Objectives

- Recognize need for the use of Personal Protection Equipment (PPE)
  - BSI/PPE isn’t a new concept!
  - What do you mean Body Substance Isolation?
  - Types and forms of PPE
  - How much PPE should I be using again…

- Learn Infection Control Practices
  - What’s out there?
  - How can I become exposed?
  - Signs and symptoms of exposure

- Understand OSHA Standards – “Requirements”
  - Exposure Control Plan
  - Worker’s Rights/Requirements
  - Squad/Agency Responsibilities
History 101

Dr. William Halstead and scrub nurse Caroline Hampton
Late 1800's early 1900's

Mercuric Chloride – antiseptic for hand washing caused rash on Caroline's hands

Dr. Halstead asking the Goodyear rubber company to create a pair of rubber gloves for her to wear in the operating room suite, thus allowing for her to continue working with him...

therefore being known as the Gloves of Love

1966 Standard Operating Room Procedures included wearing gloves

History 101

In 1980 AIDS epidemic – more people aware of disease transmission
TB makes a comeback as well

Rubber Latex gloves throughout all hospital and clinical areas
World becomes focused on how to prevent diseases from spreading

During the late 1980s Neil Tillitson and Luc DeBecker invented the nitrile gloves. Perfecting the formulae in 1990. They filed for a patent in May of 1991 and was finally granted to the Tillitson Corporation in 1997.

In 1992 the OSHA standard on Bloodborne pathogens took effect
In 1994 CDC issued final notice for the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act – mandating procedure by which EMS can seek out to find out if they have been exposed to potentially life threatening diseases. Has been amended and upheld many times.

“BSI SCENE IS SAFE!!!!!!!!!!!!!”

what the $@*% does that mean??

GLOVES
N-95
Sterile?

Mask

Gown

Eye Goggles

Uniform: pants/shirt/shoes

HAZMAT SUIT

Hand Washing/Sanitizer
Diseases are they a concern?

- Hepatitis
- HANTA Virus
- H1N1
- Pertussis
- MRSA
- Chicken Pox
- C. Diff
- Shingles
- H5N1
- SARS
- AIDS
- VRE
- Tuberculosis
- HIV
- Contagion - Film Clip #6
- SARS
- HIV
What am I protecting myself from?

Pathogens - organisms that cause infection = VIRUSES/BACTERIA

Bloodborne vs. Airborne

Bloodborne - Comes from blood rich areas (veins, arteries, placenta, mucous membranes)

Airborne - tiny droplets sprayed during breathing (coughing, sneezing, snoring, breathing)

WHAT ABOUT OTHER THINGS?

Fecal Emesis (Vomit) Seminal Vaginal

Diseases of Concern!!

Hepatitis A, B, C ...D, E?

- Bloodborne
- Disease of the Liver
- Hepatitis A – feces contaminant
- Hepatitis B – dried blood... so any body fluid spill
- Hepatitis C - fluid spills, needle stick, intercourse...
  Baby Boomer Generation?
- Still learning!
- HBV vaccine & titers
Tuberculosis

- Airborne - droplets
- Thought to be controlled until in the 1980's the disease made a comeback
- Productive cough? Undiagnosed
- Greatest risk population: nursing homes, correctional facilities, and homeless shelters

- Yearly TB test.... Vaccine?

Diseases of Concern!!

Viral Hepatitis - Overview

<table>
<thead>
<tr>
<th>Type of Hepatitis</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of Virus</td>
<td>feces</td>
<td>blood/</td>
<td>blood/</td>
<td>blood/</td>
<td>feces</td>
</tr>
<tr>
<td></td>
<td></td>
<td>blood-derived</td>
<td>blood-derived</td>
<td>blood-derived</td>
<td></td>
</tr>
<tr>
<td>Route of transmission</td>
<td>fecal-oral</td>
<td>percutaneous</td>
<td>percutaneous</td>
<td>percutaneous</td>
<td>fecal-oral</td>
</tr>
<tr>
<td>Chronic infection</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Prevention</td>
<td>prophylactic exposure; immunization</td>
<td>prophylactic exposure; immunization</td>
<td>blood donor screening; risk behavior modification</td>
<td>prophylactic exposure; immunization; risk behavior modification</td>
<td>ensure safe drinking water</td>
</tr>
</tbody>
</table>

Symptoms of Tuberculosis

- Primary pulmonary tuberculosis
- Structural abnormalities
- Tuberculous pleuritis
- Chest pain
- Dyspnea
- Night sweats
- Weight loss
- Fever
- Diaphoresis
- Return of dormant tuberculosis
- Cough with increasing mucus
- Coughing up blood
- Extra pulmonary tuberculosis
  - Common sites: Meninges
  - Lymph nodes
  - Bone and joint sites
  - Genitourinary tract

Grey lines = Specific
Colored lines = Overlapping
Diseases of Concern!!

HIV/ AIDS

- Bloodborne
- Immune system deficiency
- Far less risk of contamination – virus cannot live outside the body
- Need direct contact with blood, blood source, needle stick*
- No vaccine
Diseases of Concern!

**Pandemic Flu’s (H1N1)**
- Airborne - droplet
- 1918 Pandemic Flu killed 50 million people
- Fever, dry cough, difficulty breathing
- Frequent hand washing
- N-95/HEPA masks
- Flu shots? **H3N2v**

**C. Difficile**
- Fecal – contact contaminant
- Diarrhea- nausea, vomiting
- Antibiotic use – frequent
- Patient population: elderly, unkempt pt’s, hoarders
- Contact with uniform
- HANDWASHING!

**Chicken Pox**
- Airborne and Bloodborne
- Direct contact with sores
- N-95/HEPA mask
- Pregnancy? Previous infection?

**Staph Infections – MRSA?**
- Bloodborne – Direct contact with skin
- Why contact for us and not family?
Diseases of Concern?

- ZOMBIE Apocalypse!!!!
- It's coming!
- CDC Pandemic Preparedness
CDC: Emergency Preparedness

- Get a Kit
- Make a Plan
- Stay Informed
- Used “zombies” as way to attract more attention

What’s the role for EMS?

Agencies and the LAW

- Occupational Safety and Health Administration (OSHA)
- U.S. Department of Labor
- Center for Disease Control (CDC)
- National Institute for Occupational Health and Safety (NIOSH)
- World Health Organization (WHO)
- U.S. Food and Drug Administration (FDA)
- U.S. Department of Transportation (DOT)
- Local agencies & hospitals (REMAC)
Who’s responsible for what?!

• Infection control is a joint responsibility between the **employer** and the **employee**

• Training, PPE, and Vaccinations are required to be **provided**

• Training **you** have to attend…. PPE **you** have to put on…. And your **choice** to be vaccinated

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Specifics, Specifics....

• Infection Control Plan
• Adequate education and Training
• Hepatitis B Vaccine
• PPE- gloves, face shields, masks, eye wear, gowns, aprons, bag valve mask, pocket masks
• Methods of control – needle/sharps containers, needle-less systems, disposable airway/suction/treatment

... continued

• Housekeeping – clean environment and equipment  Proper decontaminants
• Labeling – containers used to ship store or transport potentially infectious materials
• Post exposure evaluation/follow up plan  *Ryan White CARE Act*
Mandatory Education/Training

• Hand Hygiene
• Standard Pathogens
  – HIV, Hep B&C, etc
• New pathogens
  – H1N1 uproar about vaccine?
• Placards/Labeling
• Hazmat awareness

Exposure Control Plans

• Who has one?
• Where in your squad is it located?
• How often have you updated it?
• Is your exposure control officer still active?!!

Lets look at our packets from OSHA and NIOSH!!!
Accidents do happen....

• AIRBORNE
  You Get Notified!!
  *WITHIN 48 HOURS*
  Officer helps arrange for your follow up with physician and appropriate

  SEEKING MEDICAL CARE is IMPORTANT!!

• or BLOODBORNE
  You should get notified (48*)
  You have a right to request
  Request has to be answered within 48 hours to agencies officer

  *UNIVERSAL PRECAUTION*

Seeking medical care is IMPORTANT!!
Pediatricians jokingly refer to a fictitious medical school course called Latex Glove Balloon Making 101, supposedly where techniques for enhancing their bedside manner with the young patient are taught.

Latex gloves produce toxic waste during the manufacturing process.

Nitrile gloves are still about 3 times more puncture-resistant than latex gloves.

Nitrile gloves are made to tear when pierced making the break in PPE more visible to the worker.

Fun and Interesting Facts.....

Questions??
Resources

- http://www.hopkinsmedicine.org/news/media/releases/rubber_gloves_born___a
  nd_now_banished___at_johns_hopkins
- http://www.fda.gov/medicaldevices/productsandmedicalprocedures/GeneralHospital
  ites andSupplies/PersonalProtectiveEquipment/ucm056077.htm
- https://www.osha.gov/
- http://www.cdc.gov/niosh/
- http://www.labor.state.ny.us/workerprotection/safetyhealth/DOSH_ONSITE_CON
  SUPTION.shtm
- http://www.mayoclinic.com/
- http://www.naemt.org

How fast can disease spread?