Version #1 Date 10/25/14

- Content good for current situation 10/25/14
- Very dynamic and fluid situation

- Thank you to Dr. Sara Cody and Dr. George Han, Public Health Officers Santa Clara County
- Collaborative effort to serve and protect
- New best practices from EMDAC, EMSA, EMSAAC due next week 10/28/14

Presented by Eric Rudnick MD, FACEP, FAAEM, Medical Director, and Recorded Live at the 10/25/2014 Northstate Prehospital “Fall” Conference
Overview

- Update on outbreak in West Africa
- Basic facts about Ebola
  - Symptoms
  - Transmission
  - Infectious period
- How are we preparing?
Ebola Basics

- Viral Hemorrhagic Fever, Ebola is one of three diseases known
- Temperature 100.4 F or 38 C, new definition 10/20/14
- Body aches, headache, weakness, vomiting, diarrhea, muscle pain, and hemorrhaging
- Respiratory failure late sign with multi-organ system failure
- Virus has a 2 to 21 day incubation period
- Patients with Ebola are not contagious until symptoms are present
Transmission of Ebola

- Ebola is not currently thought as an airborne illness: cough in crowded bus
- Ebola can be aerosolized
- Transmitted through infected bodily secretions such as: sweat, saliva, semen, blood, feces, urine, etc.
- Ebola does not enter intact skin but needs to contact mucous membranes (eyes, nose, mouth) or break/abrasion in the skin
Current outbreak overview

- Ebola outbreak identified in Guinea in mid-March, 2014
  - Likely had been ongoing since Dec 2013
  - Subsequently spread to Liberia, Sierra Leone
    - Nigeria now free of virus
    - Senegal had an imported case
    - Spain and U.S. have both had an imported cases with transmission

- Largest EVD outbreak ever; more cases than all other outbreaks combined

- 1918-1919 Influenza Pandemic
  - Estimated that between 20% and 40% of the world fell ill
  - 50 million perished worldwide
  - 675,000 in the US
  - Before modern air travel
Case Counts

- CDC estimates true number of cases is 2.5x what is being captured by surveillance

Althaus, C. 2014. PLOS Current Outbreaks.
Ebola outbreak currently in 3 countries in West Africa

Levels of Transmission
- New Active Area
- Active
- Not Active

Ebola Treatment Units
- Laboratory
- Transit Center
- Hospital
- Ebola Treatment Unit (ETU)

Source: WHO: Ebola Response Roadmap 10 October 2014

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Mali – Toddler dies from Ebola, traveled from Guinea 600 miles via bus – WHO deployed
Africa is a giant continent
Many countries in Africa are as far from the outbreak area as are countries in Europe...

Distance to Ebola Outbreak Area

- Toronto, CA (7,684km/4,774mi)
- New York, US (7,190km/4,468mi)
- London, UK (4,856km/3,018mi)
- Berlin, DE (5,327km/3,310mi)
- Paris, FR (4,622km/2,875mi)
- Rome, IT (4,316km/2,682mi)
- Madrid, ES (3,594km/2,233mi)
- Fortaleza, BR (3,420km/2,129mi)
- Rio de Janeiro, BR (5,017km/3,117mi)
- Kampala, UG (4,813km/2,990mi)
- Nairobi, KE (5,312km/3,301mi)
- Arusha, TZ (5,353km/3,326mi)
- Lusaka, ZM (4,988km/3,105mi)
- Harare, ZW (5,385km/3,346mi)
- Maun, BW (4,848km/3,013mi)
- Johannesburg, ZA (5,606km/3,519mi)
- Windhoek, NA (4,554km/2,829mi)
- Cape Town, ZA (5,597km/3,478mi)

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Risk assessment for suspected Ebola

- Could they have had an exposure?
  - Have they been in Liberia, Sierra Leone, or Guinea within the past 21 days?
  - Have they been in close contact with someone who has been in those countries in the last 21 days?

- Are they ill with symptoms that might indicate Ebola?
  - Fever, weakness, muscle pain, diarrhea, vomiting, etc

- Suspected cases
- Person under investigation (PUI)
- MHOAC (Medical/Health Operational Area Coordinator)
- Health Officer, CDPH Duty Chief, CDC
- EMD and Pre-screening at PSAPs
Ebola symptoms

- Starts with non-specific symptoms
  - Fever (87%), chills, muscle aches (39%), weakness (76%)

- Day 4 of illness:
  - Severe watery diarrhea (65%), nausea, vomiting (67%), abdominal pain (44%), chest pain, shortness of breath, profound weakness

- Day 5 – 7 of illness: Some may develop rash

- Day 6 – 16:
  - Multi-organ failure, septic shock, bleeding (18%)
How is Ebola transmitted?

- Animal (bats, primates) to human
- Human to human, through direct contact (touches someone’s eyes, nose, mouth or opening in skin) with blood or bodily fluids (saliva, mucus, vomit, feces, urine)
  - Increasing infectivity with course of illness
  - Low infectious dose
- Common settings for transmission
  - Healthcare workers taking care of sick
  - Home caregivers taking care of sick
  - Traditional funerals that involve touching the body
When is someone with Ebola infectious?

- The “incubation period” is the time between exposure to the bug, and onset of symptoms
  - For Ebola, this ranges from 2 to 21 days, with 8 – 10 days being typical
- The “infectious period” is the time when a person with the infection can spread the germ to another
  - For Ebola, the infectious period starts when the symptoms start. Before someone has symptoms, they are not infectious.
  - Infectiousness increases as the illness progresses.
How are we preparing?

Objective #1: Safe identification and care of a potential Ebola patient

- Rapid ID of patient in all healthcare settings
- Is it possible in the rural Northstate?
- Rapid implementation of infection control/measures & precautions
  - Public Health’s enormous job – contact tracing
- Safe transport of ill patient to hospital via EMS
  - Local Hospitals
  - Bypass and direct transport?
  - Air providers - no
  - UC Hospitals referral for “confirmed cases” 10/25/14
  - UC San Diego, UC Irvine, UCLA, UCSF, and UC Davis

ID and support of referral hospitals for ongoing care

- Regional Centers of Excellence
- City and County Local Health Officers

Effective decontamination of personnel

- Decontamination prior to doffing (hospital partners)
- “Buddies”
- Observers

Effective decontamination of equipment, vehicles and facilities

- CAL-OSHA, CDPH, and EMSA guidance
How are we preparing?

- **Objective #2:** Clear, concise, consistent risk communication with public and other stakeholders
- Avoid the news media and refer to Public Health or agencies public information officer
How are we preparing?

Objective #3: Rapid identification, risk assessment and implementation of public health actions for any contacts to a confirmed Ebola case to stop the chain of transmission
PPE – New PPE Guidelines Released CDC 10/20/14

- Nitrile gloves (double glove technique) and eye protection (goggles and Face shield) all patient contacts that are high risk
- N95 mask or P100 particle respirators for any invasive procedure
- Fluid impermeable gown ensemble
- Fluid impermeable suit
- N95 mask versus PAPR
- Bottom Line: “No Skin Showing”
- Donning and Doffing with an “buddy” and trained observer
- Bleach solution 0.5% and dwell time between 5 and 10 minutes
- Bonus: bleach kills other organisms (bacterial and viral)
Great Debate

- **New York and New Jersey governors mandate quarantine for 21 days all people returning from affected African countries including health care professionals who had contact with Ebola patients 10/24/14**

- **Organizations worried that it will make it harder for relief workers**

- **The Obama administration said it was weighing the dilemma**

- **North Carolina-based international relief group Samaritan’s Purse- requiring all returning staff to stay isolated for 21 days-they house near Emory and NIH while being paid regular wages**
Questions?