



# *Anthrax Update*



Protecting the CAV

# What is Anthrax?



- Infection by bacteria called *Bacillus anthracis*
- Recognized as an illness for centuries
- Disease may affect skin, digestive system, or lungs
- Human infection usually results from direct contact with infected animals or animal products
- Exposure is via spores (survive in soil for decades)
- Treatable with early antibiotics
- Preventable with vaccination

# Biотerrorism

- Anthrax is a known biological weapon
  - Easy and cheap to produce
  - Can be stored for a long time
  - Can be dispersed in air by a variety of weapons  
(Such as Mail)
  - Inhalational anthrax is highly lethal
  - Odorless, colorless, tasteless, difficult to detect
- Vaccination against anthrax is critical for your protection
- Anthrax vaccine is safe and effective.

# Anthrax: Three Disease Types

- Skin (Cutaneous) Anthrax
  - 95% of natural cases; spores enter skin breaks
  - Responds well to antibiotics... 1 in 5 die if untreated
- Gastrointestinal Anthrax
  - Ingestion (e.g., eating undercooked, infected meat)
  - Severe GI symptoms... 50% may die even with treatment
- INHALATIONAL ANTHRAX
  - "Flu-like symptoms" early, rapid deterioration, and death
  - Mortality may exceed 80% after symptoms occur, despite treatment

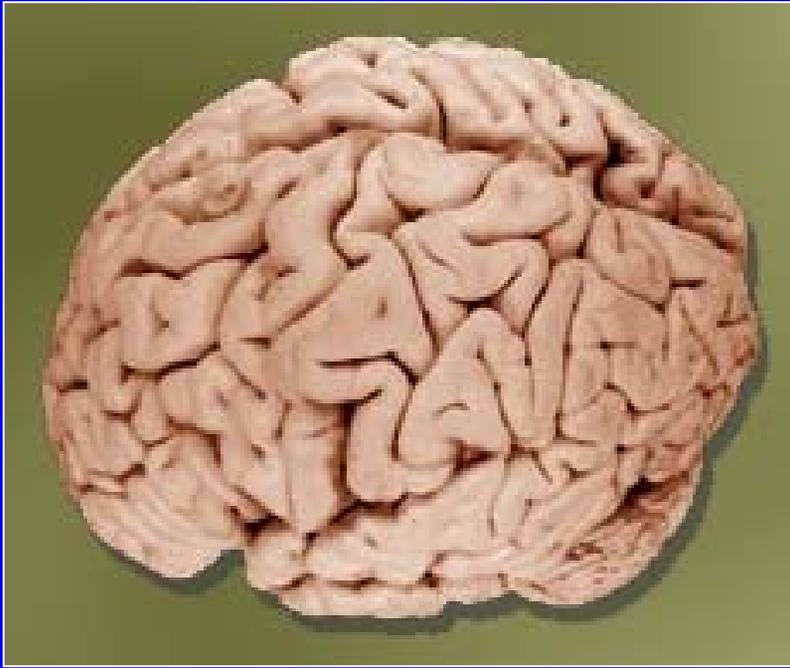
# Cutaneous Anthrax: Cutaneous Ulcer



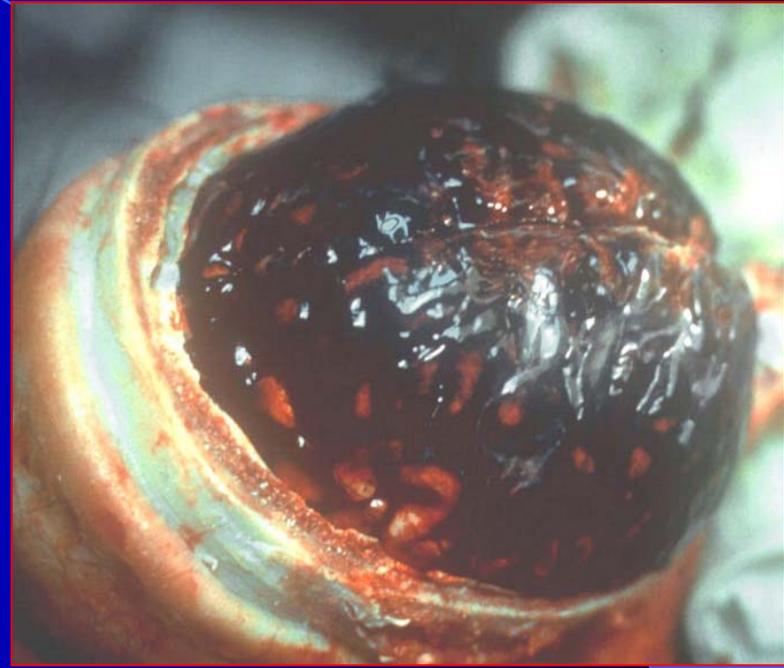
# Inhalational Anthrax

- Inhalational anthrax occurs when spores enter the body through the lungs
- Not transmitted person to person
- Spores migrate to lymph system where bacteria multiply and produce lethal toxins
- Toxins cause bleeding and destruction of the brain or vital organs in the chest, resulting in death

# The Human Brain



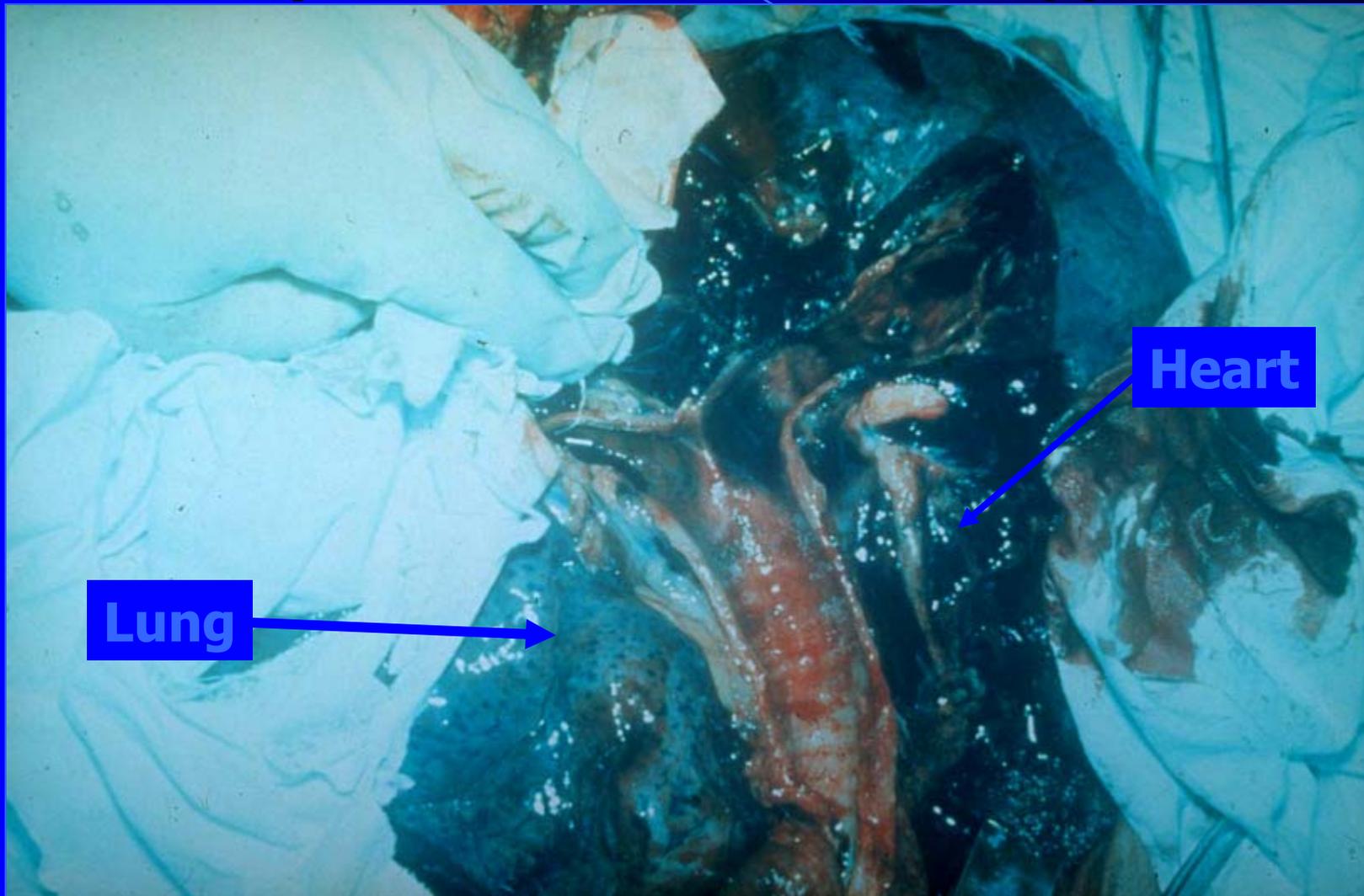
**Normal Brain**



**Brain of a person who died  
from inhalational anthrax**

**Note that the usually clear fluid which surrounds the brain becomes bloody from the anthrax infection.**

# Inhalational Anthrax Victim (view of chest cavity)



# How would I know if I have been exposed?

- 1) Suspicion of exposure from a terrorist act
  - Known biological attack
  - Suspicious mail package
- 2) Symptoms that could result from infection
  - Skin ulcer
  - Flu-symptoms
    - fever, feeling ill, tiredness, body aches, mild cough
    - Shortness of breath, difficult breathing, chest pain, excessive sweating, seizures

# Suspicious Mail?

- Suspicious packages
  - Oily stains, discolorations, excessive postage, handwritten or poorly typed address, incorrect titles, a title without a name, misspellings, no return address, excessive weight, lopsided or uneven envelope, protruding wires or aluminum foil, excessive tape, string, etc.
  - DON'T OPEN -> NOTIFY MILITARY POLICE

# The Powdery Substance?

- **SUSPICIOUS POWDER**
  - white-tan powder (not crystals- eg. salt/sugar)
- **EXPOSURE STEPS**
  1. **DO NOT** try to **CLEAN UP** the powder.
  2. **COVER** the spilled contents immediately with anything
  3. Then **LEAVE** the room and **CLOSE** the door
  4. **WASH** your hands with soap and water to prevent spreading any powder to your face.
  5. **REMOVE** heavily contaminated clothing as soon as possible, place in a sealed container/bag.
  6. **SHOWER** with soap and water as soon as possible.
  7. **LIST** everyone in room.
  8. **CALL MILITARY POLICE**

# Smallpox

- Virus spread by droplets (coughing, sneezing, bioweapons)
- Signs/Symptoms:
  - Flu-like:
    - high fever, fatigue, headache, backache, severe abdominal pain, disorientation
  - Rash:
    - mouth, throat, face, and forearms, and spreads to the trunk and legs (initially like blisters, then pustules, and finally crusts)
    - Very disfiguring
- Disease ERADICATED in 1970's by aggressive vaccination program
  - Vaccinations discontinued
  - Several research institutions maintained a stock of virus
  - Terrorists may also have stocks of the virus

# Smallpox Rash



# Smallpox: Bioweapon

- Bioweapon
  - Probable 1<sup>st</sup> use during French & Indian War (via blankets)
  - Person-to-person transmission allows to spread quickly
  - Currently not anticipating attack, but must have heightened awareness
- Mortality: up to 30%
- Treatment: none; just supportive measures
- Prevention: **VACCINATION**
  - Prior to 1970's most people were vaccinated (probably still have some antibodies, but for safety should be assumed to be a risk))
  - Large unvaccinated population at risk (stay posted for possible vaccination in the future)

# Key Messages

- Anthrax used as a biological weapon represents a grave and urgent threat to U.S. Armed Forces
- Smallpox another potential bioweapon
- Prevention is KEY
  - Vaccination
  - Knowledge about symptoms and exposure prevention
  - Early Treatment

# Information Sources

- Chain of command
- [Http://www.anthrax.osd.mil](http://www.anthrax.osd.mil)
- [Http://www.defenselink.mil](http://www.defenselink.mil)
- [Http://www.cdc.gov](http://www.cdc.gov)
- [Http://www.aviationmedicine.com](http://www.aviationmedicine.com)
- Call Toll Free 1-877-GET-VACC  
(1-877-438-8222)