collection procedures
- A limited menu of POC assays performed inside the unit
- No diagnostic specimens left the unit for testing

Emory Laboratory Testing Approach

- POC Test Menu
 - Chemistry profile (Abaxis Piccolo Xpress)
 - Blood-gas analyzer (GEM Premier 4000)
 - Urinalysis analyzer (CLINITEK Status)
 - Coagulation analyzer (CoaguChek)
 - Hematology analyzer (poch 100i)
 - Malaria POC test----- BinaxNOW®
 - PCR analyzer (BioFire) FilmArray)

Issues Encountered by Emory

CDC says:

Sanitary sewers may be used for safe disposal of patient waste

County Watershed Dept:

If Ebola virus is placed into sanitary sewers, they would disconnect the hospital from the sewer lines

Result:

All patients' liquid wastes were disinfected with bleach or quaternary detergents for > 5 minutes prior to flushing

Issues Encountered by Emory

CDC says:

Disposable materials and linens should be placed in leak-proof containment and discarded as regulated medical waste

Emory's Contractor:

All waste needs to be certified as free of Ebola virus prior to transport to incinerator

Result:

Hospital autoclaved all regulated medical waste before contractor picked it up

Resources

DHS

- Primary Ebola Page: www.dhs.wisconsin.gov/communicable/DiseasePages/ViralHemorrhagicFevers.htm
(or select "E" on the A to Z topic list)
- Interim Guidance for Wisconsin Clinicians: www.dhs.wisconsin.gov/publications/P0/P00812.pdf
- Guidance for LHDs regarding travelers returning from West Africa:
www.dhs.wisconsin.gov/forms/F0/F01340.docx
- Infection Control Quick Guide: www.dhs.wisconsin.gov/publications/P0/P00812a.pdf

CDC

- Guidance for U.S. Clinicians
www.cdc.gov/vhf/ebola/hcp/clinician-information-us-healthcare-settings.html
- Specimen Collection and Submission:
www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html
- Full Infection Control Guidance:
www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html
- Status of West African Outbreak: www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html
- Guidance for EMS Systems:
www.cdc.gov/vhf/ebola/hcp/interim-guidance-emergency-medical-services-systems-911-public-safety-answering-points-management-patients-known-suspected-united-states.html

Recommended Checklists

- ER criteria: www.cdc.gov/vhf/ebola/pdf/evd-screening-criteria-hospitals.pdf
- EMS checklist: www.cdc.gov/vhf/ebola/pdf/ems-checklist-ebola-preparedness.pdf
- Hospital checklist: www.cdc.gov/vhf/ebola/pdf/hospital-checklist-ebola-preparedness.pdf
- Patient evaluation checklist: www.cdc.gov/vhf/ebola/pdf/checklist-patients-evaluated-us-evd.pdf



Final Thoughts

- Prompt reporting of suspect cases is crucial and reporting is mandated: “Any illness caused by an agent that is foreign, exotic or unusual to Wisconsin, and that has public health implications” (DHS chapter 145)
- Call DPH about any suspect cases at 608/267-9003 (office hours) or 608/258-0099 (nights and weekends)
- DPH mailbox set up for inquiries: dhsresponse@wi.gov





Prevention of Ebola Virus Disease (EVD) Transmission in Healthcare Settings

- Gwen Borlaug, CIC, MPH
- Coordinator, Healthcare-Associated Infections Prevention Program
- Division of Public Health
- October 14, 2014



CDC Interim EVD Guidance Documents

- Infection Prevention in Healthcare Settings
- Environmental Infection Control
- Emergency Medical Services and 9-1-1 Management

CDC Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Virus Disease (EVD) in U.S. Hospitals

<http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html>



EVD Infection Control

Standard precautions

Contact precautions

Droplet precautions



Personal Protective Equipment (PPE) for Individuals Entering Rooms Housing Patients with Suspected or Confirmed EVD



Impermeable disposable gowns



Disposable nitrile gloves (double gloving if exposed to copious amounts of blood or body fluids)



Leg and shoe coverings if exposed to copious amounts of blood or body fluids



Disposable goggles or face shields



Surgical masks





Personal Protective Equipment (PPE) for Individuals Entering Rooms Housing Patients with Suspected or Confirmed EVD

Respiratory protection during aerosol-generating procedures



Disposable N-95 filtering face pieces



PPE

Use the “buddy system” when donning and doffing PPE.





- 1 Bleach wipe the long cuff KC500 Purple Nitrile Gloves before opening the door to the patient room.
- 2 Step out of room onto the doffing pad with trash receptacle nearby.

Donning and doffing PPE: Drill, drill, drill!!!

Log of Individuals Entering Rooms Housing Patients with Suspect/Confirmed Ebola Virus Disease

Visitors and staff should be limited to only those necessary for the patient's care and well-being.

Visits should be scheduled to allow for:

- screening the visitor for symptoms of ebola virus disease.
- training the visitor regarding proper use of PPE, hand hygiene and other infection control measures.

Instruct visitors to limit movement in the facility to only the patient care area and the adjacent waiting area.

Patient Name _____ MR# _____

Date of Admission _____ Unit _____ Room Number _____

Return this form to the Infection Prevention Department when completed.

Date	Time In	Name of individual entering room	Relationship to Patient (e.g., HCW, spouse, sibling)	Name of Person Screening/Training Visitor	Time Out

<http://www.dhs.wisconsin.gov/communicable/DiseasePages/ViralHemorrhagicFevers.htm>



Aerosol-Generating Procedures

- Avoid
 - Bilevel positive airway pressure
 - Bronchoscopy
 - Sputum induction
 - Intubation and extubation
 - Open suctioning of airways



Aerosol-Generating Procedures

Respiratory protection

- Minimum: *NIOSH-certified fit-tested N95 filtering facepiece
- Powered air purifying respirator (PAPR)
- Elastomeric respirator
- Disposable respiratory protective equipment is recommended.
- Staff processing re-usable respirators must be trained and use PPE described for patient care.

*National Institute of Occupational Safety and Health



Aerosol-Generating Procedures

- Do not allow visitors in the room.
- Limit number of healthcare personnel in room.
- Use private room and ideally an airborne infection isolation room (AIIR).
- Minimize entry and exit during and shortly after procedure.



Hand Hygiene

Alcohol hand sanitizers are effective against Ebola virus.



Safe Injection Practices

- Minimize use of needles and other sharps.
- All injection equipment and parenteral medication vials that enter the patient care area should be dedicated to that patient and discarded at point of use.



Specimen Collection and Handling

<http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html>

Recommendations for specimen collection by staff: Any person collecting specimens from a patient with a case of suspected Ebola virus disease should wear gloves, water-resistant gowns, full face shield or goggles, and masks to cover all of nose and mouth. Additional PPE may be required in certain situations.

Recommendations for laboratory testing by staff: Any person testing specimens from a patient with a suspected case of Ebola virus disease should wear gloves, water-resistant gowns, full face shield or goggles, and masks to cover all of nose and mouth, and as an added precaution use a certified class II Biosafety cabinet or Plexiglass splash guard with PPE to protect skin and mucous membranes. All manufacturer-installed safety features for laboratory instruments should be used.



Specimen Collection and Handling

<http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html>

- Conduct point of care testing or maintain chain of custody when transporting specimens to the laboratory (no use of pneumatic tubes).
- Use only plastic vials.
- Disinfect outside of specimen vials before placing in durable, leak-proof secondary containers.
- Alert laboratory of specimen collected from potential or known Ebola cases.



Duration of Precautions

Duration of infection control precautions will be determined on a case-by-case basis collaboratively among local, state and federal health authorities.



Management of Healthcare Personnel (HCP)

- No known unprotected exposure
 - Monitor HCP caring for Ebola patients for fever and other symptoms twice daily during care of patient and for 21 days after last contact with patient or patient's environment.
 - Remove symptomatic HCP from work or furlough from work. Notify local and state health departments.



Management of Healthcare Personnel (HCP)

- Known unprotected exposure
 - Notify local and state health departments.
 - Remove from work for 21 days after last known exposure.
 - Medical evaluation and monitoring for fever and symptoms twice daily for 21 days after last known exposure.

DPH telephone numbers

608-267-9003 or after hours 608-258-0099



Healthcare Employees Returning from West Africa

- Notify Division of Public Health upon return and before employee returns to work.
- Employee will be evaluated for exposure risk and managed accordingly.
- Employer will conduct temperature and symptom check twice daily.



Visitors

- Visitors exposed to persons with EVD before and during hospitalization are a possible source of infection for other patients, visitors and staff.
 - Limit visitors to only those needed for patient’s wellbeing.
 - Schedule visits, screen for fever and symptoms, train on use of PPE, hand hygiene, restrict movement in the facility.
- Work with local and state health departments.

CDC Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

<http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>



Role of Environment in EVD Transmission

- Role of environment in Ebola virus transmission not clearly established.
- Laboratory studies indicate Ebola virus can remain viable on solid surfaces for several days.
- Items and surfaces with no visible blood are less likely to be contaminated with viable Ebola virus.
- No epidemiologic evidence of transmission via patient care environment or fomites.



PPE

- Environmental Services (EVS) staff should wear same PPE as patient care staff when cleaning and disinfecting patient care areas.
- Re-usable items (e.g., utility gloves) should be disinfected after use.



Disinfectants

- Use U.S. Environmental Protection Agency (EPA)-registered hospital disinfectants with a label claim for non-enveloped viruses such as norovirus, rotavirus. These include bleach-based and hydrogen peroxide products.

http://www.epa.gov/oppad001/list_g_norovirus.pdf



Environmental Cleaning and Disinfection

- Clean and disinfect patient rooms daily.
- Use disposable cleaning cloths, mops and wipes.



Waste Disposal

- 42 CFR 73.3(d)(1) exemption from Category A regulation: Any *HHS select agent or toxin that is in its naturally occurring environment provided the select agent or toxin has not been intentionally introduced, cultivated, collected, or otherwise extracted from its natural source.
- Dispose of used PPE, linens, cleaning cloths, wipes, privacy curtains, etc. as infectious waste.

*U.S. Department of Health and Human Services



Waste Transportation

Waste generated during care of EVD patients is subject to U.S. Department of Transportation (DOT) Hazardous Materials Regulations.

- All waste generated from a suspected/confirmed patient should be treated as Category A waste as follows:
 1. Place soft waste or sealed sharps containers into a primary medical waste bag (1.5ml – ASTM tested; can be provided by Stericycle).
 2. Apply bleach or other virocidal disinfectant into the primary bag to sufficiently cover the surface of materials contained within the bag; securely tie the bag.



3. Treat the exterior surface of the primary container with bleach or other virocidal disinfectant.
4. Place the primary bag into a secondary bag and securely tie the outer bag.
5. Treat the exterior surface of the secondary bag with bleach or other virocidal disinfectant.
6. The double bagged waste should then be placed into special Category A packaging provided by Stericycle with the liner tied securely and container closed per the packaging instructions provided.
7. Store the Category A waste containers separate from other regulated medical waste and in a secure area preferably isolated and with limited access.



Non Fluid-Resistant Items

- Avoid contamination of reusable porous items that cannot be made single use.
- Use only mattresses and pillows with plastic or other impervious coverings.
- Do not place suspected EVD patients in carpeted rooms. Remove all upholstered furniture and decorative curtains.



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Medical Devices



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Preventing Dangerous Medical
Errors](#)

Damaged or Worn Covers for Medical Bed Mattresses Pose Risk of Contamination and Patient Infection: FDA Safety Communication

Date Issued: April 19, 2013

Audience: Nurses, Caregivers, Infection Control Professional Staff, Risk Managers, Materials Managers, Housekeepers, Biomedical Engineers, Directors of Purchasing, and other health care providers and staff responsible for the purchase, inspection, use, or maintenance of medical bed mattress covers

Medical Areas: Any patient care setting where medical bed mattress covers are used. These include Intensive Care, Diagnostic Care, Emergent or Urgent Care, Ambulatory Care, Specialty Care, General Care, Long Term Care, and Home Care.

Purpose: The Food and Drug Administration (FDA) is alerting health care providers, health care facility staff, and caregivers that damaged or worn covers for medical bed mattresses can allow blood and body fluids to penetrate medical bed mattresses, posing a risk of infection to patients. The FDA is providing recommendations for reducing



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American Journal of Infection Control
[Volume 42, Issue 4](#), Pages 421–422, April 2014

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Potential bloodborne pathogen exposure from occult mattress damage

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Interim Guidance for Emergency Medical Services (EMS) Systems
and 9-1-1 Public Safety Answering Points for Management of
Patients with Known or Suspected EVD in the U.S.

<http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-emergency-medical-services-systems-911-public-safety-answering-points-management-patients-known-suspected-united-states.html>



EMS and 9-1-1 Guidance

- Guidance is for pre-hospital EMS personnel, law enforcement and fire service first responders.
- In effect when threat of EVD cases is elevated in the community (determined by information from state and local health departments).

<http://www.cdc.gov/vhf/ebola/pdf/ems-checklist-ebola-preparedness.pdf>



EMS and 9-1-1 Guidance

9-1-1 staff should screen callers **during elevated EVD activity in the community** and notify first responders.

- Fever, headache, muscle pain, vomiting, diarrhea, abdominal pain, unexplained bleeding
- Within past 3 weeks of symptom onset:
 - Contact with blood or body fluids of a suspected or known EVD case
 - Residence in or travel to EVD affected countries
 - Direct handling of bats or nonhuman primates from EVD endemic areas



Ambulance Disinfection Mission recovery

- Driver compartment isolation and patient compartment barrier drapes
- Decon, disinfection of ambulance, PPE doffing and waste removal ALL SUPERVISED
- Surveillance



http://emergency.cdc.gov/coca/calls/2014/callinfo_101414.asp



Ebola Perioperative Considerations

Association of Perioperative Registered Nurses excerpt from “Clinical Issues”

- Standard, droplet, contact and airborne precautions for perioperative staff
- Same PPE as recommended for other hospital staff, with the addition of N-95 filtering facepiece, shoe covers, leg covers or boots, **fluid-resistant** head covers
- For sterile processing staff: heavy-duty gloves, impermeable gown, face shield or goggles and mask, leg covers or boots



Ebola Perioperative Considerations

Disinfectants

- A multidisciplinary team should select appropriate agents.
- Cover surfaces of sensitive instruments with protective barriers that can be discarded after procedures.
- Use disposable cleaning materials (mops, cloths) and discard as regulated medical waste.

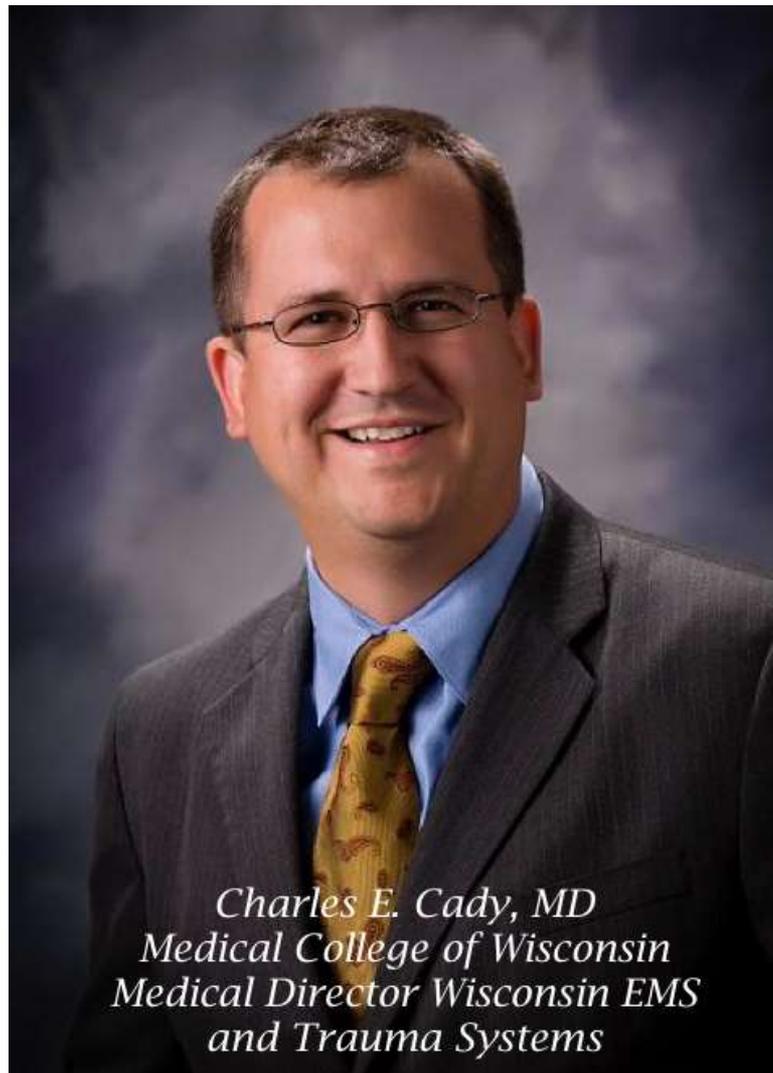


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