

# Introduction to Ebola Virus Disease

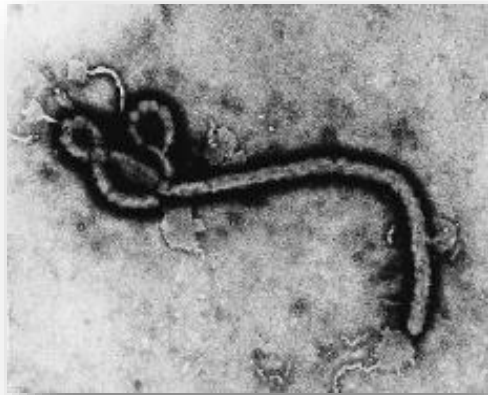
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# History of Ebola in Uganda



- The first case of Sudan Virus Disease (SVD) was detected in Nzara, Sudan in 1976 with 34 cases of which 22 of which were fatal
- Uganda currently experiencing 3<sup>rd</sup> *Sudan Ebolavirus* outbreak
  - 2022: Central and Western Regions, Uganda
  - 2011 Luwero District,
  - 2000-1: Gulu

# Ebola Virus



Filoviridae family  
*(comprises three genera)*

Marburgvirus

Cuevavirus

## Ebolavirus

### Species

Zaire (EBOV)

Bundibugyo (BDBV)

**Sudan (SUDV)**

Reston (RESTV)

Tai Forest

Bombali (BOMV)

# Ebola Virus Transmission

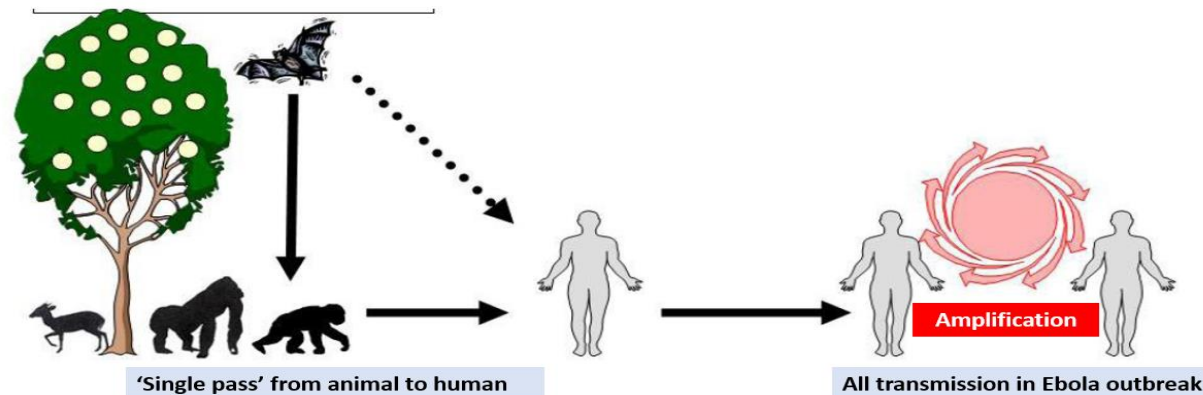


It is believed that fruit bats are the natural hosts of the Ebola virus  
Introduced into the human population through close contact with  
infected animals,

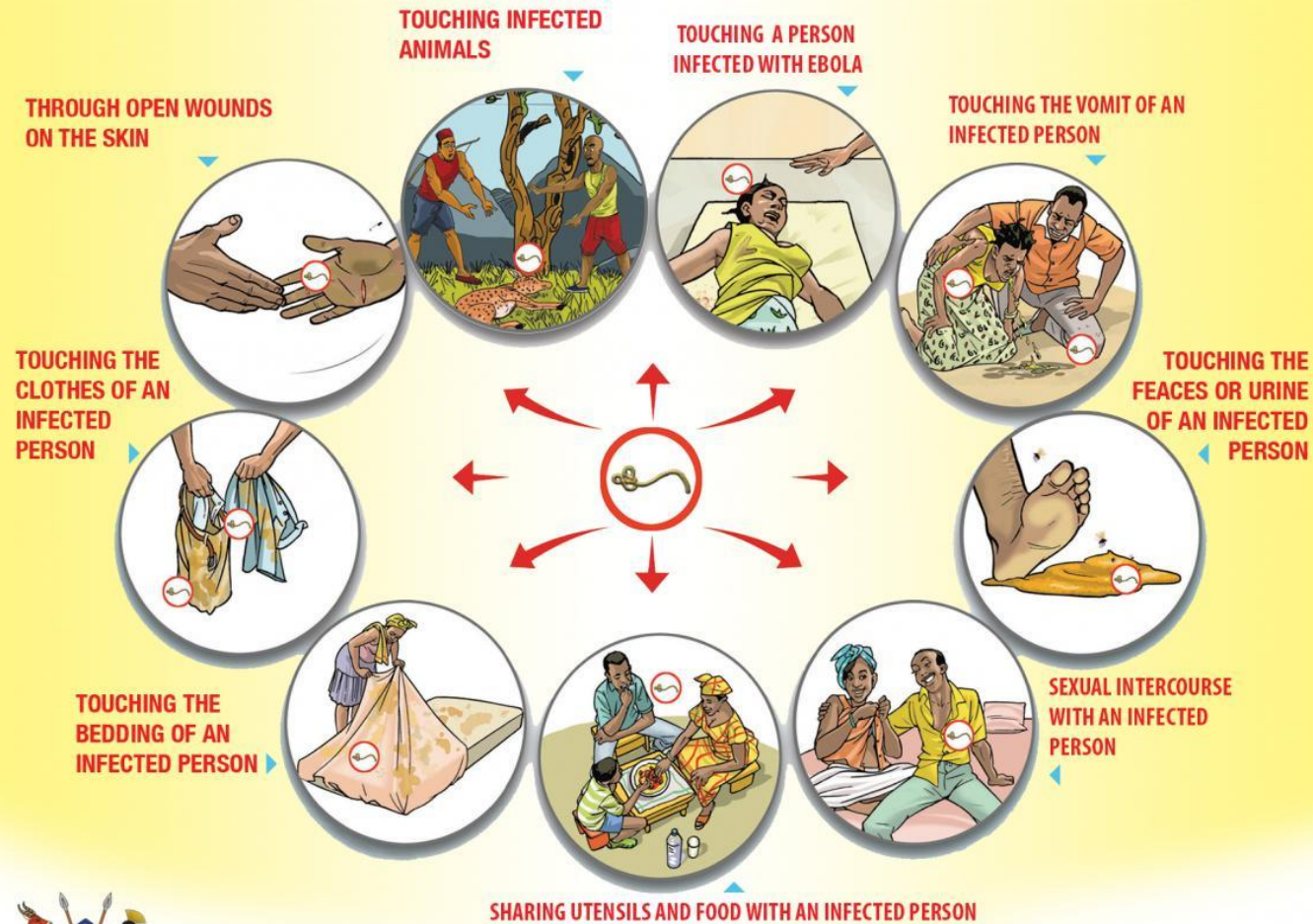
- Blood or secretions,
- organs or biological fluids

Interhuman transmission

- Direct contact with the blood or secretions of an infected person
- Mother-to-child transmission
- Exposure to objects contaminated with infected secretions (such as needles)



# Ebola spreads through contact with infected body fluids

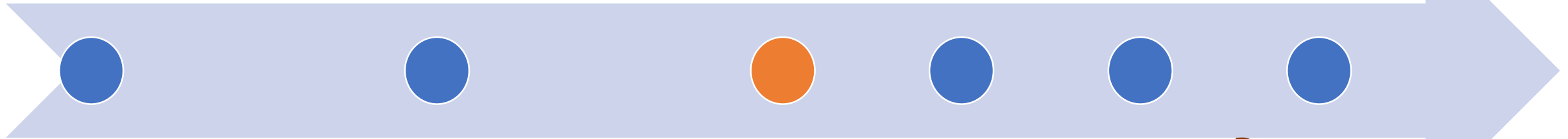


# Stages of infection



**Asymptomatic people cannot spread Ebola to other people**

Infection



Onset of symptoms  
DAY 0

Spike stage  
D7 to D14

Incubation Period : **2-21**

Early stage  
D0 to D7

Recovery stage D14 to D28 and above

Average: **7-10** days

# Clinical presentation



- Initially non-specific and mimic many common infections—**making early diagnosis difficult!**
- **Differential Diagnosis** should include malaria, typhoid fever, shigellosis, cholera, leptospirosis, rickettsioses, relapsing fever, meningitis, hepatitis and other VHF
- **Proper screening at entry is paramount**

*Hemorrhage is seen in less than 30% of patients with Ebola*



# Symptoms of Sudan virus disease (SVD)

**NOTE:** Not every SVD patient will have a fever

## Early stage:

- Fever (>38 °C)
- Weakness, malaise
- Headache
- Muscle and joint pain
- Conjunctivitis (red eyes)
- Throat pain
- Difficulty swallowing
- Hiccups
- In small children (under 5 years) irritability, crying, restlessness





# Symptoms of Sudan virus disease (SVD)



## Intermediate stage:

Signs and symptoms of the early stage plus:

- Diarrhoea (can be bloody or non-bloody)
- Vomiting
- Chest/abdominal/ epigastric pain
- Skin rash

# Symptoms of Sudan virus disease (SVD)



## **Advanced stage:**

Signs and symptoms of the early and intermediate stages plus:

- Confusion/irritability
- Seizures
- Internal and/or external bleeding (ex: bleeding gums, blood in urine)
- Miscarriage in pregnant women
- Shock
- Respiratory distress
- Coma

## **Important:**

It is difficult to distinguish between Sudan Ebola virus disease and other illnesses such as malaria, typhoid or other bacterial infections in patients who present with symptoms in the early stages

# Management of Ebola



- Optimized supportive care
- No licensed treatments or vaccines against Sudan Ebolavirus yet- studies on-going
- Candidate therapeutics available under compassionate use and expanded access protocols

# CASE DEFINITIONS FOR EBOLA VIRUS DISEASE





## CASE DEFINITIONS FOR EBOLA VIRUS DISEASE

### COMMUNITY CASE DEFINITION

Illness with onset of fever and/ OR no response to treatment OR at least one of the following signs:  
bleeding (from the nose or any other part of the body, bloody diarrhea, blood in urine)  
OR any sudden death

### SUSPECT CASE DEFINITION

**Suspect I**  
Illness with onset of fever and/ OR negative laboratory diagnosis for usual causes of fever AND/ OR at least three of the following signs:  
• Headache, vomiting, diarrhoea, anorexia/loss of appetite, lethargy, stomach pain, aching muscles or joints, difficulty swallowing, breathing difficulties, or hiccups, convulsions  
OR Illness with onset of fever and no response to treatment for usual causes of fever AND at least one of the following signs

- Bloody diarrhea
- Bleeding from gums
- Bleeding into skin (purpura)
- Bleeding into eyes and urine
- Bleeding from the nose

**Suspect II**  
OR any person with a history of fever ( $\geq 38^{\circ}\text{C}$ ) and at least one of the following:  
• History of contact with a suspect, probable or confirmed Ebola case.  
• History of travel to an area with a confirmed outbreak of Ebola  
OR: sudden/unexplained death  
OR: unexplained bleeding



Sudden onset of fever



Headache



Bleeding from body openings



Sore throat



Muscle pain



Intense body weakness





### PROBABLE CASE

Any person who died from 'suspected' EVD and had an epidemiological link to a confirmed case but was not tested and did not have laboratory confirmation of the disease

### CONFIRMED CASE

A suspected case with a positive laboratory result for either virus antigen or to viral RNA detected by RT-PCR or IgM antibodies against Ebola.




As of December 7, 2022



# Community case definition

- Illness with onset of fever and/ OR no response to treatment OR at least one of the following signs:
  - Bleeding (from the nose or any other part of the body,
  - Bloody diarrhea, blood in urine)
- OR any sudden death.

# Suspected case definition



## Suspect I

- Illness with onset of fever and/ OR negative laboratory diagnosis for usual causes of fever AND/ OR at least three of the following signs:
  - Headache, vomiting, diarrhoea, anorexia/loss of appetite, lethargy, stomach pain, aching muscles or joints, difficulty swallowing, breathing difficulties, or hiccups, convulsions
- OR Illness with onset of fever and no response to treatment for usual causes of fever AND at least one of the following signs
  - Bloody diarrhea
  - Bleeding from gums
  - Bleeding into skin (purpura)
  - Bleeding into eyes and urine
  - Bleeding from the nose

# Suspected case definition



## Suspect II

- OR any person with a history of fever ( $\geq 38^{\circ}\text{C}$ ) and at least one of the following:
  - History of contact with a suspect, probable or confirmed Ebola case.
  - History of travel to an area with a confirmed outbreak of Ebola
- OR: sudden/unexplained death
- OR: unexplained bleeding

# Suspected case definition



## Probable case definition

- Any person who died from 'suspected' EVD and had an epidemiological link to a confirmed case but was not tested and did not have laboratory confirmation of the disease

## Confirmed case definition

A suspected case with a positive laboratory result for either virus antigen or to viral RNA detected by RT-PCR or IgM antibodies against Ebola





# Knowledge check

- While you are visiting a facility, an IPC focal point asks for some clarification about how Ebola is transmitted. She asks you how Ebola is transmitted and if it can be spread through airborne transmission.
- She is also wondering whether a person who is infected with Ebola is contagious before they have symptoms and when persons with Ebola are most contagious.
- Then she asks you if a person is exposed and becomes infected, after how many days since exposure would they start to have signs and symptoms.

# The Critical role of IPC



Protect yourself



Protect your community



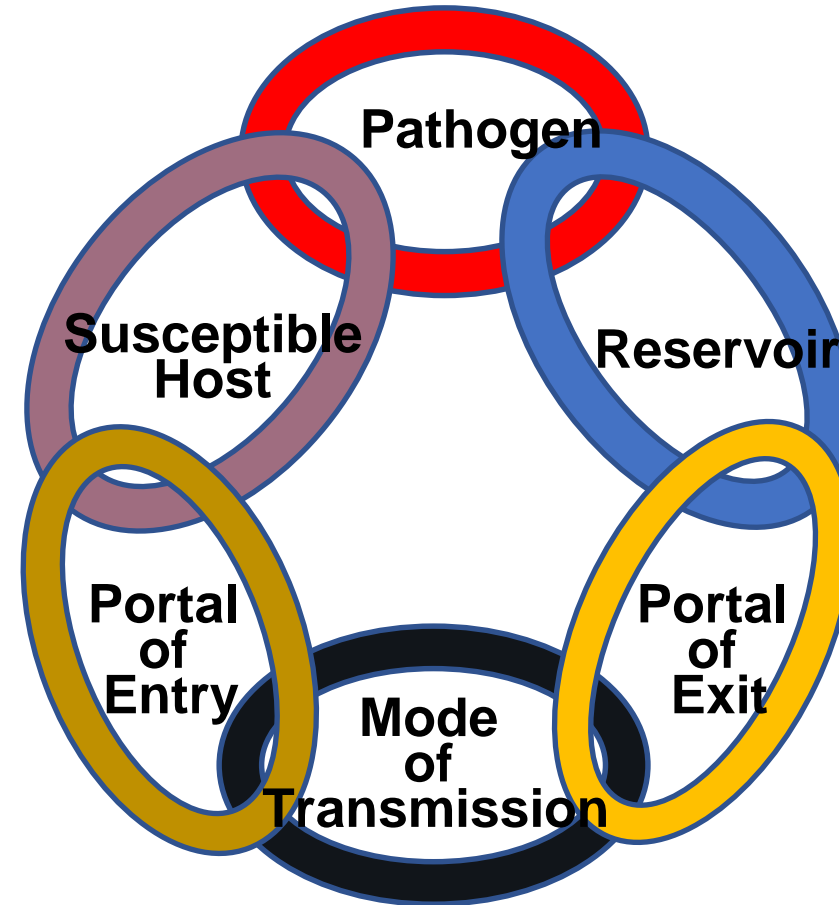
Protect your patients

- Healthcare workers--- a key resource in the healthcare system are at an increased risk of contracting the virus
- Staff safety is critical for ensuring continuity of other services

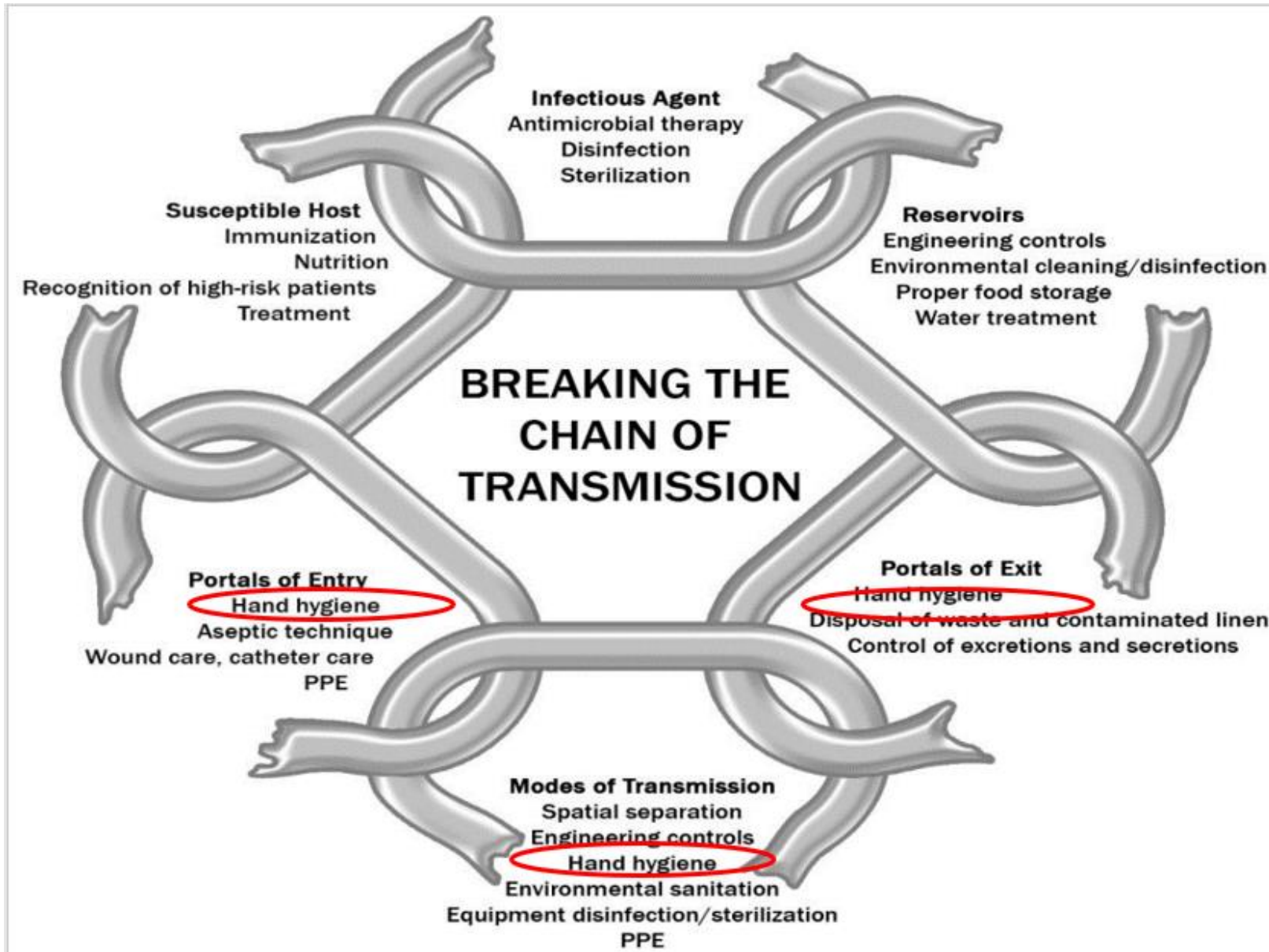


# Chain of Disease Transmission

- **For an infection to spread, all links must be connected**
- Anyone who is not immune is **at risk of infection**
- Disease transmission can be stopped by **breaking any one of the links**

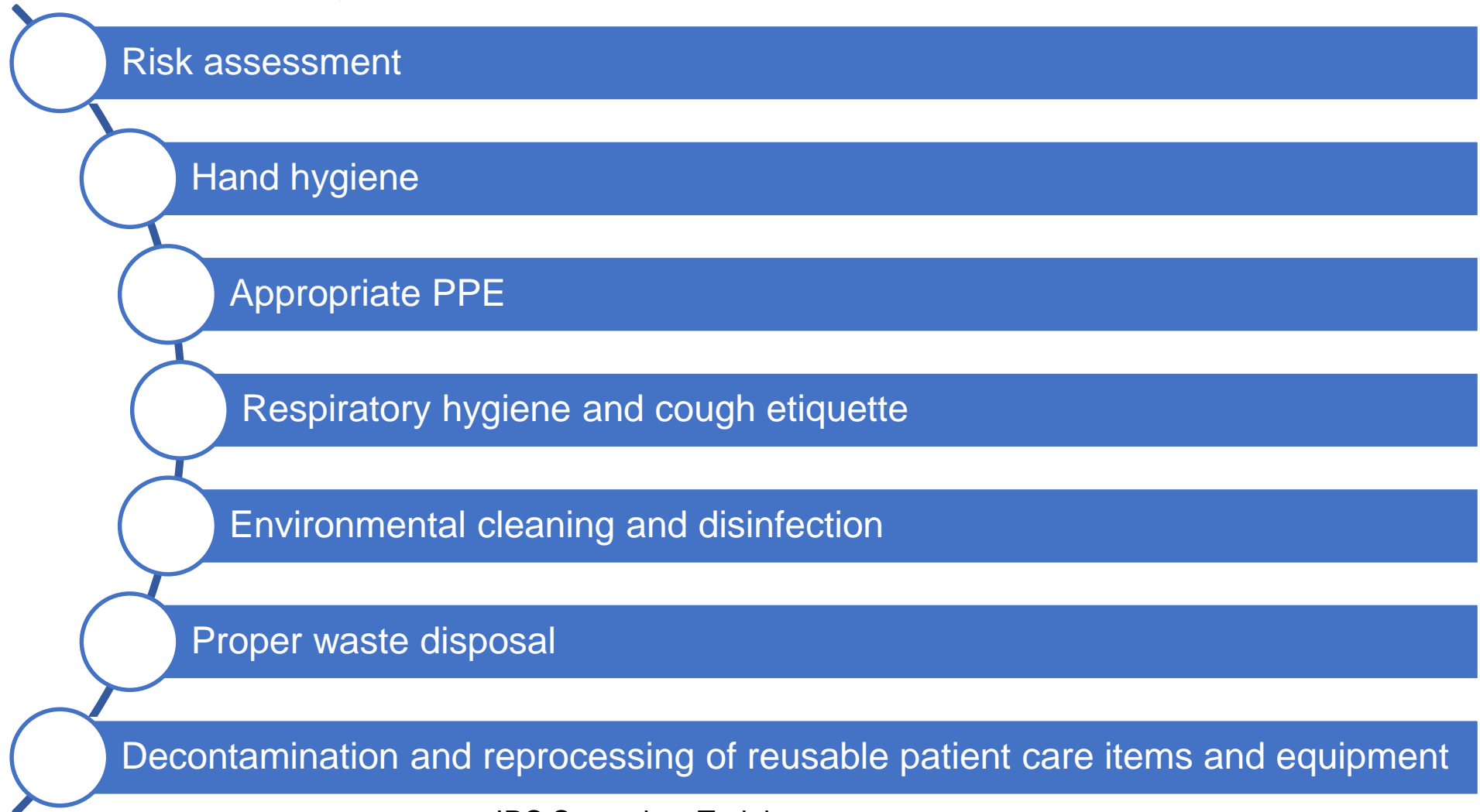


# Break the Chain of Disease Transmission



# Standard Precautions

Should be used for **ALL** patients at **ALL** times





# Strategies to prevent healthcare acquired EVD infections

- **Screen** each patient for EVD symptoms and risk factors
- Immediately move people suspected of having EVD to a **holding area**
- **Notify** immediately so that patients suspected of having EVD can receive care in a designated facility
- **Use standard precautions for all patients all the time**



# IPC is not just about Ebola

- **Use standard precautions for all patients all the time** (not just if Ebola is in the area) and use additional precautions based on risk
- IPC principles should be a routine practice in the health facility
- Understanding and correctly applying IPC principles is critical to protect healthcare workers and their patients