

# **Training for Healthcare Providers**

Hospitals and Health Centers



# Clinical Features of Ebola

- Incubation period 2-21 days
- Sudden onset:
  - Fever, headache, chills, malaise, and myalgia
  - GI symptoms common: vomiting, diarrhea, abdominal pain
  - Hemorrhagic symptoms: in ~45% of cases
    - Mild: petechiae, epistaxis, ecchymosis, bruising
    - Severe: GI hemorrhage, shock, DIC
  - Less commonly seen: rash (trunk, shoulders), conjunctivitis, pharyngitis, cough, hiccups



# Human-Human transmission

- Direct contact
  - Body fluids, blood, respiratory secretion, saliva
  - Breast milk
  - Semen -- up to 90 days following clinical resolution
- Nosocomial transmission
  - Reuse of needles and syringes
  - Exposure to infectious tissue, excretions, waste
- Funeral exposures
  - Preparation of body for burial



# Course of Disease & Virus shedding

- Not transmissible prior to onset of symptoms
  - All body fluids can carry virus
- Virus quantity increases to death, usually 7-10 days post-onset
- Convalescence/resolution of viremia
  - Discharge



# TRIAGE



# Setting up Triage

- Only one access point to the facility.
- **All** patients, visitors and staff must go through triage before entering the facility.
- Triage should be open *anytime* facility is open.
- Triage staff should be dressed in face shield, gown, and gloves

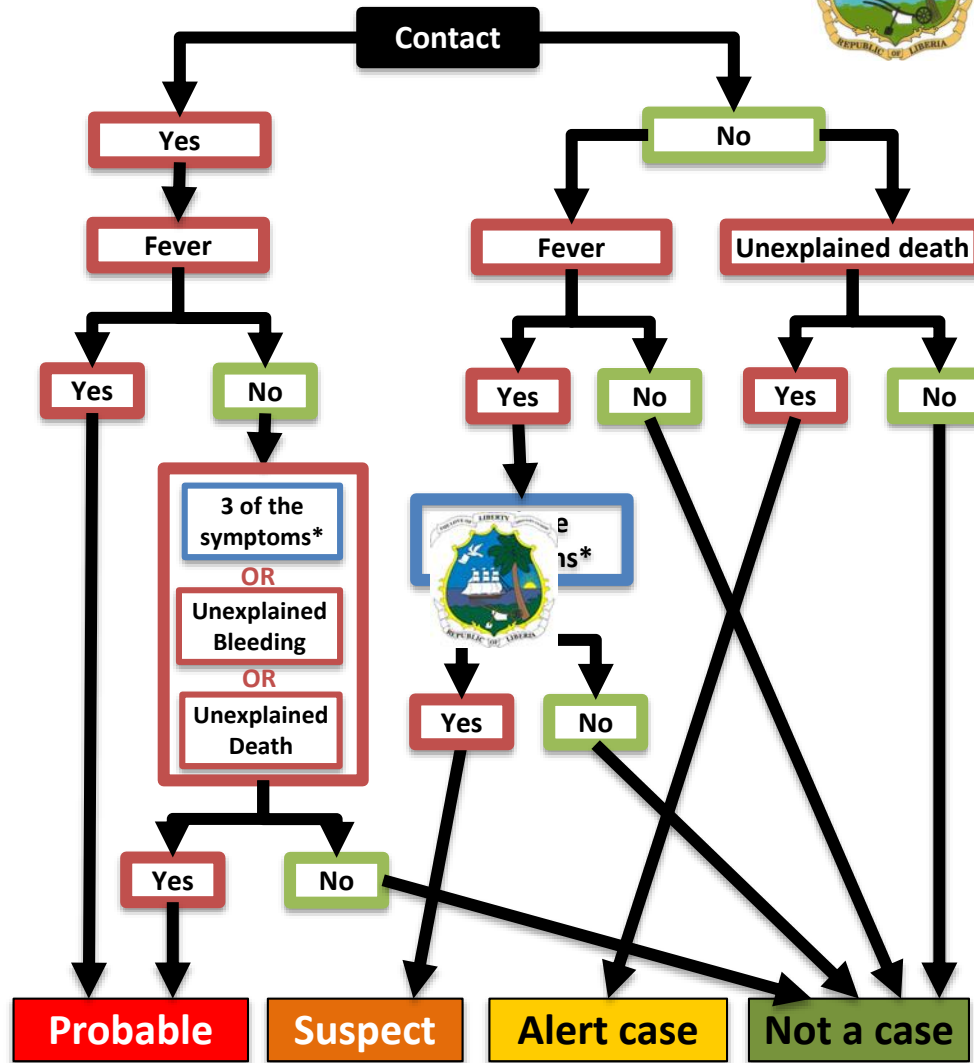


# Triage Process

- Stay at least 3 feet away from patient when possible
- Take the patient's temperature from behind
- Interview the patient using the Ebola triage flow chart



# Ebola OUTBREAK Triage Decision-making Flowchart



**\*Symptoms include:** headache, vomiting, nausea, loss of appetite, diarrhoea, intense fatigue, abdominal pain, general muscular or articular pain, difficulty in swallowing, difficulty in breathing, hiccoughs



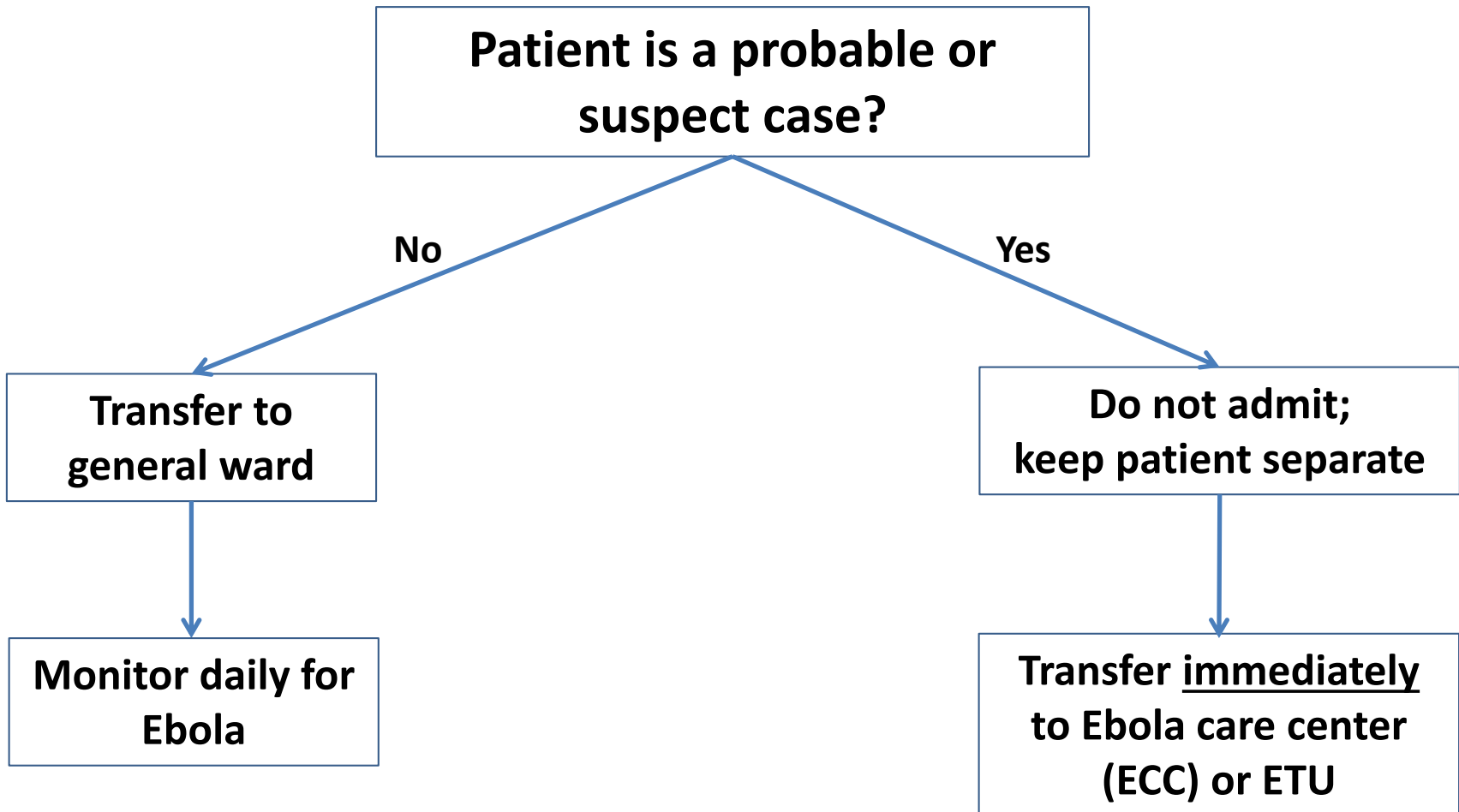
# Contact

- Slept in the same house as Ebola patient
- Touched body or body fluids of Ebola patient
- Took care of someone with suspect Ebola or very sick
- Washed the clothes/bedding of someone who died
- Touched the body or body fluids of someone who died
- Took care of someone who died





# Triage Process



# Screening for Ebola in General Ward

- Patients may develop symptoms in the hospital that weren't obvious at triage
- Screen all patients for Ebola:
  - Check temperatures 3 x daily
  - Interview using triage form daily
  - Transfer all suspect Ebola cases to ECC



# Triage Scenarios

## Scenario 1

A 25 year old man presents to the hospital with fever. His wife was sent to an Ebola Treatment Unit 3 days ago. He was brought to the hospital in a taxi.

Within your group discuss the following; in relation to your scenario.

1. What could be the diagnosis?
2. What questions would you ask?
3. What would be your immediate response?
4. What would you do next?
5. What would you tell the staff and family?



# Scenario #1 Discussion

- Patient has contact with Ebola patient and fever → probable case. Needs to be transferred to Ebola care center right away
- If ECC is not at the site, the patient should be transported by ambulance
- Taxi needs to be disinfected before leaving the hospital



# Triage Scenarios

## Scenario 2

A 60 year old man presents to the hospital with fever and body ache for 3 days. He is becoming dizzy and has vomiting and diarrhea. He has no transport.

Within your group discuss the following; in relation to your scenario.

1. What could be the diagnosis?
2. What questions would you ask?
3. What would be your immediate response?
4. What would you do next?
5. What would you tell the staff and family?



# Scenario #2 Discussion

- Patient has fever + 3 of the symptoms (body ache, vomiting, diarrhea) → transfer to ECC.
- We should still find out if patient has contact to patient with Ebola disease
- Transport the patient in ambulance to the ECC

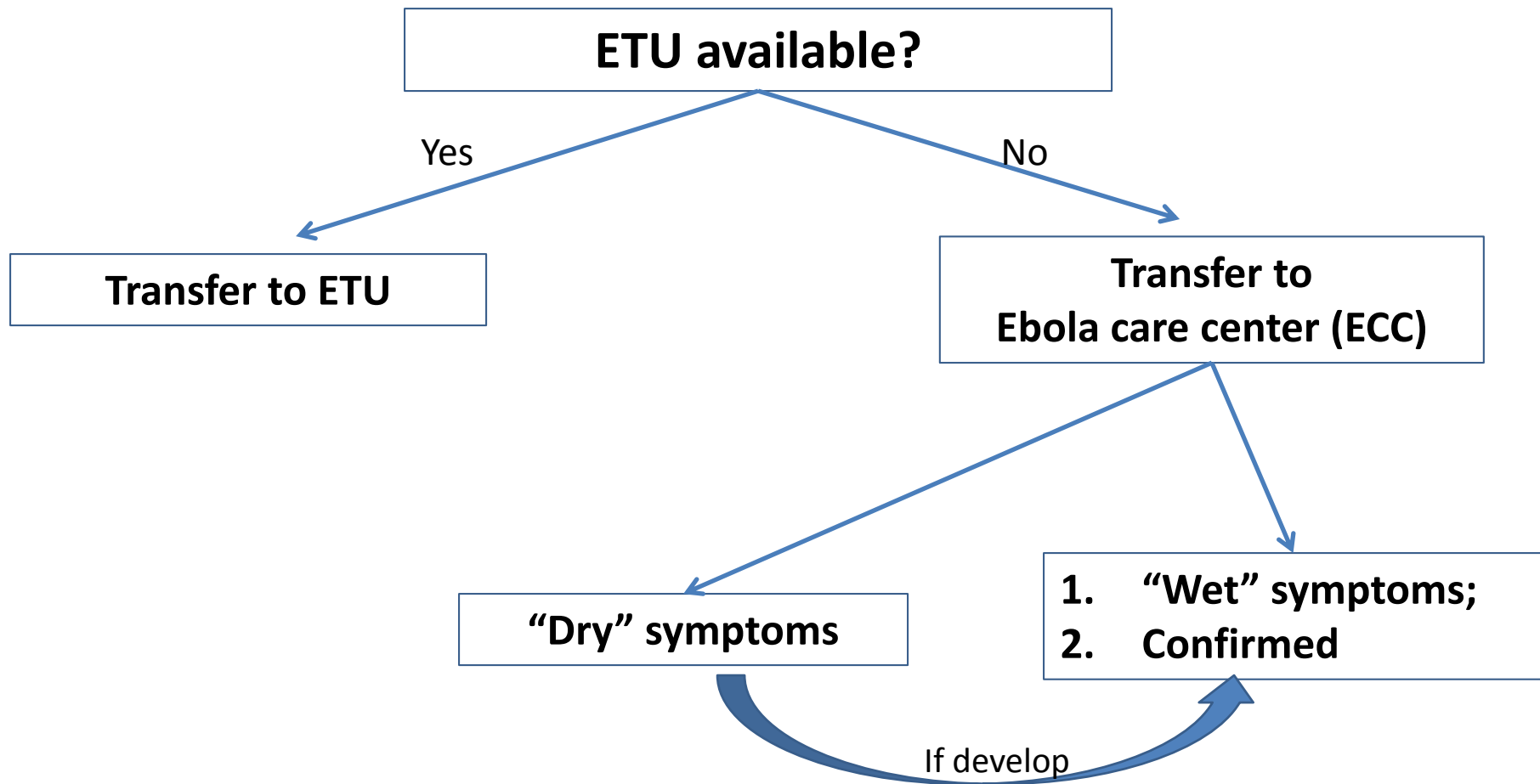


# **CASE MANAGEMENT/ CLINICAL CARE**





# Triaging a Patient with Suspect or Probable Ebola



- “Wet” symptoms: vomiting, diarrhea, bleeding, etc.
- “Dry” symptoms: **no** vomiting, diarrhea, bleeding, etc.



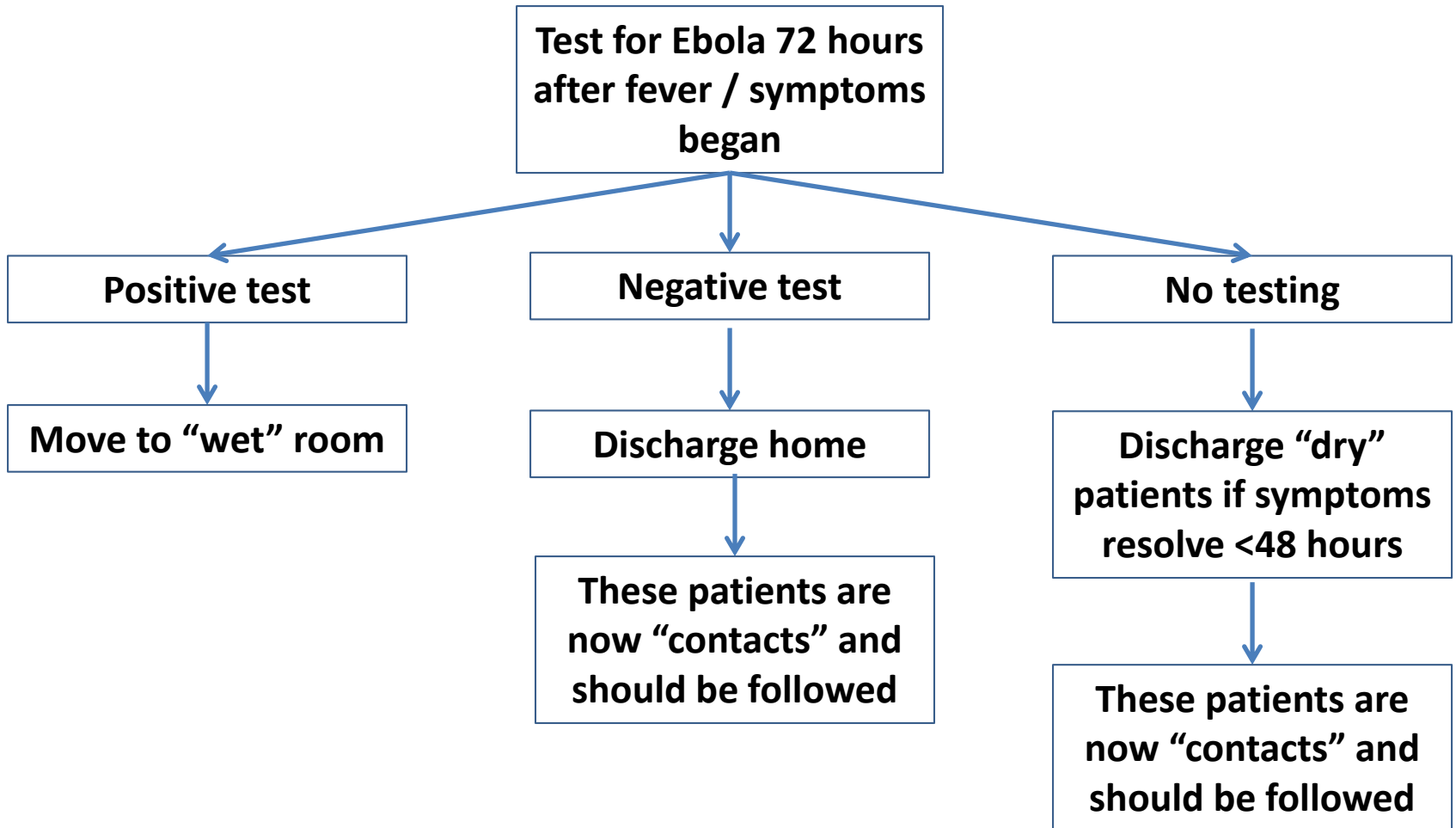
# Suspect or Probable Ebola cases

- Treat empirically for malaria and any other infections.
- Report case to county health officials
- Send patient to ETU or Ebola care center:
  - Prioritize “wet” patients for transfer to ETU
  - Separate rooms in ECC:
    - “Dry” patients
    - “Wet” patients and confirmed Ebola patients





# Testing for Ebola in ECC



# Testing for Ebola in ECC

- If limited testing, prioritize “dry” patients
  - May have illness other than Ebola
- Patients that remain in ECC should not be discharged until all major symptoms (e.g., fever, diarrhea, vomiting, bleeding) have resolved for three days.



# Clinical Care: Fluids

- Dehydration threatens patient's survival
- Use oral rehydration solution(ORS);
  - Avoid intravenous fluids unless can be delivered safely
- Encourage normal eating



# Clinical Care in the ECC: Medications

- Treat *all* Ebola cases empirically for malaria and antibiotics as needed
- Treat vomiting, diarrhea, anxiety, pain
- AVOID aspirin and other NSAIDs
- Give Vitamin supplements (A, B, C, Multivites)





# Clinical Care: Medications

| Type of Medication | Reason                            | Examples   |
|--------------------|-----------------------------------|--|
| Antibiotics        | Treat bacterial infections        | Oral ciprofloxacin (not for children)  |
| Anti-emetics       | Treat nausea; prevent dehydration | For adults: chlorpromazine 25-50 mg Q6H orally or metoclopramide 10 mg orally q8h. For children, give promethazine |
| Anti diarrheals    | Symptom relief, dehydration       | Imodium  |
| Analgesics         | Relieve pain                      | Paracetamol, codeine, morphine esp. Avoid aspirin and NSAIDs, diclofenac, ibuprofen                                |
| Anxiolytics        | Ease anxiety                      | Diazepam –adults: 5-15 mg/day in 3 divided doses; If more severe: give haloperidol 5 mg oral                       |
| Anti-pruritics     | For itch                          | Calamine lotion or antihistamines  |
| Anti-pyretics      | Reduce high fever                 | Paracetamol; Avoid aspirin, NSAIDS   |
| Antacids           | Relieve heartburn                 | Omeprazole 20mg daily; or magnesium trisilicate; 2 tabs q8h until symptoms resolved                                |
| Anticonvulsants    | Treat seizure/ epileptic fit      | Check glucose<br>Diazepam rectal   |

# Deaths

- Dead bodies are highly infectious
- Call burial team right away to remove body
- If burial team does not come soon:
  - Always wear advanced PPE when handling body
  - Cover body with sheet
  - Move to separate area if can be done safely





# Needle Safety



# Needle Safety

- Needle sticks and injuries from other sharp objects can cause infections (Ebola, HIV, Hepatitis)
- Limit testing or treatment that involve needles
  - Use oral medications and fluids whenever possible
  - No unnecessary testing (treat empirically for malaria)
- You **CAN** prevent injuries from needles and other sharp objects



# Needle Safety – If you must use a needle

- Always wear gloves
- When possible use retracting needles
- When using needles, work slowly and carefully



# DO

- **DO** throw away needles immediately after use
- **DO** throw the uncapped needles away in a sharps container
- **DO** close, seal, and send sharps containers for incineration when they become  $\frac{3}{4}$  full





# DO NOT

- **DO NOT** recap a used needle
- **DO NOT** bend or break used needles or other sharp instruments
- **DO NOT** walk around with sharp objects
- **DO NOT** overfill sharps container



# Injection Safety

- Once you use a needle and syringe on a patient, the needle AND the syringe are contaminated
- Needles and syringes are used for **ONLY ONE** patient
- **Never** give medications from the same syringe to more than one patient, even if the needle is changed



# Injection Safety

- **Never** puncture a vial or any other container of liquid medications with a used syringe or needle
- **Never** use the same vial of medication for more than one patient



# **INFECTION PREVENTION AND CONTROL**





# Designate Infection Prevention and Control (IPC) Specialist

- Develop infection control committee
- Ensure staff follow recommended practices
- Ensure adequate supplies of PPE
- Consult experts and county officials



# How to Prevent Infections in Healthcare Workers

- Do not go to work if you are sick
  - Call your supervisor and tell him/her that you are sick
- Tell your co-workers not to go to work if they are sick
- Do not wear your work clothes (or scrubs) home
- Wear and remove PPE properly with a buddy watching
- Wash your hands according to protocol



# Personal Protective Equipment (PPE)

- Basic PPE: Staff in most patient care areas
- Advanced PPE: Staff in Ebola care center and maternity ward

**Never use your phone while wearing PPE**



# Additional items for high-risk areas

## Everyone: Basic PPE

- Closed toe shoes with covers or boots
- Face shield
- Gown
- Gloves (1 set)

## High risk: Advanced PPE

- Rain boots
  - or closed toe shoes & covers
- 1<sup>st</sup> set of gloves
- Gown
- Head cover or hood
- Mask
- Shield
- 2<sup>nd</sup> set of gloves
  - outer set can be rubber
- Apron



# Basic Protection PPE



With acknowledgments to Kumblytee Johnson



# Sequence for Putting on Basic PPE over your scrubs or work clothes

1) Remove Jewelry

1



2) Wash hands

2



3) Face shield

3



4) Gown

4



5) Gloves

5



# Put On PPE

- Put on PPE slowly and carefully
- **DO NOT RUSH !**





# 1. Remove Jewelry

- **Remove ALL jewelry before putting on PPE**
  - Watches      -Necklaces
  - Bracelets
  - Rings
  - Earrings







## 2. Wash Your Hands

- **Wash your hands immediately before putting on PPE**
- **Use Soap and water**  
...OR 0.05% chlorine  
...OR hand sanitizer



### 3. Put on Face Shield

- **Position shield over the face and secure with elastic band/ties**
- **Shield should rest just above your eyebrows**
- **Adjust to fit comfortably**



# 4. Put on Gown

- Opening is in the back
- Secure at the neck and waist with ties



# 5. Put on Gloves

- **Put on gloves last**
- **Select correct size**
- **Insert hands into gloves**
- **Extend the gloves over the gown cuffs**



# Take Off PPE



# Taking Off PPE

- Take off PPE carefully and slowly!
- **DO NOT RUSH !**
- Remove PPE just before you leave the patient area



# Sequence for Taking Off PPE

- **Wash hands**
- **Take-off gown**
- **Take-off gloves**
- **Wash hands**
- **Take-off Face shield**
- **Wash hands**



**Wash your gloved hands with  
0.05% chlorine**





## 2. Take Off Gown

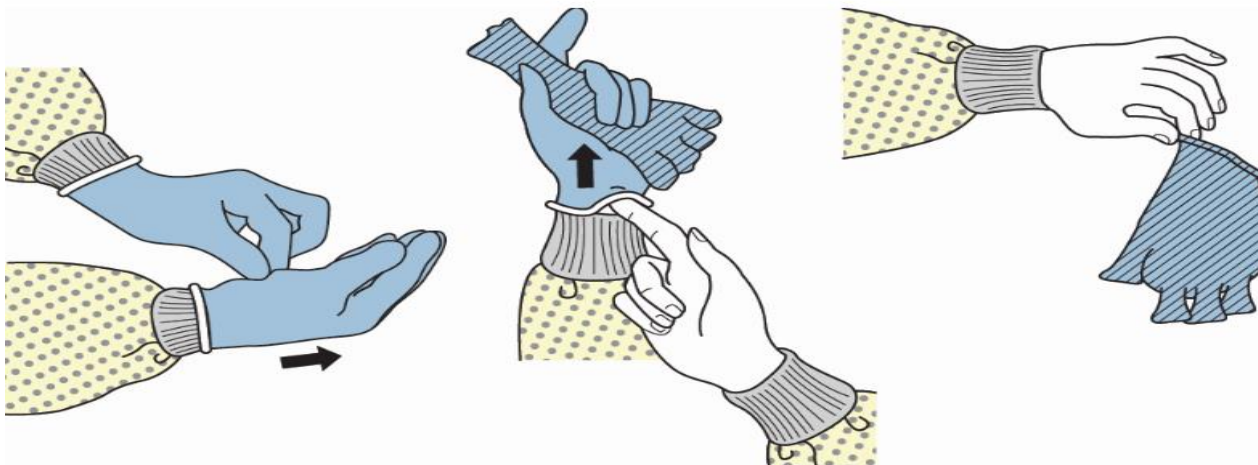


- Unfasten ties
- Peel gown away from neck and shoulder
- Turn contaminated outside toward the inside
- Throw it away



# How To Take Off Gloves

- **Outside of gloves is contaminated! Remove your gloves slowly**
- Grasp glove at the palm with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist
- Peel glove off over first glove
- Throw away the gloves



# Wash Your Hands

- **Wash your hands immediately after removing PPE**
- Use Soap and water
- OR Hand sanitizer
- OR **0.05% Chlorine**



# How to Take Off the Face Shield



- **Lift the elastic strap over your head**
- **Throw it away**

# Wash Your Hands

- **Wash your hands immediately after removing PPE**
- **Use Soap and water**
- **OR Hand sanitizer**
- **OR 0.05% Chlorine**



# Advanced Protection PPE



With acknowledgments to Kumblytee Johnson



# Putting on PPE over your scrubs or work clothes

- Put PPE on slowly and carefully
- **DO NOT RUSH !**
- You must have a “buddy” watch you put on PPE



# Sequence for Putting on Advanced PPE

1) Take off jewelry



2) Put on boots



3) Wash hands



4) Examination gloves



5) Gown



6) Head cover



7) Face mask



8) Face shield



9) Examination gloves



10) Apron





# 1. Remove Jewelry

- **Remove ALL jewelry before putting on PPE**
  - Watches
  - Bracelets
  - Rings
  - Earrings



## 2. Put on Boots or Shoe covers

- Put on boots



## 3. Wash Your Hands

- **Wash your hands immediately before putting on PPE**
- **Use Soap and water**  
...OR Hand sanitizer  
...OR **0.05% Chlorine**



## 4. Put on Inner Pair of Examination Gloves

- **Select correct size**
- **Insert hands into gloves**



# 5. Put on Gown

- **Opening is in the back**
- **Secure at the neck and waist with ties**



## 6. Put on Head Cover

- Put on head cover
- Tuck hair into the head cover



## 7. Put on a Face Mask

- Place the mask over your nose and mouth
- Secure on head with ties
- Adjust to fit



## 8. Put on a Face Shield or Goggles

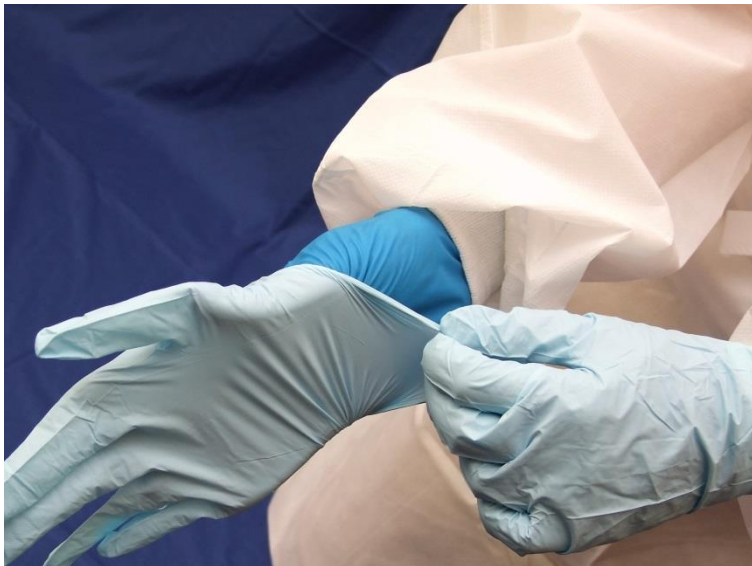
- Position shield over the face and secure with the elastic band
- Adjust the face shield to sit just above your eyebrows
- Adjust to fit comfortably





## 9. Put on Outer pair of Examination Gloves

- Put on second pair of examination gloves
- Extend the gloves over the gown cuffs



# 10. Put on Apron

- Place neck strap over head
- Tie straps behind back



# Taking Off PPE



# PPE Removal Area

- Take off PPE in the “PPE REMOVAL AREA”
- Supplies inside the “PPE REMOVAL AREA”



**0.5% Chlorine**



**Disposable towels**



**Rubbish bin**



**Bucket filled with  
0.5% Chlorine**



**Chlorine foot bath**



# Taking Off PPE

- Taking off PPE **MUST** be supervised by a infection control professional
- Every time you take off a PPE item, wash your hands with 0.05% chlorine



# Sequence for Taking off PPE



**\*Wash your hands every time you remove each item**

1) Apron

1



2) Examination (outer) gloves

2



3) Gown

3



4) Inspection/cleaning boots

4



5) Face shield

5



6) Face mask

6



7) Head cover

7



8) Examination (inner) gloves

8

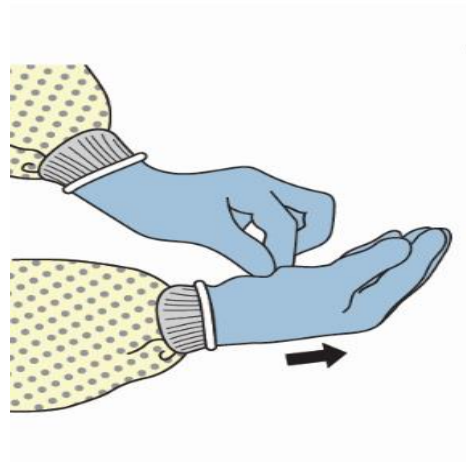


**Wash your gloved hands with  
0.05% chlorine**



# 1. Take Off Outer Pair Examination Gloves

- **Remove your gloves slowly**
- Grasp glove at the palm with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of hand under glove at wrist
- Peel glove off the glove
- Throw away the gloves





# Wash your gloved hands with 0.05% chlorine



## 2. Take Off Apron

- Remove apron strap over head
- Throw re-usable apron in 0.5% chlorine



# Wash your gloved hands with 0.05% chlorine



# 3. Take Off Gown



- Unfasten ties
- Peel gown away from neck and shoulder
- Turn contaminated outside toward the inside
- Throw it away



# Wash your gloved hands with 0.05% chlorine



## 4. Inspection/Cleaning of Boots

- Infection control person **MUST** inspect your boots for any visible blood or other body fluids (blood, vomit, urine, stool)



# Inspection/Cleaning of Boots

- If your boots are dirty:
  - Wipe off the visible body fluid with a disposable towel and throw it away
  - Wipe area again with a disposable towel soaked with 0.5% chlorine



# Wash your gloved hands with 0.05% chlorine





## 5. Take Off Face Shield



- **Lift the elastic strap over your head**
- **Throw it away**

# Wash your gloved hands with 0.05% chlorine



## 6. Take Off Face Mask



- **Untie the bottom tie**
- **Untie the top tie**
- **Discard**

# Wash your gloved hands with 0.05% chlorine



## 7. Take Off Head Cover

- Take off the head cover
- Throw it away

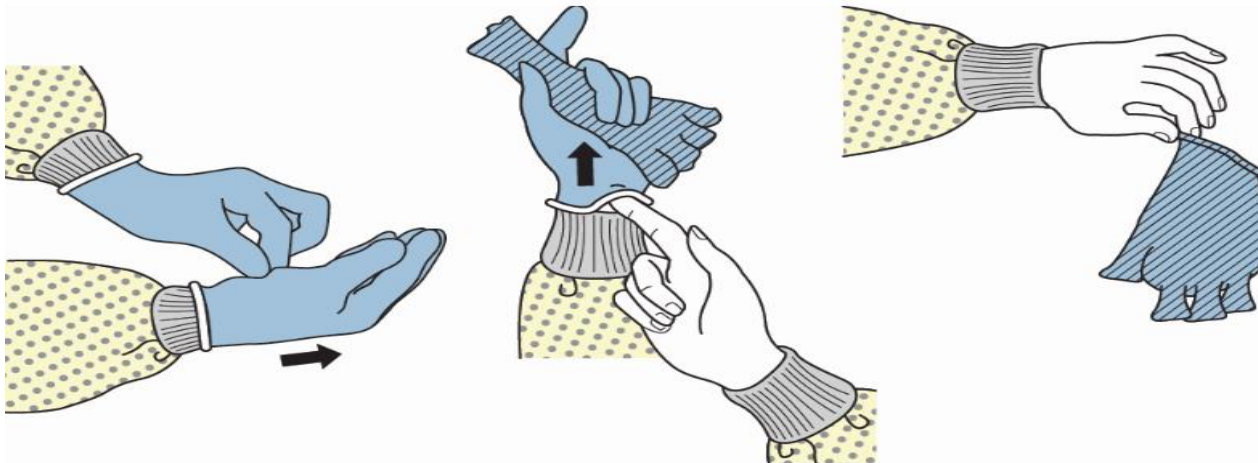


# Wash your gloved hands with 0.05% chlorine



# 8. Take Off Inner Pair of Gloves

- **Remove your gloves slowly**
- Grasp glove at the palm with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist
- Peel glove off over first glove
- Throw away the gloves



## 9. Wash Your Hands

- **Wash your hands immediately after removing PPE**
- Use Soap and water
- OR Hand sanitizer
- OR **0.05% Chlorine**





# Leaving PPE REMOVAL AREA

- As you leave the PPE removal area, walk through the chlorine boot bath



# Mistakes Using Personal Protective Equipment



# Personal Protective Equipment

- Personal protective equipment **MUST** be used correctly
  - If you use PPE incorrectly while caring for a patient with Ebola, you risk getting infected
- You **MUST** take off PPE in the correct order
  - If you take off PPE in the wrong order you risk getting infected



## Find the PPE Mistake



| PROBLEM | CORRECT ACTION |
|---------|----------------|
|         |                |
|         |                |

## How Do You Fix the Problem



**Healthcare worker is not wearing gloves while drawing blood.**



**Healthcare worker is not wearing gloves or face shield while treating a patient.**

### PROBLEM

### CORRECT ACTION



## PPE Mistakes



| PROBLEM  | CORRECT ACTION   |
|--|--|
| Healthcare worker is not wearing gloves while drawing blood.                     | <ul style="list-style-type: none"><li>• <b>ALWAYS</b> wear gloves when touching patients.</li><li>• <b>CHANGE</b> gloves between each patient.</li></ul> |
| Healthcare worker is not wearing gloves or face shield while treating a patient. | <ul style="list-style-type: none"><li>• <b>ALWAYS</b> wear gloves and face shield when treating patients.</li></ul>                                      |

## Find the PPE Mistake



| PROBLEM | CORRECT ACTION |
|---------|----------------|
|         |                |
|         |                |

## How Do You Fix the Problem



- Touching his face with gloved hands
- Should take off gloves BEFORE taking off face mask



- Touching their gowns with bare hands

### PROBLEM

### CORRECT ACTION



## PPE Mistake



- Touching his face with gloved hands
- Should take off gloves BEFORE taking off face mask

### CORRECT ACTION

- Contaminated gloves should come off BEFORE taking off face mask
- Remove mask by pulling the elastic FROM THE BACK



- Touching their gowns with bare hands

- The gown is contaminated!
- **DO NOT** touch your gown with bare hands

## Find the PPE Mistake



| PROBLEM | CORRECT ACTION |
|---------|----------------|
|         |                |
|         |                |

## Find the PPE Mistake



| PROBLEM  | CORRECT ACTION |
|--|----------------|
| <ul style="list-style-type: none"><li>• Touching the outside of the glove with a bare hand while being removed</li></ul> |                |
| <ul style="list-style-type: none"><li>• Gloves removed incorrectly</li></ul>   |                |

## Find the PPE Mistake



| PROBLEM  | CORRECT ACTION  |
|--|---|
| <ul style="list-style-type: none"><li>• Touching the outside of the glove with a bare hand while being removed</li></ul> | <ul style="list-style-type: none"><li>• Remove gloves correctly</li></ul> |
| <ul style="list-style-type: none"><li>• Gloves removed incorrectly</li></ul>   | <ul style="list-style-type: none"><li>• Remove gloves correctly</li></ul> |

**THE END**

