CHRISTIAN HEALTH ASSOCIATION OF LIBERIA (CHAL)

Keep Safe - Keep Serving

Standard Safety Measures for Health Worker

Training for
Healthcare Providers

What is Ebola?

Ebola hemorrhagic fever (**EHF**), or simply **Ebola** is a disease of humans and other primates caused by an Ebola virus

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

Triage in the simplest term is the sorting or prioritizing of items (clients, patients, tasks…). Some form of triaging has been in place, formally or informally at most of our facilities. In some instances Triage occurs at registration and in others specifically trained health care providers perform it after registration.
Efficient management of triage at the facility requires a team of providers capable of correctly identifying Patient's needs, setting priorities and implementing appropriate treatment, investigation and disposition.

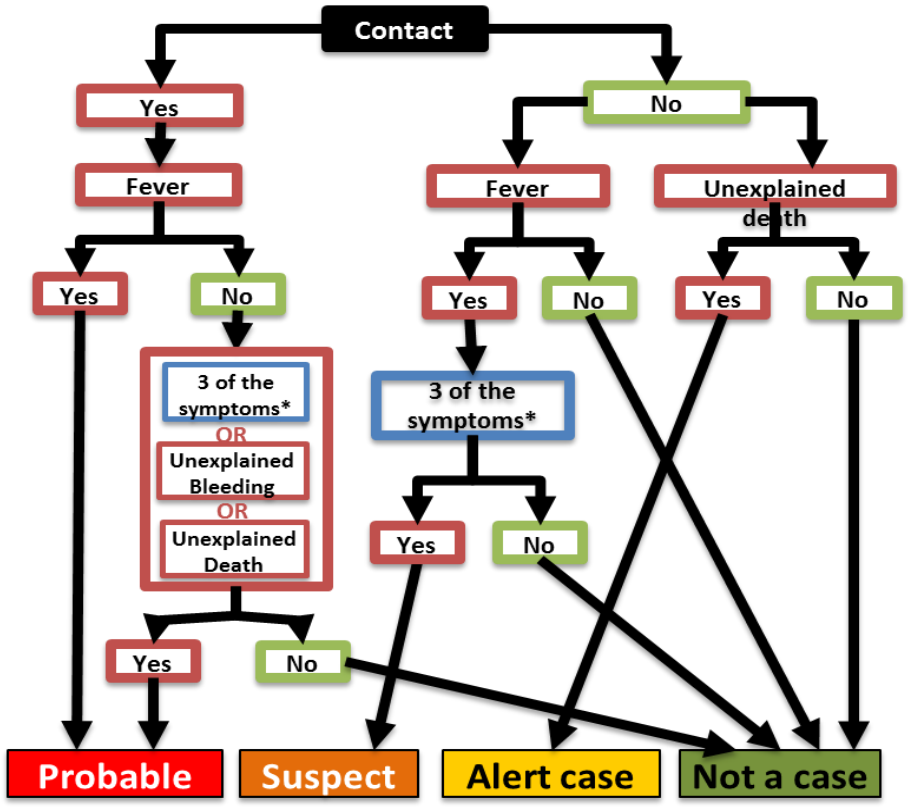
Setting up Triage

- 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



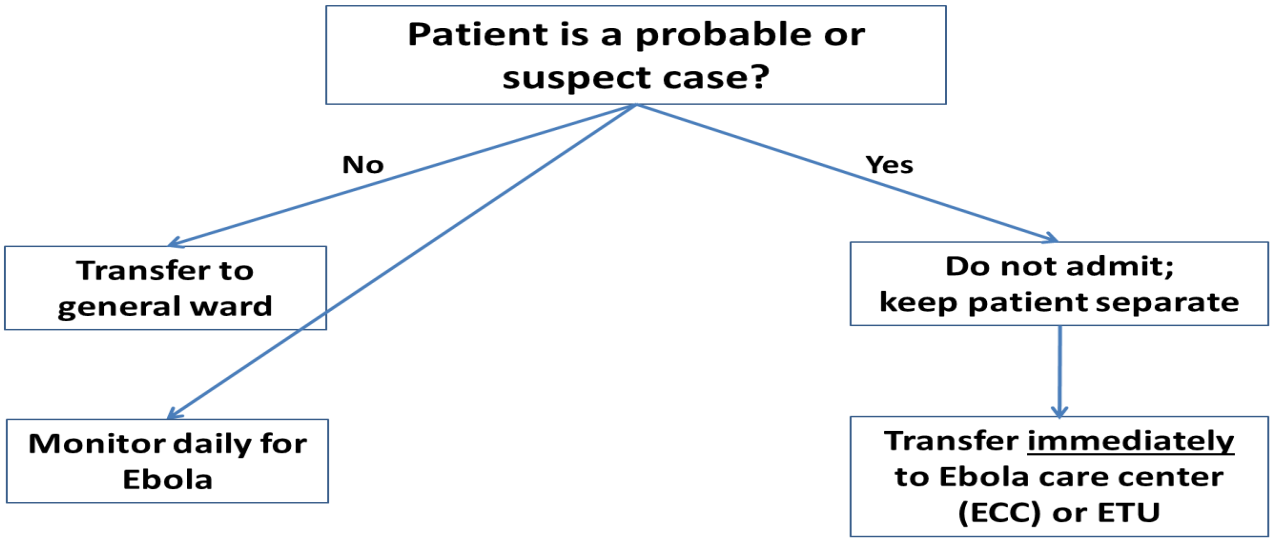
Note: Confirmed cases requires positive laboratory test

Liberia, 2014

Contact

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

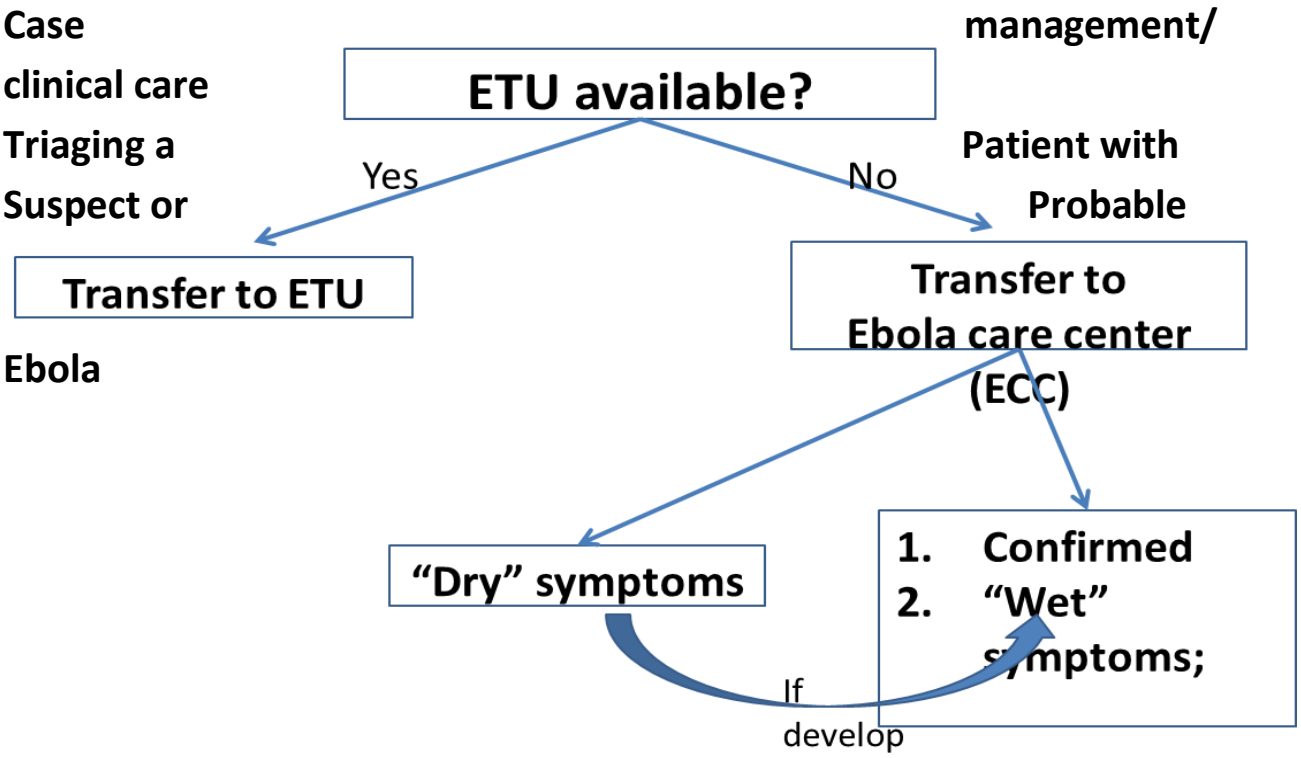
A 60 year old man presents to the hospital with fever and body ache for 3 days. He is becoming dizzy and has vomiting and diarrhea. He has no transport.

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

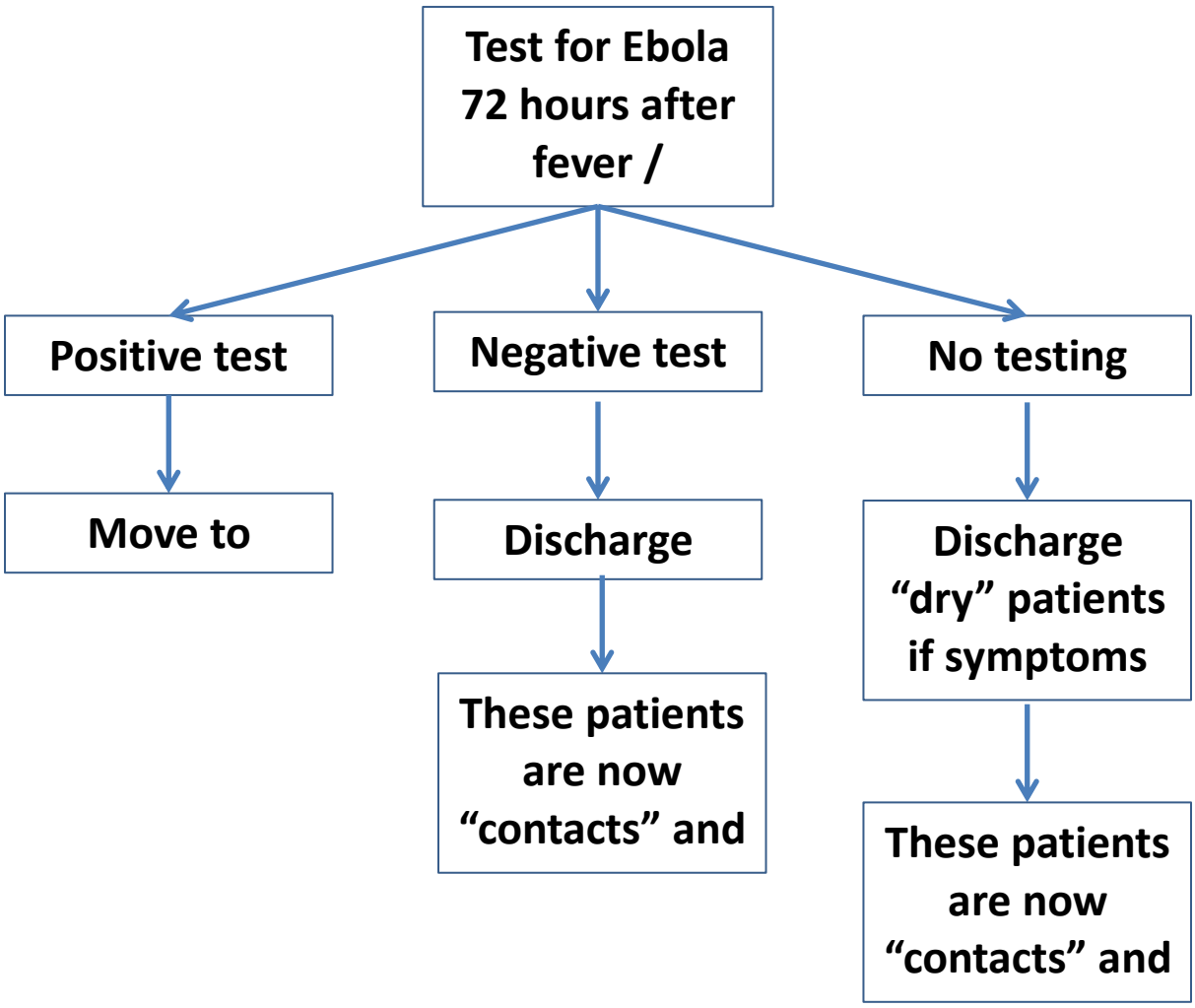
- Patient has fever + 3 of the symptoms (body ache, vomiting, diarrhea) → transfer to ECC.
- We should still find out if patient has contact to patient with Ebola disease
- Transport the patient in ambulance to the ECC



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

- 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**)**

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 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 ¾ 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

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
- 1st set of gloves
- Gown
- Head cover or hood
- Mask
- Shield
- 2nd set of gloves
  - outer set can be rubber
- Apron

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

1) Remove Jewelry
2) Wash hands
3) Face shield
4) Gown
5) Gloves

1

2

3

4

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**

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

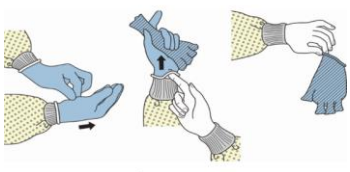
Wash your gloved hands with 0.05% chlorine

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**



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

2

3

4

5

6

7

8

9

10


1. Remove Jewelry



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

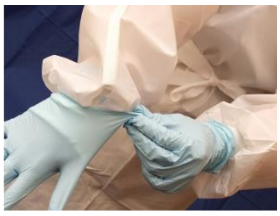
- **Place the mask over your nose and mouth**
- **Secure on head with ties**
- **Adjust to fit**

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
2) Examination (outer) gloves
3) Gown
4) Inspection/cleaning boots
5) Face shield
6) Face mask
7) Head cover
8) Examination (inner) gloves

1 

5 

2 

6 

3 

7 

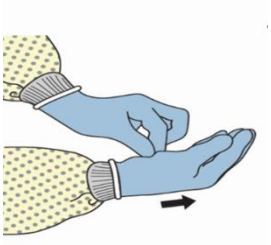
4 

8 

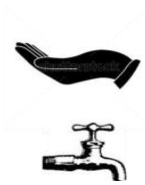
Wash your gloved hands with 0.05% chlorine

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 <u>0.5% </u>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

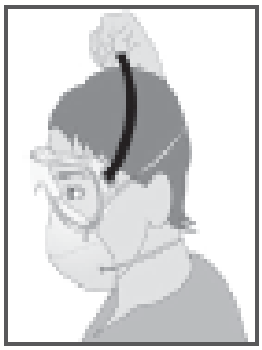

4. Inspecti Boot

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

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

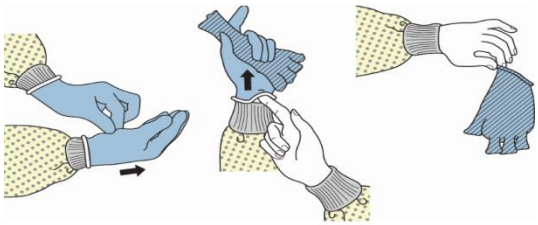
7. Take Off Head Cover

- 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**

PPE Mistakes

PROBLEM	CORRECT ACTION
Healthcare worker is not wearing gloves while drawing blood.	• ALWAYS wear gloves when touching patients. • CHANGE gloves between each patient.

PROBLEM	CORRECT ACTION
Healthcare worker is not wearing gloves or face shield while treating a patient.	• ALWAYS wear gloves and face shield when treating patients.

PPE Mistake

PROBLEM	CORRECT ACTION
• Touching his face with gloved hands • Should take off gloves BEFORE taking off face mask	• Contaminated gloves should come off BEFORE taking off face mask • Remove mask by pulling the elastic FROM THE BACK

PROBLEM	CORRECT ACTION
• Touching their gowns with bare hands	• The gown is contaminated! • DO NOT touch your gown with bare hands

Find the PPE Mistake

PROBLEM

- Touching the outside of the glove with a bare hand while being removed

CORRECT ACTION

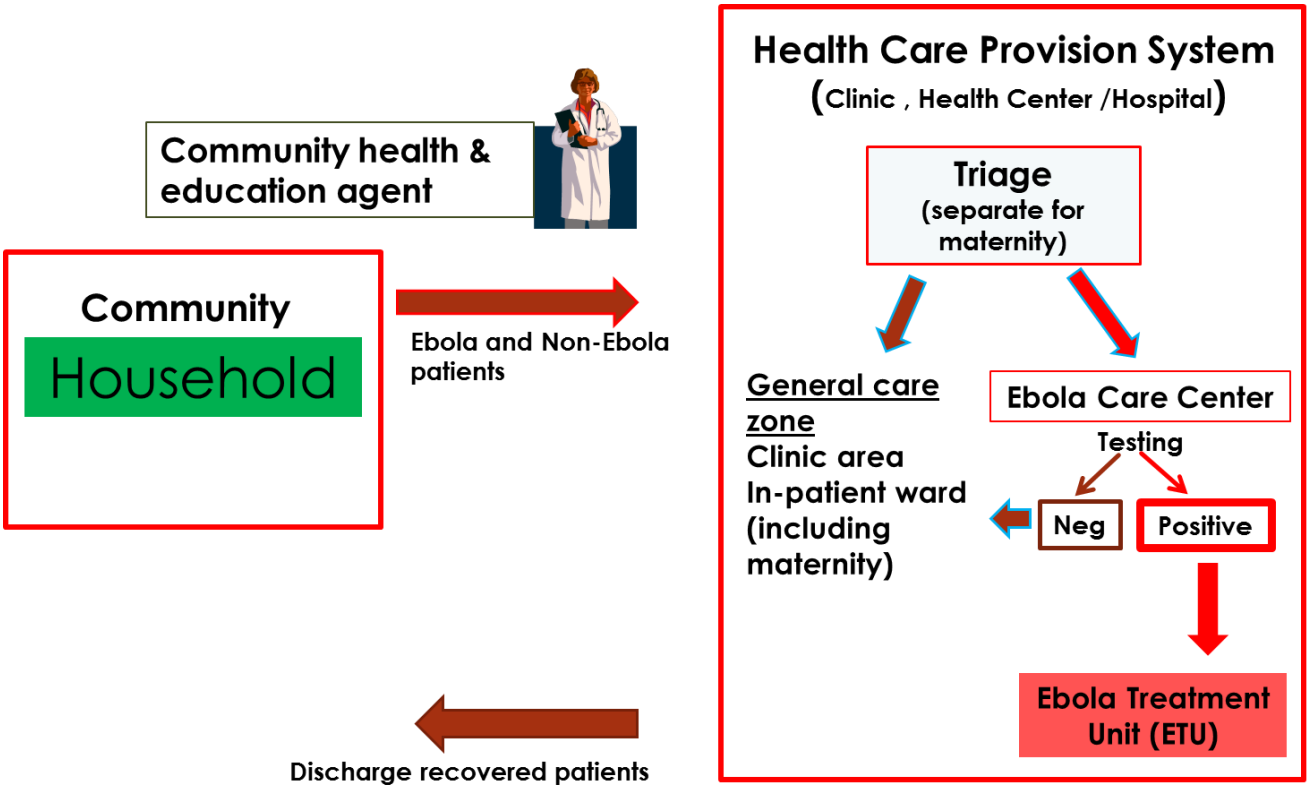
- Remove gloves correctly

- Gloves removed incorrectly

- Remove gloves correctly

Preparing the Health System for Ebola

PROPOSED LEVELS OF CARE



Infection Control

- Ebola is spread by direct contact with body fluids from an Ebola patient through the mouth, eyes, or broken skin
- You can prevent spread of Ebola through:
  - Chemical barriers
    - 0.05% chlorine for hand washing
    - 0.5% chlorine for environmental disinfection
  - Physical barriers
    - Separate Ebola patients from non-Ebola patients and workers
    -

Preparing the healthcare facility

Preparing the Healthcare Facility

- Both patients *with* Ebola and patients *without* Ebola patients will visit your healthcare facility for care
- It is important you have a screening process in place to identify patients with Ebola and separate them from non-Ebola patients and healthcare workers.

Physical Barriers

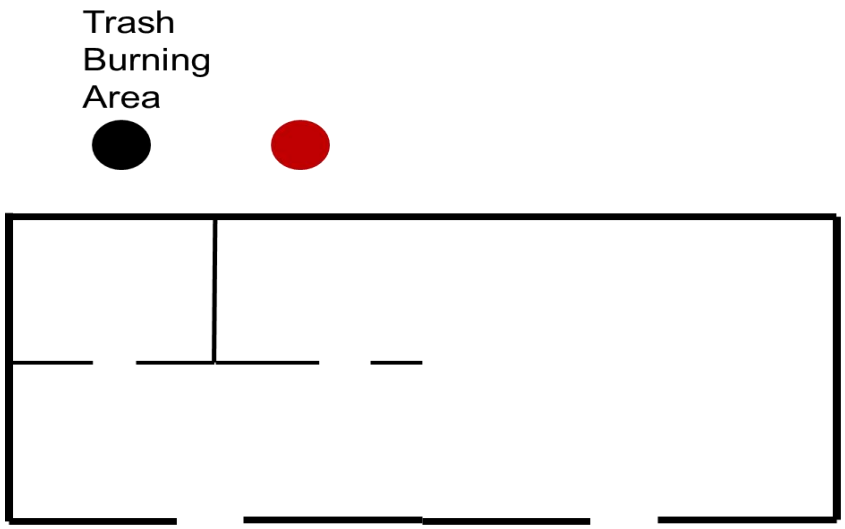
- Divide the healthcare facility into separate areas
  - Screening area: screen all patients coming to the clinic for Ebola
  - Isolation area: for suspect Ebola patients
  - Clean area: for healthcare workers and non-Ebola patients
  - Adjust patient flow within the facility to lower risk of spreading the disease to others
- Teach all staff how to safely wear PPE as needed

Screening Area

- Area where ALL patients will be screened for signs and symptoms of Ebola
- Located outside the clinic but protected from the sun
- ALL patients, visitors and staff coming to the clinic must pass through the screening area
- Screeners must wear face mask, gown, and gloves
- Stay at least 3 feet away from the patient at all times
- Do not sit face-to-face with the patient
- Screener will ask all patients for signs and symptoms of Ebola:
  - Patients suspected of having Ebola are sent to the isolation area, while awaiting transfer to an Ebola care center or ETU.
  - Clean this area thoroughly after the patient leaves
  - All other patients are allowed to enter the clean area
- If the patient is suspected of having Ebola:

- Tell the patient what is happening
- Send patient to the isolation area
- Transfer to an Ebola care center or ETU immediately
- Encourage patient to drink fluids/ORS
- Do not perform physical exam
- Do not perform rapid diagnostic test for malaria

- Each facility should identify a safe place to screen and isolate patients.
- The following example was used in an outpatient clinic. However, you should adapt these principles to your healthcare setting.



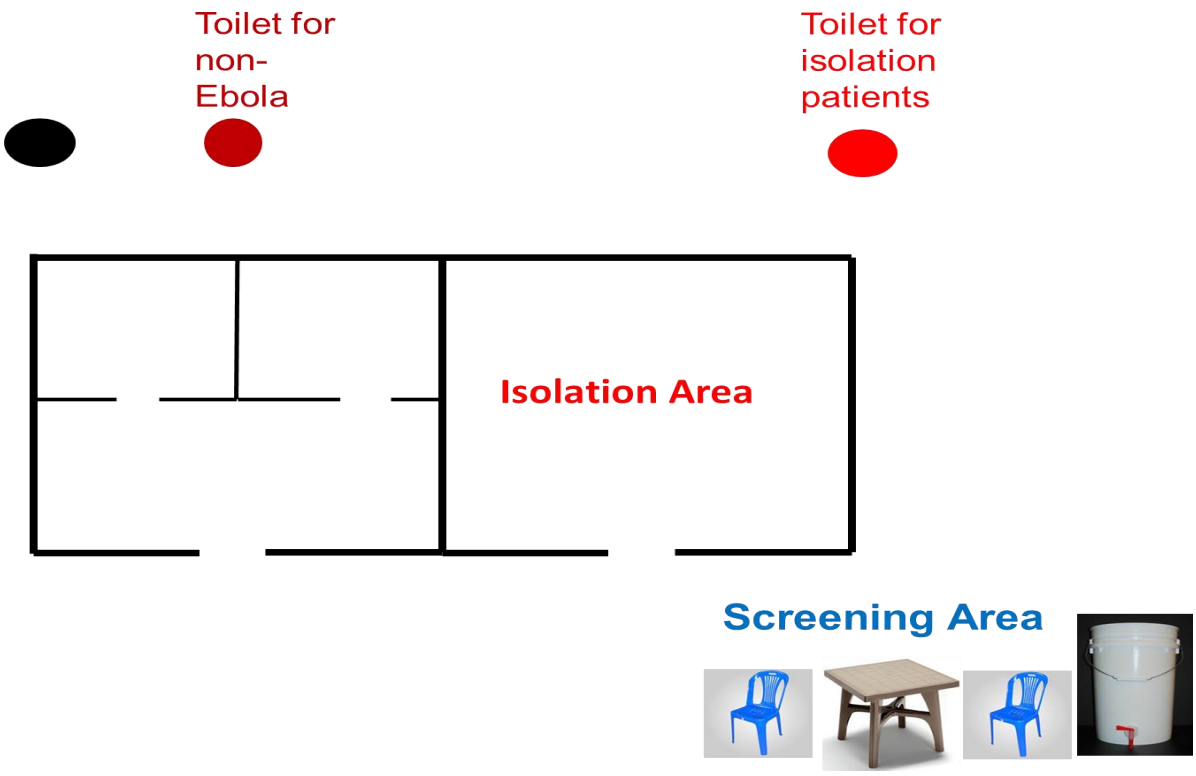
- Area ONLY for suspect or confirmed Ebola patients

- Must be separate from the main ward
  - Separate room OR separate building OR tent outside

Isolation Area

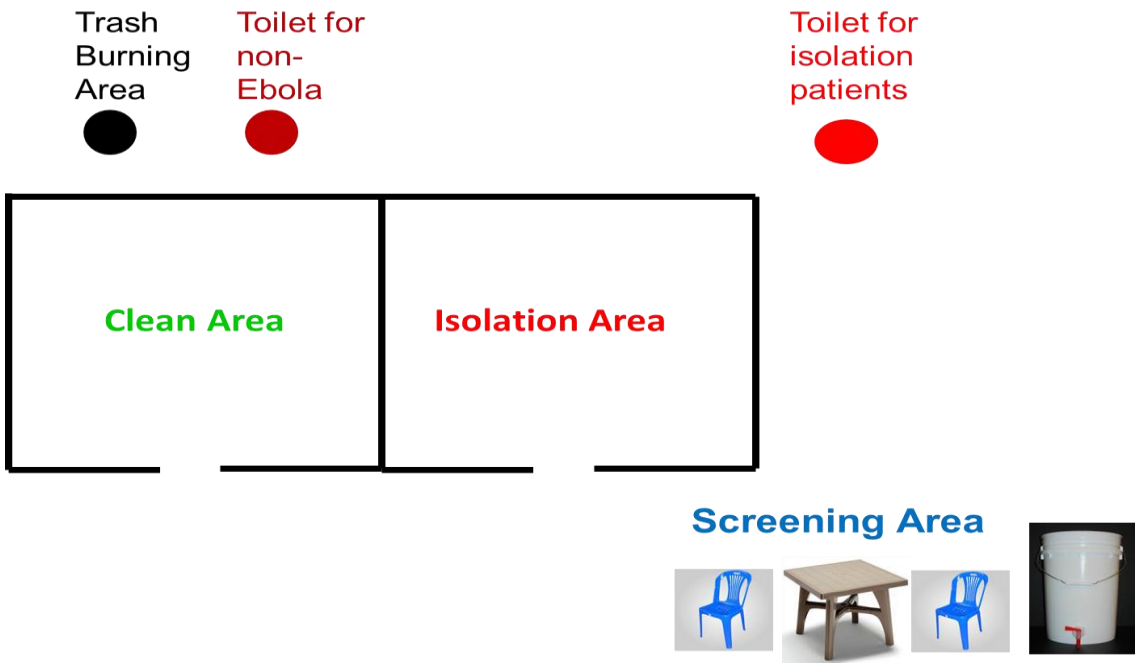
- Supplies
  - Separate drinking cups
  - Separate Latrine pots
  - Separate toilet (outside the facility)

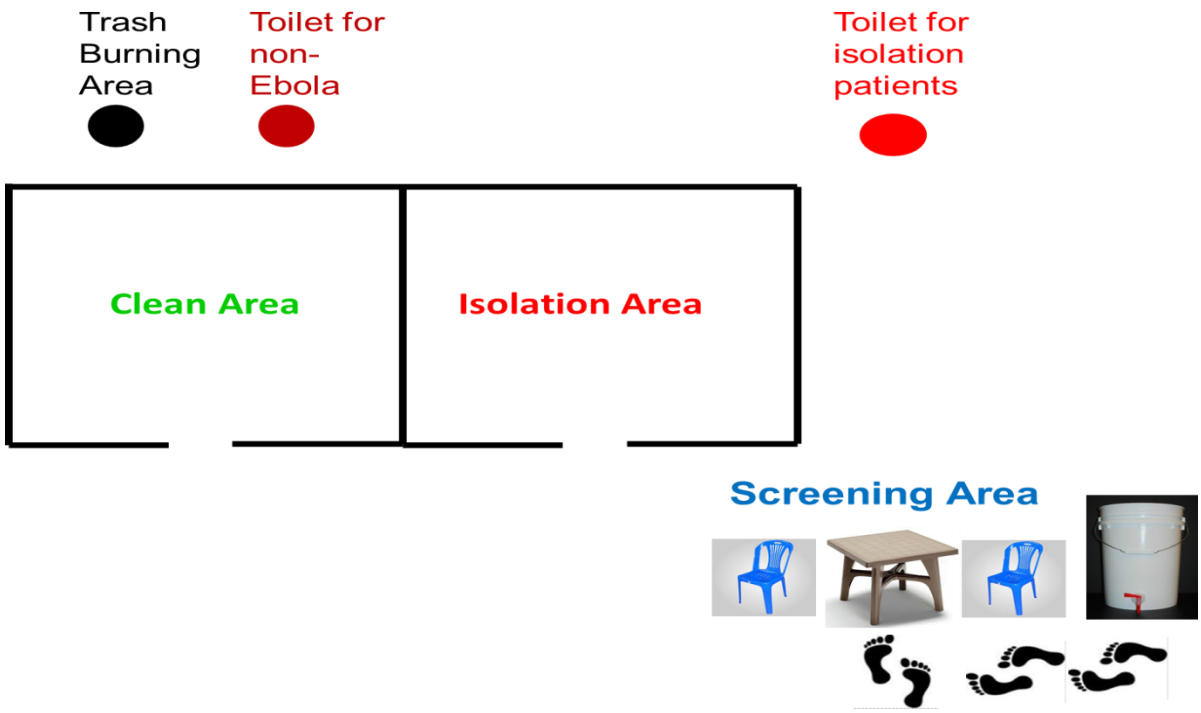
For Suspect or Confirmed Ebola patients only

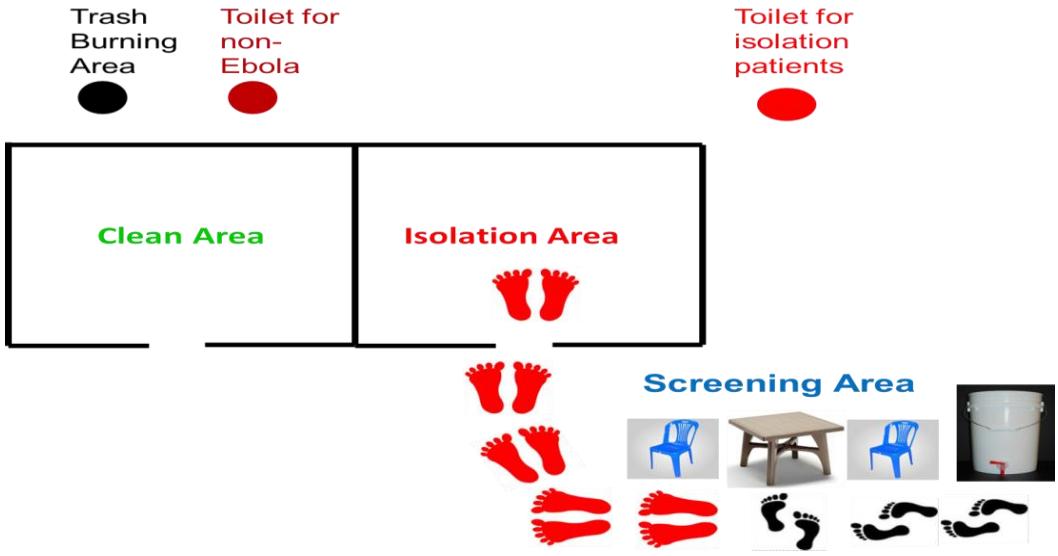


Clean Area

- Clean area for clinic workers and non-Ebola patients
- Everyone MUST be screened for signs and symptoms of Ebola before entering the clean area




Trash Burning Area
Toilet for non-Ebola
Toilet for isolation patients
Clean Area
Isolation Area
Screening Area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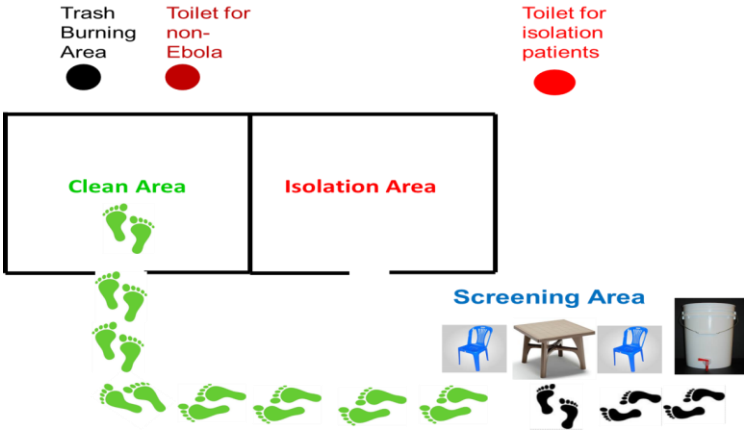


Patient entrance with hand washing station

Training on correct hand washing

View of the Clean Area for healthcare workers and patients who do not have Ebola

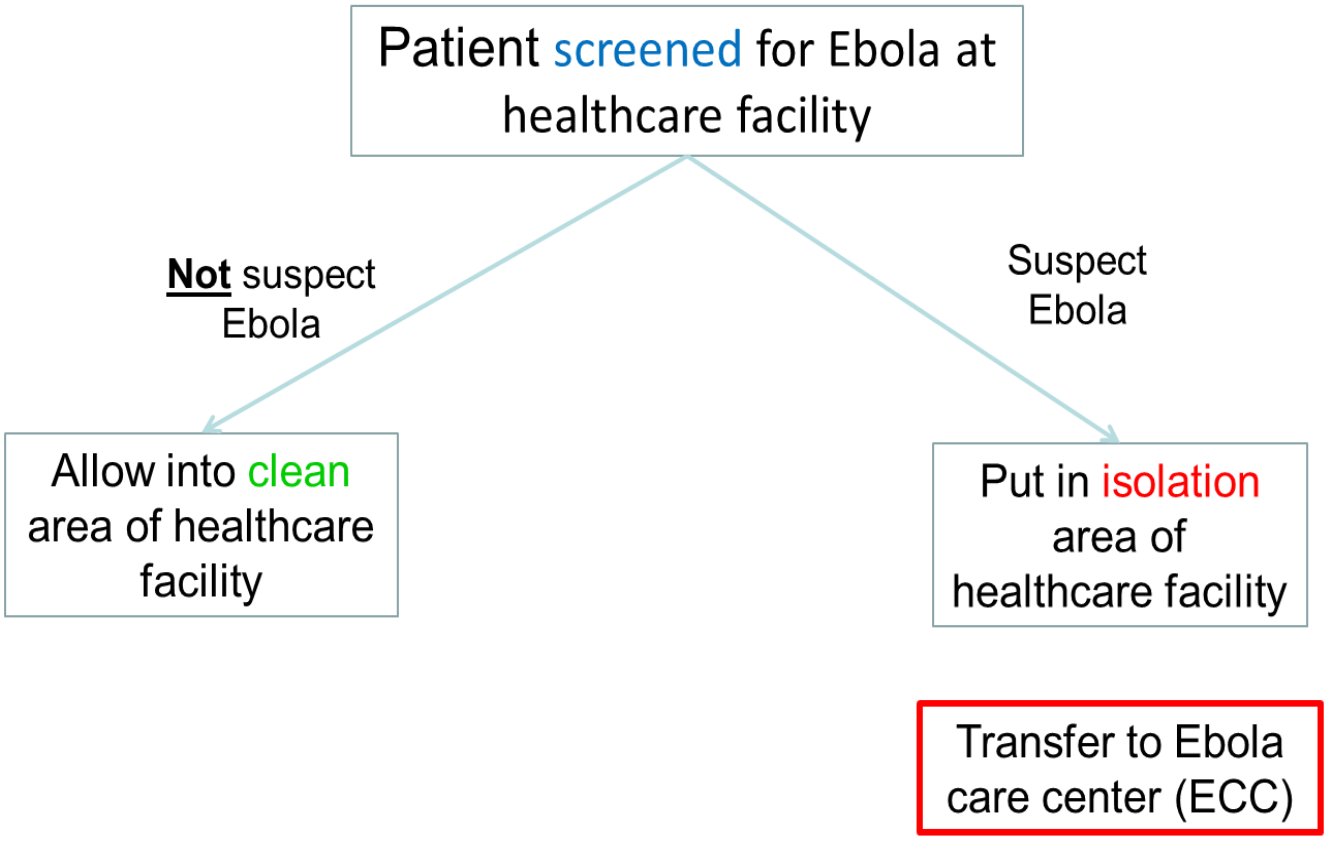
View of the Isolation Area for patients suspected of having Ebola

Digging a hole for burning medical waste

Community members digging a toilet for Ebola patients

Preparing an Ebola care center (ECC)

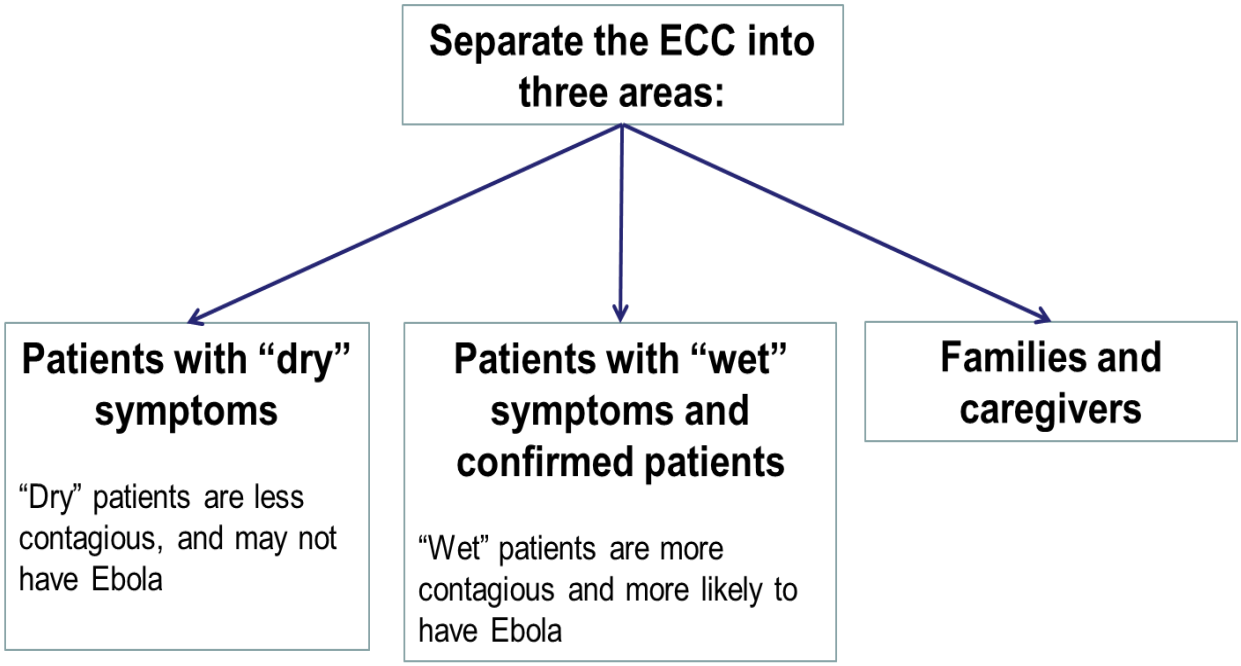
Review of the Triage Process



Ebola Care Centers (ECC)

- After a patient has been identified as a suspect Ebola case at your hospital or health center, they should be transferred to an Ebola Care Center
- The following slides provide general guidelines about ECCs, which will be in a separate area from the healthcare facility
- Established and managed by a healthcare facility, even if it is not at the same place as the facility
- Size of ECC:
    - Hospitals can take up to 30 patients
    - Healthcare centers can take up to 15 patients

Setting up the ECC

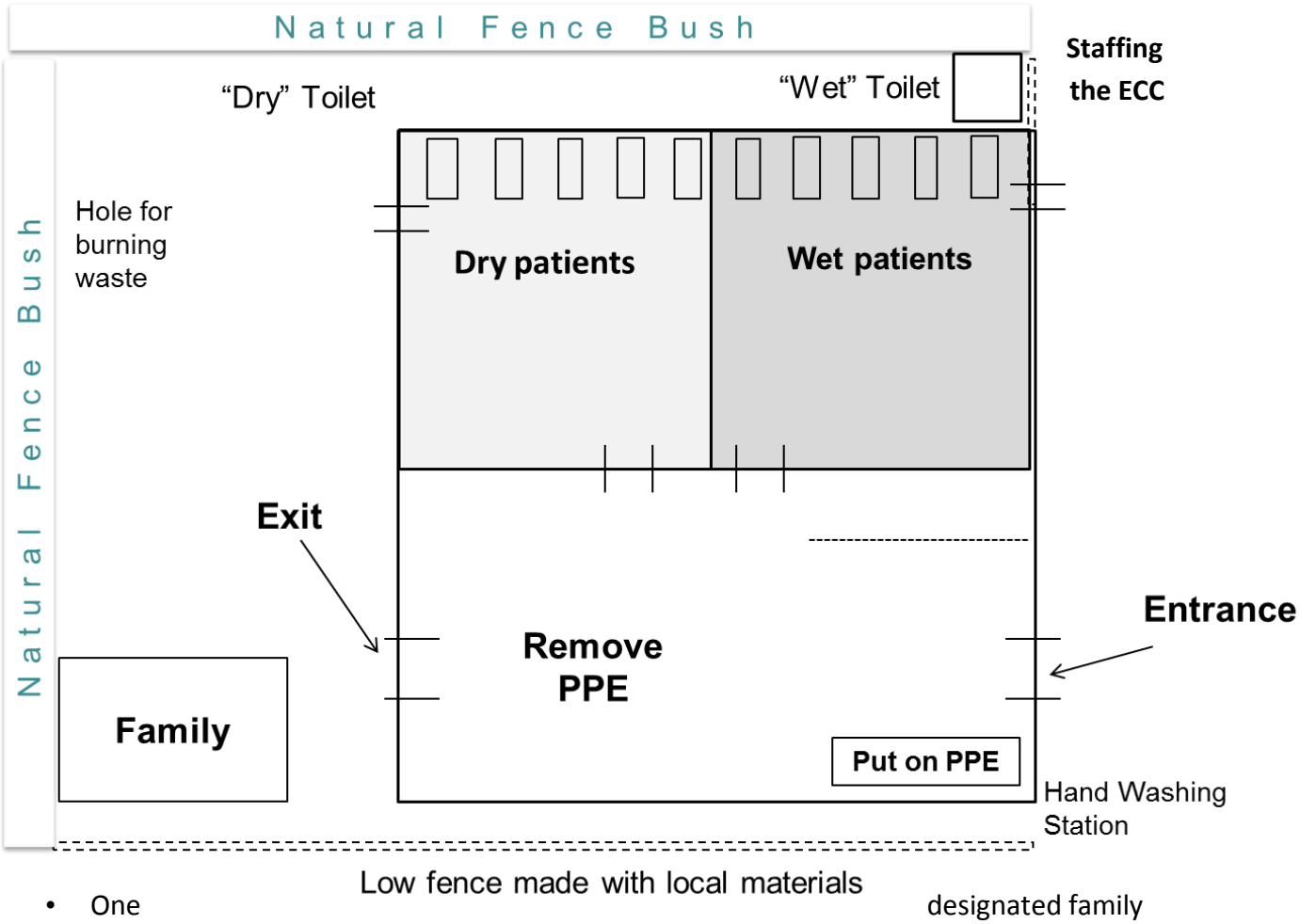


"Wet" symptoms: vomiting, diarrhea, bleeding, etc.
"Dry" symptoms: those without wet symptoms

Setting up the ECC

- Have a place to put on PPE
    - Clean space separate from patient area
    - Should be stocked with necessary supplies
    - PPE removal area
    - Prevent contamination with clean area
    - Should have place to discard waste and wash hands

Example of an ECC set-up



- One designated family member will provide all direct patient care and clean the patient area
  - Consider a family member who has recovered from Ebola
- Healthcare facility manages the ECC:
  - 2 triage staff
  - 4 staff (1-2 nurses and 2-3 nurses aids)
  - A mobile lab tech every second day
  - Water and sanitation / cleaners
  - ***Needs will vary based on the site!***

Role of the Supervising Health Care Facility

- Supplies, including PPE
- Core group of trained staff
- Report cases to county officials
- Monitoring and evaluation of IPC and security

Expectations and Training Needs of the Family Care Giver

- Provide food, utensils
- Wash clothes and bedding
- Clean the patient area
- Clean after the patient does poo-poo or pee-pee in the chamber/bucket
- Wash plates and utensils

Equipment and supplies to be provided at the ECC

- Beds/mattresses
- Linen
- Buckets
- Body bags

- Environmental cleaning and management of linen
  - Heavy duty/rubber gloves
  - Detergent
  - Chlorine
  - Cleaning tools
  - Bags for waste disposal
  - Rags and paper towels

- IPC equipment:
  - Hoods, Gloves, Gowns
  - Masks, Face shields
  - Boots, Aprons
- Hand hygiene supplies:
  - Soap & clean water
  - Alcohol based hand sanitizer
  - Chlorine water

- Basic Medical Kit
  - Thermometer
  - Oral Rehydration Solution
  - Paracetamol
  - Antimalarials and antibiotics

Ebola – Key information

- Transmission
  - Contact with blood or body fluids from an infected person (or infected animal)
  - Not air born
- Incubation: 2 to 21 days
- Treatment
  - fluids
  - symptomatic
  - No specific antivirals

Standard precautions - Everywhere, Always

1. Hand hygiene
2. Appropriate selection and use of PPE
    - 2 levels;
        - For all healthcare workers

For those working in areas of higher risk eg holding space and maternity

1. Injection safety
2. Cleaning and disinfection
3. Waste management

Precautions in health-care facilities

- Avoid physical contact with people and especially any body fluids (blood, faeces (poo poo), urine (pee pee), sputum, etc.)
- Early identification of suspect cases at triage
    - For referral to ETUs or ECCs
- PPE is required in all patient care areas (low and high risk areas)

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

Items for low and high-risk areas

<u>Everyone: Basic PPE</u>

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

<u>High risk: Advanced PPE</u>

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

Ebola Care Centres (ECCs)

Ebola Care Centres will be established near and managed by designated healthcare facilities across Liberia.

Hospitals can supervise ECCs of up to 30 patients. Health centres can supervise ECCs of up to 15 patients at one time.

The site should be able to provide the following:

- Three separate areas for
    - wet patients (e.g. vomiting, diarrhoea, bleeding)
    - dry patients
    - family members to sleep

Staffing the ECC

- A family member will provide all direct patient care and clean their patient care area.
- The Health care facility will provide core staff to manage the center.
    - 2 triage staff at all times
    - 4 staff (1-2 nurses and 2-3 nurse aids) for supervising care and infection control for family members.
    - A mobile lab tech will attend every second day
    - One watsan person present at all times

Role of the Supervising Hospital or Health care center

- Supplies inc PPE
- Core group of trained staff
- Report cases
- monitoring and evaluation of IPC, security, facility

PPE for staff at the ECCs

- Extended level PPE whenever inside the facility.
- Only change PPE after being involved in patient contact or when leaving the facility.
- Avoid touching sick people and particularly their bodily fluids.
- Try to stay 1 meter (3 feet) away.
- Wash your gloved hands with soap and water or bleach or chlorine water or hand sanitizer, after touching the sick person or anything that belongs to the person.
- Always wash hands after removing gloves.

Flow of patients in the ECC

- 2 patient care areas
    - wet and dry patients confirmed on testing
    - dry patients without a confirmed diagnosis (by laboratory)
- A patient in the dry area who becomes “wet” should be promptly moved to the wet area.

Expectations of the family care giver

- Provide food, utensils

- Wash clothes and bedding
- Disinfect spills of body fluids
- Clean the patient area
- Clean after the patient does poo-poo or pee-pee in the chamber/bucket
- Wash plates and utensils

Equipment and supplies to be provided at the ECC

- Beds/mattresses
- Linen
- Buckets
- Body bags

Environmental cleaning and management of linen

- Heavy duty/rubber gloves
- Detergent
- Chlorine
- Cleaning tools
- Bags for waste disposal
- Rags and paper towels

IPC equipment:

- Hoods, Gloves, Gowns
- Masks, Face shields
- Boots, Aprons

Hand hygiene supplies:

- Soap & clean water
- Alcohol based hand sanitizer
- Chlorine water

Basic Medical Kit

- Thermometer
- Oral Rehydration Solution
- Paracetamol

Hand hygiene

- Before and after contact with a patient or the surrounding environment
- Before putting on gloves and after removing

Wash with soap and water or use alcohol-based handrub or chlorine/bleach water

Injection safety

Disinfection and Elimination of Waste

*Part of standard precautions**!***

Disinfection

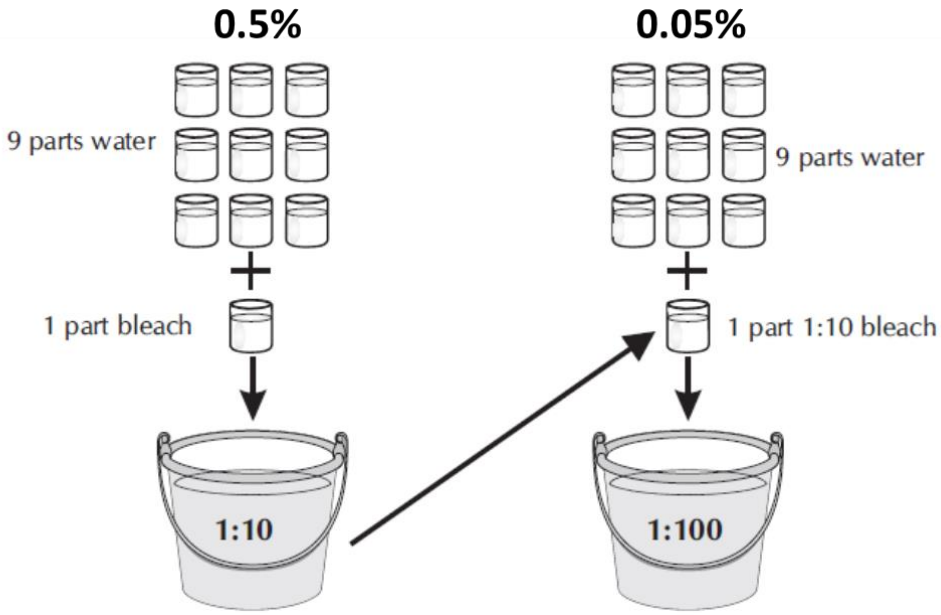
- Disinfection
  - Bleach can kill most germs
  - Use bleach as 0.05% or 0.5% solutions.
  - Germs are quickly killed in a 0.5% solution or after being soaked at least 30 minutes in a 0.05% solution.
- Clean with detergent before disinfecting

Preparation and use of chlorine

Chlorine Solutions & Uses

	1:10 solution •Soiled clothes •Toilets •Body Fluid Spills •Floors/Environment	1:100 solution •Bare hands and skin
Calcium hypochlorite powder or granules 70% 	1 tablespoon per 2 liters of water  	1 tablespoon per 20 liters of water  

Making chlorine water from 5% bleach



0.05%	• Disinfection of bare hands and skin • Disinfection of medical equipment • Disinfection of laundry • Disinfection of plates and eating utensils
0.5%	• Disinfection of body fluids • Disinfection of corpses • Disinfection of toilets and bathrooms • Disinfection of gloved hands • Disinfection of floors • Disinfection of beds and mattress covers • Footbaths

Sharps — Collected in water-proof and puncture-proof containers

Liquid Waste — Collected in buckets and basins (spills mopped up using absorbent pads)

Solid Waste — Collected in plastic bags (double bags)

Disinfection

Waste Separation

Waste Treatment

Sharps	Disposed of in sharps pit
Liquid Waste	Disinfected in basin or bucket, disposed of in toilet or latrine
Other Solid Waste	Burnt in burning pit, ashes pushed into adjacent ash pit & buried

PSYCHOSOCIAL SUPPORT

Psychosocial Health Support

- What is the greatest problem, fear or feeling you have about caring for an Ebola Patient?
- How is it showing up in your life?
- How are you coping?
- How can you help others
- What is the greatest problem or fear you have about caring for an Ebola Patient?
- Death, family would die, loss income, loss of mobility, loss of friends, social life, physical attractiveness
- Patients-loses, physical strength, mobility, job, attractiveness, social life

Signs and symptoms

- How is that showing up in your life?
  - Not caring for patients, depression, not eating,
  - Shock and denial, anger, guilt, depression, despair, hopelessness, search for meaning, change/challenge to religious , reevaluate, goals
  - Stress that it is normal
  - Normal to be abnormal when faced with life threatening or treats to identity

Abnormal" reactions are normal

- Listening to others and share insights-What do they say and think
- Take care of yourself, eat well, limit alcohol, food, and drugs, tobacco, and stay fit
- Avoid perfectionist expectations- they often lead to disappointment and conflict
- Do not try to hide feelings
- Do not self-medicate-food, drug
- Look for healthy outlet
- Seek professional advice

Ancillary Staff Training

Goals of Infection Prevention

- Protect the patients
- Protect the staff
- Prevent spread of diseases

How Does The Virus Spread Between People?

- Direct contact through broken skin, mouth, eyes with body fluids from someone who is sick or died of Ebola
  - Caring for someone who is sick or died of Ebola
  - Touching/washing body of someone who died of Ebola
  - Poking yourself with a needle used on an Ebola patient
  - Having sex (without condoms) with someone with Ebola



- Contact with something contaminated with the body fluids of someone who is sick or died of Ebola

- Touching the dirty clothes or bed sheets of an Ebola patient
- Touching dirty cups/plates used by an Ebola patient
- Giving someone a shot with a needle that was used on an Ebola patient



Can the Virus Survive Outside The Body?

- Yes, the virus can survive in body fluids (vomit, urine, stool) outside the body for a long time
  - Important to safely clean up spills of body fluids (blood, vomit, urine, stool) as soon as possible
  - Important to burn soiled clothing/sheets/mattresses

How to Prevent Infections

- Do not go to work if you are sick
- Tell your co-workers not to go to work if they are sick
- Wash your hands
- Wear personal protective equipment
- Wear and remove personal protective equipment properly
- Needle safety

Why Should You Wash Your Hands

- Hand washing is the most important measure to prevent infection
- The use of gloves does not replace the need for hand washing
  - The virus can get on your hands as you remove your gloves
  - Gloves can have holes and tears, even if none are visible

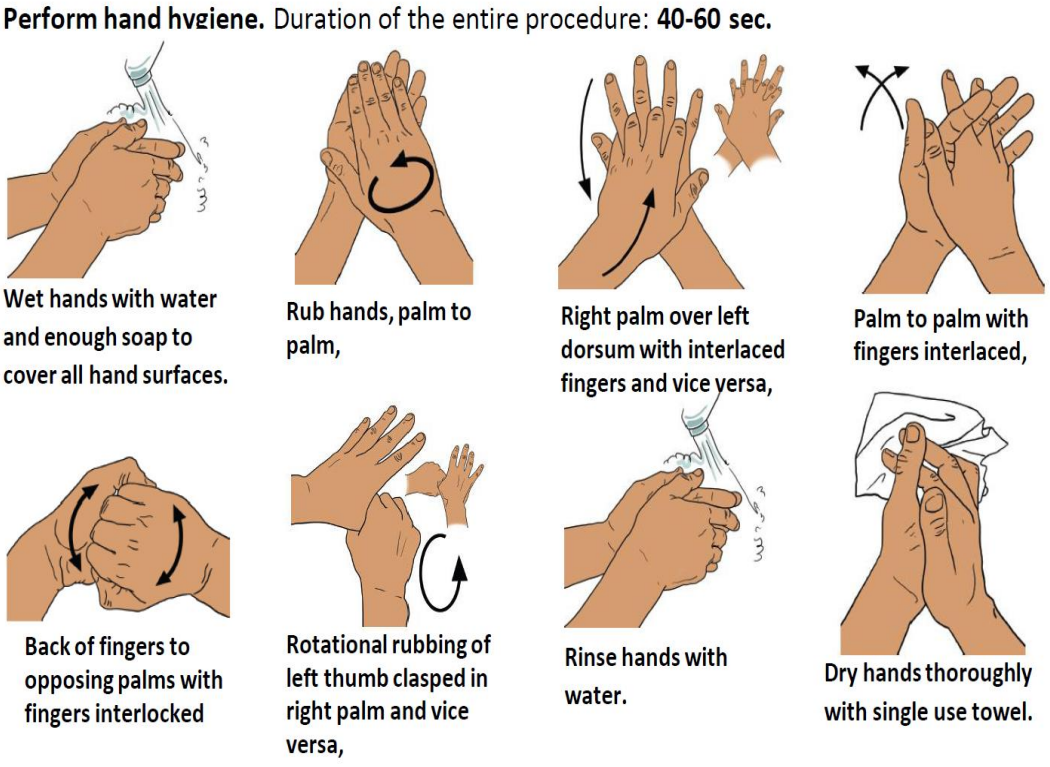
When Do You Wash Your Hands

- Before touching a patient
- Before putting on gloves
- After taking off gloves
- After touching the patient's surroundings
- After being exposed to a patient's body fluids (sweat, blood, vomiting, urine, stool)
- Before touching your face, mouth, or eyes

What Do You Use to Wash Your Hands

- Soap and water
  - Always use soap and water if your hands are visibly dirty
- 0.05% Chlorine
- Hand sanitizer

Hand Washing — Soap and Water



Things to Remember

When You are Wearing PPE

- Always have a buddy check your PPE

- Put on the PPE slowly and carefully
- Once you enter the patient area, your gloves are contaminated!
  - DO NOT touch your face
  - DO NOT adjust or touch PPE
  - DO NOT pick up objects (mobile phone, pens, books)
- Avoid touching surfaces or items whenever possible

Sequence for Putting on PPE

1) Take Off Jewelry

2) Wash hands

3) Face shield

4) Gown

5) Examination gloves





- DON'T PANIC!
- Do not touch anything.
- Wash gloved hands with 0.05% chlorine solution.
- With gloved hands, carefully remove gown, ensuring that outside of gown does not touch your body.
- Remove gloves.
- Wash hands with soap and water, or alcohol-based hand sanitizer, or 0.05% chlorine solution.
- Remove the face shield by grabbing the side of the head band and moving the shield downwards and away from the face.
- Wash hands with soap and water, or alcohol-based hand sanitizer, or 0.05% chlorine solution.
- Alert Infection Control supervisor

Waste Management & Environmental Cleaning

- What is Waste?
  Waste includes
  - Human waste: vomit, urine, stool, placenta
  - Water waste: Chlorine used to wash boots, soapy water used to wash dishes
  - Leftover food
  - Sharps: needles, scalpels

- Burnable waste: disposable gloves, gowns, face masks, disposable towels, used bandages

Why is it Important?

- Waste from sick people can spread disease
- You be careful when handling waste
- People who handle waste **MUST** wear PPE for cleaners

Personal Protective Equipment

- Put on PPE slowly and carefully
- DO NOT RUSH!
- It is **HIGHLY RECOMMENDED** that You must have a buddy watch you put on the PPE
- Cleaning should always be carried out from “clean” areas to “dirty” areas, in order to avoid contaminant transfer
- **Change PPE if visibly soiled**

Waste Management — Supervisor Duties

- Oversee all parts of waste management
- Train and supervise waste disposal staff
- Make a schedule for collecting and burning disposable waste
- Make sure waste collection and burning is done safely

Waste Management — Staff Duties

- Bring waste from the clinic/hospital to the disposal site
- Operate the incinerator/burning pit
- Make 0.5% chlorine solution every day for cleaning
- Make 0.05% chlorine solution every day for hand washing stations

Type of Waste	How to Collect	How to Dispose
Human Waste Stool, urine, vomit, placenta	Bucket	Pour down the latrine
Waste Water, Leftover Food Used chlorine water, water used to wash dishes, water used to wash rubber boots	Bucket	Pour down the latrine
Sharps Needles, scalpels, knives, broken glass	Sharps container	Incinerator
Burnable Waste Disposable gloves, gowns, face masks, face shields, disposable towels, used bandages	Plastic bag	Incinerator or burn pit

Waste collection

- Waste should be segregated at point of generation to enable appropriate and safe handling.
- Collect all solid, non-sharp, infectious waste using leak-proof waste bags and covered bins.

Bins should never be carried against the body (e.g. on the shoulder)

How to Dispose of Human Waste Collected in a Bucket

1) Tip the bucket slightly and slowly and carefully pour 0.5% chlorine into the bucket
   - As you pouring , try to coat all the sides of the bucket with the chlorine
   - **AVOID splashing**

How to Dispose of Human Waste Collected in a Bucket

1) Cover the bucket and wait 15 minutes
2) Carry bucket without splashing or spilling to the latrines
3) Pour the contents of bucket down the latrine
4) Clean and disinfect the bucket

How to Dispose of Waste Water and Leftover Food

1) Put waste water and leftover food in buckets
2) Carry bucket without splashing or spilling to the latrines
3) Pour the contents of bucket down the latrine
4) Clean and disinfect the bucket

How to Dispose of Sharps

- All sharps **MUST** be placed in a waterproof, puncture resistant container **before** it is brought to the incinerator
- 1) When the sharps container is ¾ full, close and seal the container
- 2) Place the sharps container in a bucket
- 3) Carry the bucket to the incinerator and burn the sharps container
- 4) Clean and disinfect the bucket

How to Dispose of Burnable Waste in a Plastic Bag

1) When the plastic bag is ¾ full, close the bag shut with string or tape
2) Place sealed bag inside another bag
3) Bring to the incinerator/pit for burning

Picking a Place for Incinerator/Burning Pit

- On the health facility area
- Away from the normal flow of people/cars
- Should NOT be in an area where it will attract people

How to Make a Burning Pit for Waste

- Dig a pit that is 2 meters deep (about 7 feet) and filled to a depth of 1–1.5 m (or about 3–5 feet)
- Pit should be wide enough to hold all the burnable waste that will be burned
- An incinerator may be used during an outbreak to destroy solid waste
  - It is essential to ensure that total incineration has taken place
  - Caution is required when handling flammable material and when wearing gloves due to the risk of burn injuries if gloves are ignited

How to Burn Waste in a Pit

- Place the waste into the pit
- Pour fuel (diesel) on the waste and start the fire
- Watch the burning to make sure all the waste is completely burned
  - When the fire has gone out, if any waste was not completely burned, repeat burning
- When no waste remains and the fire goes out, cover the ash with dirt
- When the pit becomes ¾ full, cover it with half a meter of soil
- Dig a new waste pit

Placenta and anatomical samples should be buried in a separate pit.

How to disinfect spills of body fluids

- Pour 0.5% chlorine solution onto a clean rag
- Let stand for 15 minutes.
- Remove with rag or paper towels.
- Discard rag in plastic bag for infected waste
- Wash area with soap and water.
- Disinfect again with 0.5% chlorine solution

How to disinfect patient clothing and bedding before laundering:

- Soak soiled clothing in 0.05% chlorine for at least 30 minutes.
- Remove and place in a container of soapy water overnight, rinse thoroughly and dry on line.

If you have a suspect or probable Ebola case discard and burn contaminated materials

How Often Should I Clean and Disinfect ?

- Surfaces (Tables, chairs, desks)
  - Twice a day (in the morning before clinic opens, and in the evening after the clinic closes)
  - **Clean Triage area or anywhere a suspect patient has been**
- Medical Equipment
  - After each patient
  - Thermometers, stethoscopes should be cleaned and disinfected after **EACH** patient
- Cleaning with a moistened cloth helps to avoid contaminating the air and other surfaces with air-borne particles.
  - Allow surfaces to dry naturally before using them again.

- **Dry sweeping with a broom should never be done**. Rags holding dust should not be shaken out and surfaces should not be cleaned with dry rags

Chlorine Solution

- Chlorine is a VERY STRONG chemical
- Make the solution in an open area to avoid fumes
- You must wear your recommended PPE when making chlorine solution
  - Face shield, mask, gown, apron, gloves and rubber gloves, rain boots
- Chlorine loses strength with time
  - Everyday throw out the old chlorine solution
  - Everyday make new chlorine solution

- Sunlight weakens chlorine solution
  - Keep the chlorine solution away from direct sunlight

Caution:

- Chlorine solutions can weaken gloves. Gloves must be checked after cleaning, and before reuse.

Disinfection Chlorine Solutions & Uses	
0.05%	DISINFECTION of : • Bare hands, skin and shoes. • Thermometers • Laundry • Plates, cups and eating utensils.
0.5%	DISINFECTION of: • Body fluids , excreta, vomit etc. • Corpses • Toilets & bathrooms • Gloved hands • Floors • Beds and mattress covers Footbaths

Find the Mistake

Keep Safe – Keep serving