GOVERNMENT OF UGANDA

MINISTRY OF HEALTH

Principles of IPC in the context of IPC Ebola Virus Disease (EVD)

Orientation of healthcare workers

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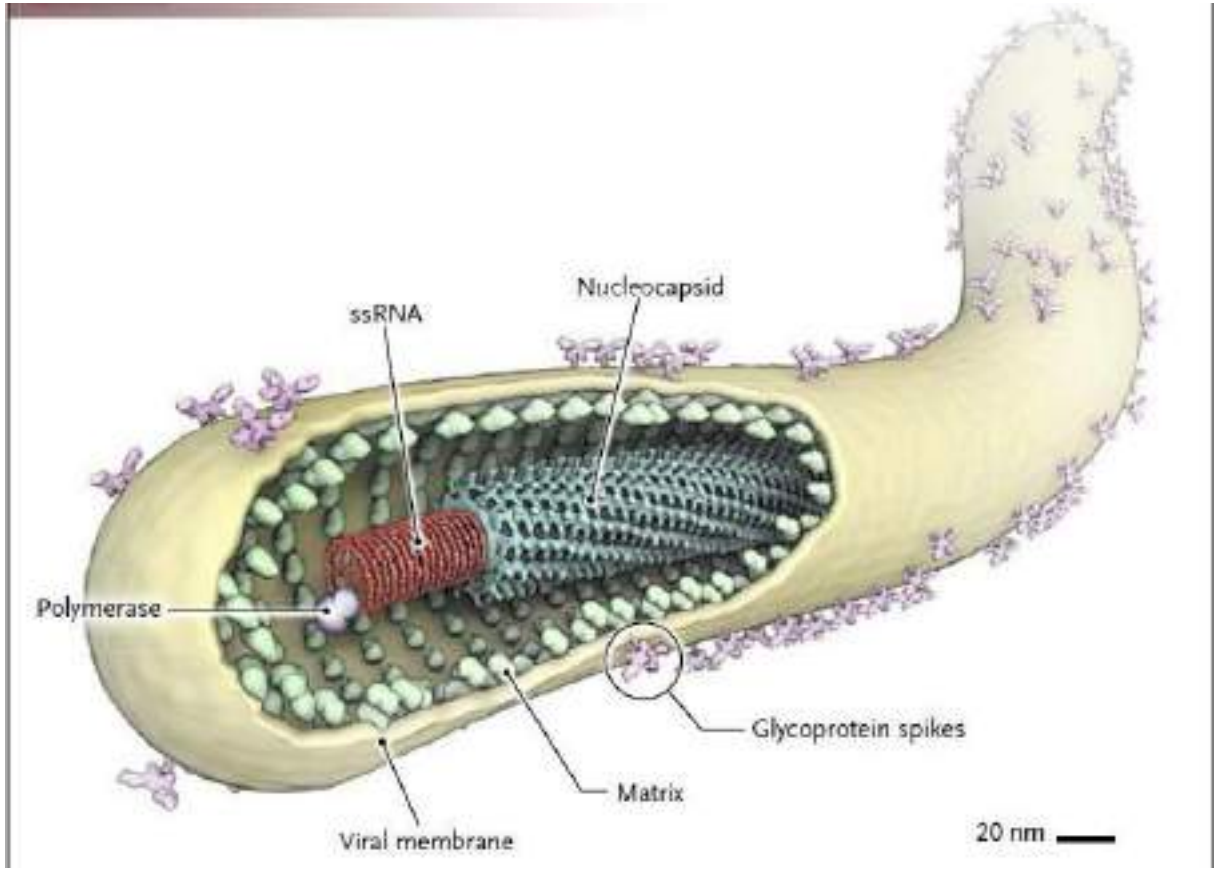
7th June 2024

Ebola Virus Structure



- lipid envelope
- **easily destroyed by soap, chlorine, ABHR and open environment**

H Feldmann. DOI: 10.1056/NEJMp1405314,

It is believed that fruit bats
the natural hosts of the Eb

Introduced into the humar
with infected animals,

- blood,
- secretions,
- organs or
- biological fluids

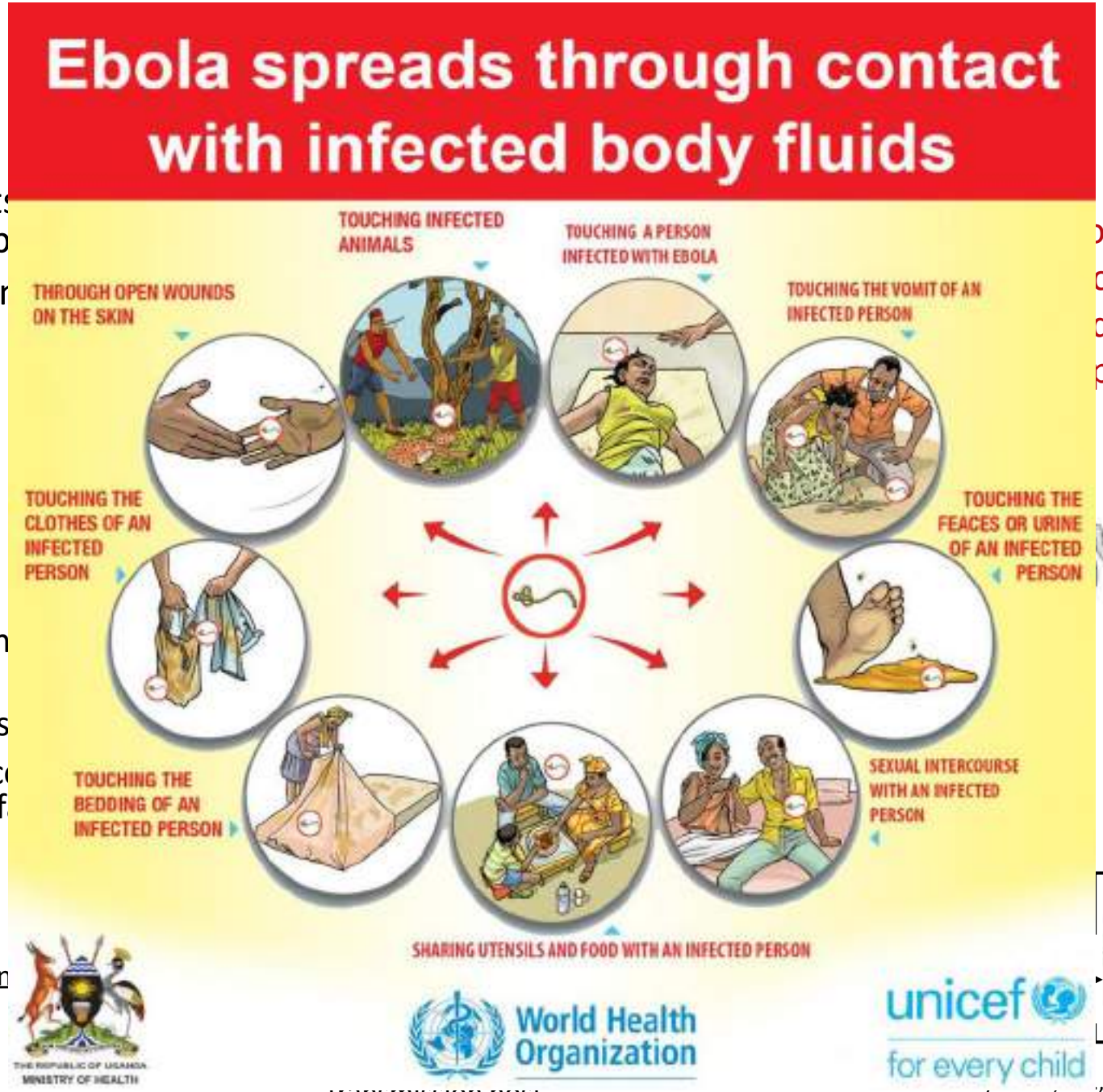
Interhuman transmission

- Direct contact with th
  person
- Mother-to-child trans
- Exposure to objects c
  (such as needles, surf

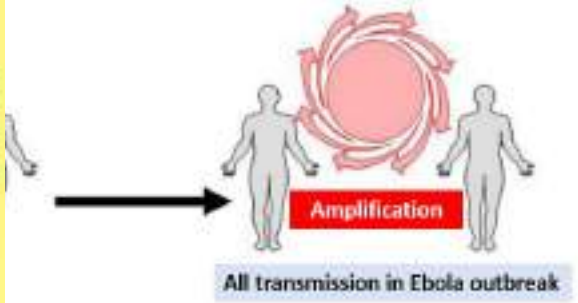
Unknown natural host reservoir

Con

transmission host



ost HW infections occur
cause EVD was not suspected
d therefore IPC measures not
plied (lack of screening)

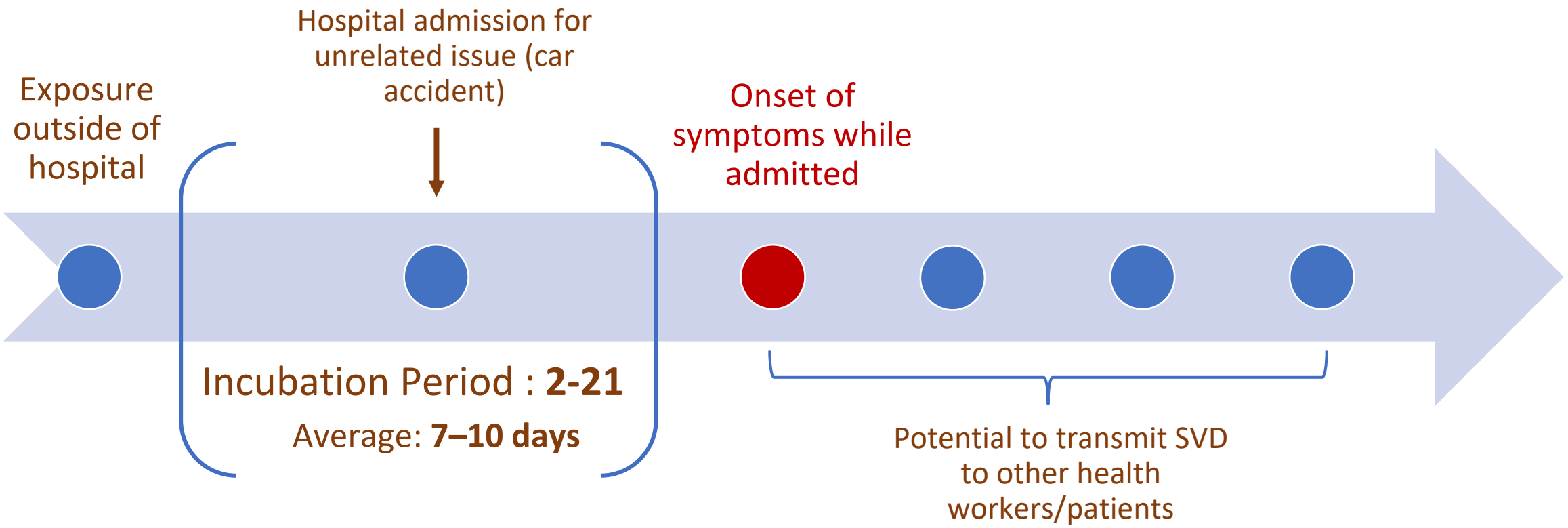


Outbreak

, Crozier, I., Fischer, W.A. et al. Ebola virus disease. Nat Rev Dis Primers 6, 13 (2020). https://doi.org/10.1038/s41572-020-0147-3

Risk of EVD infection transmission

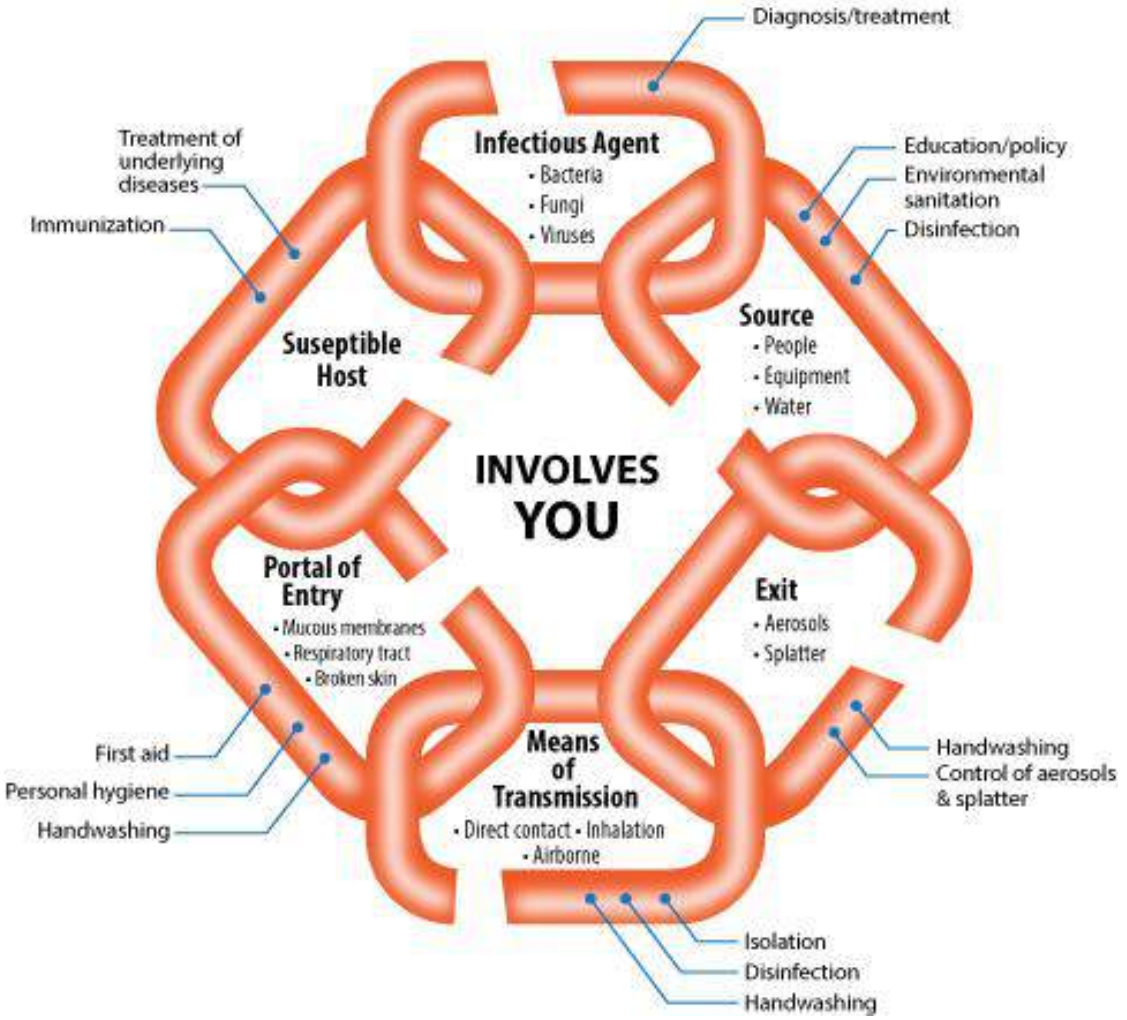
To detect SVD patients who may have been asymptomatic at time of admission but develop symptoms during their hospital stay



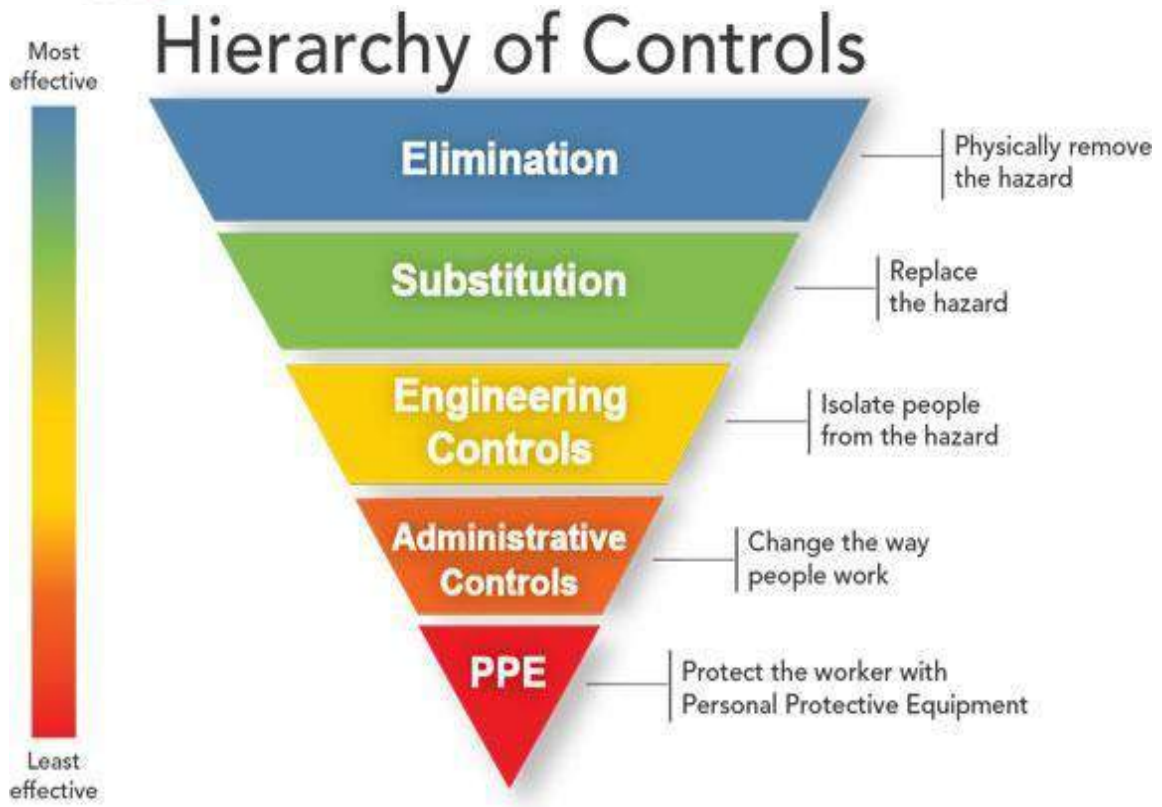
Role of Infection Prevention and Control

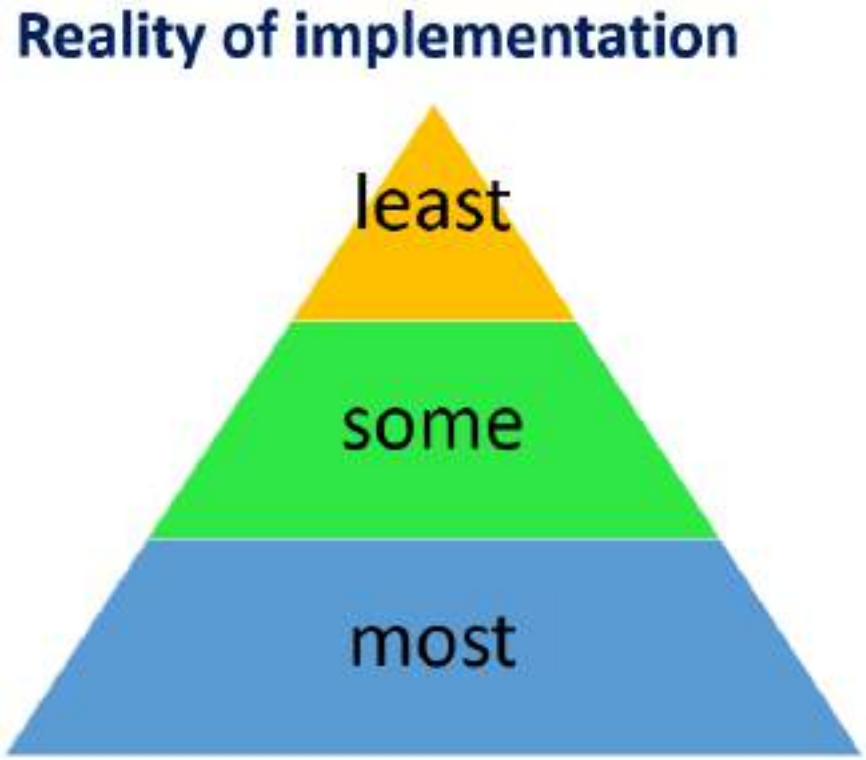
- IPC-evidence-based practices and procedures, which, when consistently applied in health care situations

- Can prevent transmission or reduce the risk of transmission of micro-organisms to health care providers, patients, residents and visitors



Hierarchy of IPC measures!

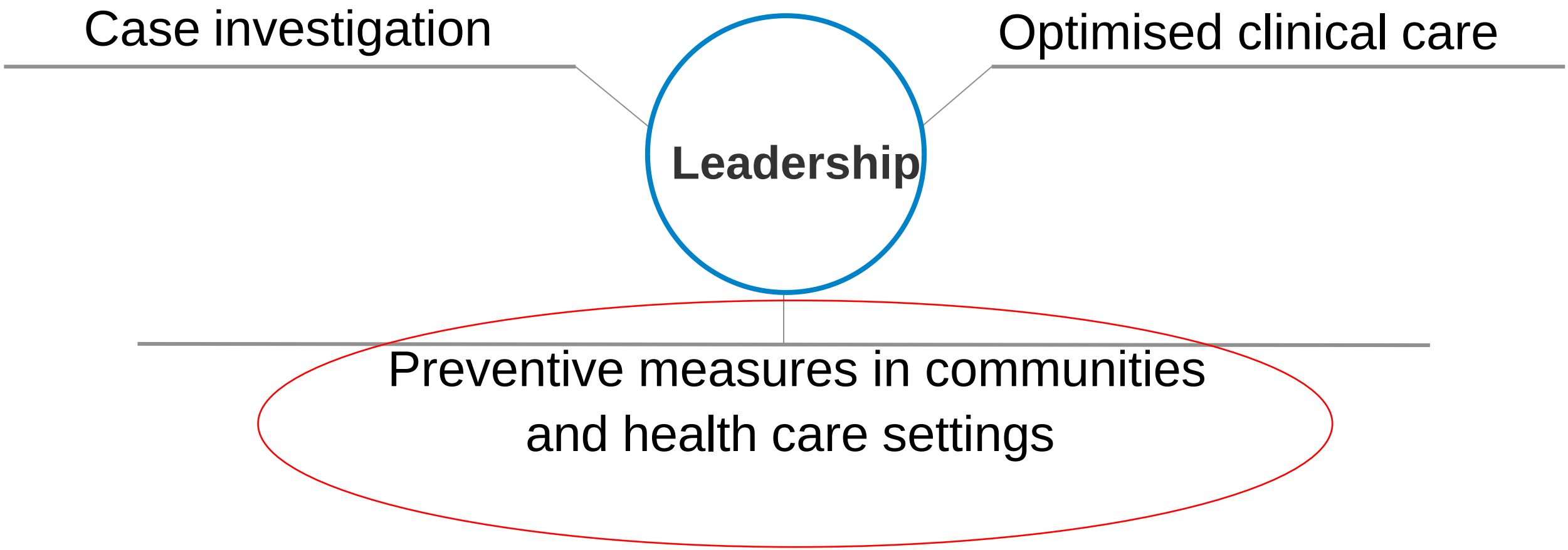




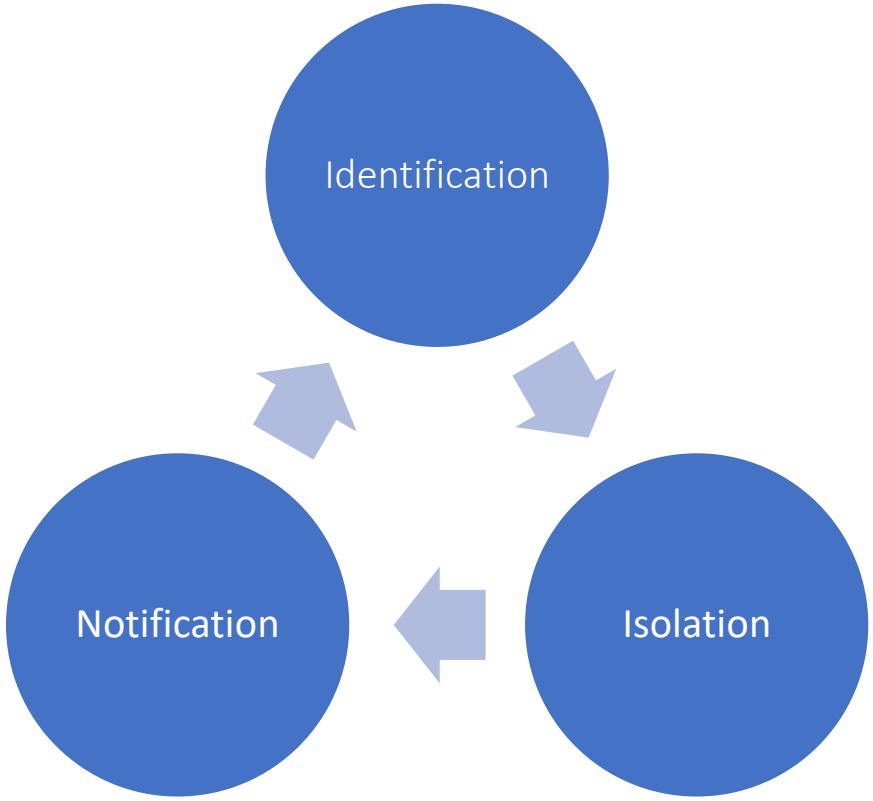
- PPE provides some, but not total, protection to the user:
  - Only effective if used as part of a whole IPC process
  - Has little or no value as a sole measure of containing pathogens

Key components of Ebola disease control

Successful EVD control relies on applying a package of interventions



IPC measures at all health facilities



Minimum capabilities

The goal of this capability is to

- Ensure early identification
- Rapid source control and linkage to testing
- Timely response
  - Staff safety
  - Better patient outcomes
  - Reduce secondary transmission

Ebola case management is often done in designated treatment units but patients may present to other health facilities or hospitals first.

IPC considerations in Ebola treatment units, Isolation Units and Quarantine Sites vs routine health facilities

Ebola treatment specialized units

- Ensuring use of Standard Precautions for care of all patients at all times
- Supporting design, layout, IPC assessment, and action planning at ETU/Isolation units
- Conducting pre-deployment training and ongoing refresher training
- Supporting HCW monitoring and any HCW infection investigations
- Ensuring compliance to standards and SOPs
- Availability of adequate IPC/WASH supplies

Non ETU facilities

- Ensuring use of Standard Precautions for care of all patients at all times
- Establishing functional screening areas (for all healthcare workers and visitors) and inpatient screening and holding areas
- Ensuring notification and referral processes for suspected SVD are in place
- Availability and utilization of IPC supplies, SOPs and IEC materials at all health facilities
- Training (capacity enhancement) healthcare staff, IPC Focal Persons, and IPC supervisors

Standard Precautions

- Used for **all patient care** at all times, in all settings
- used by all health-care workers
- Protect healthcare workers from infection and prevent the spread of infection from patient to patient


Hand hygiene


Personal protective equipment (PPE)
based on risk of exposure


Safe injection practices


Sharps safety

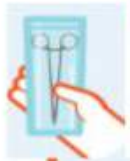

Cover coughs / respiratory hygiene


Clean and disinfect patient care equipment and instruments


Clean and disinfect healthcare environment


Handling of laundry and linen carefully


Waste management

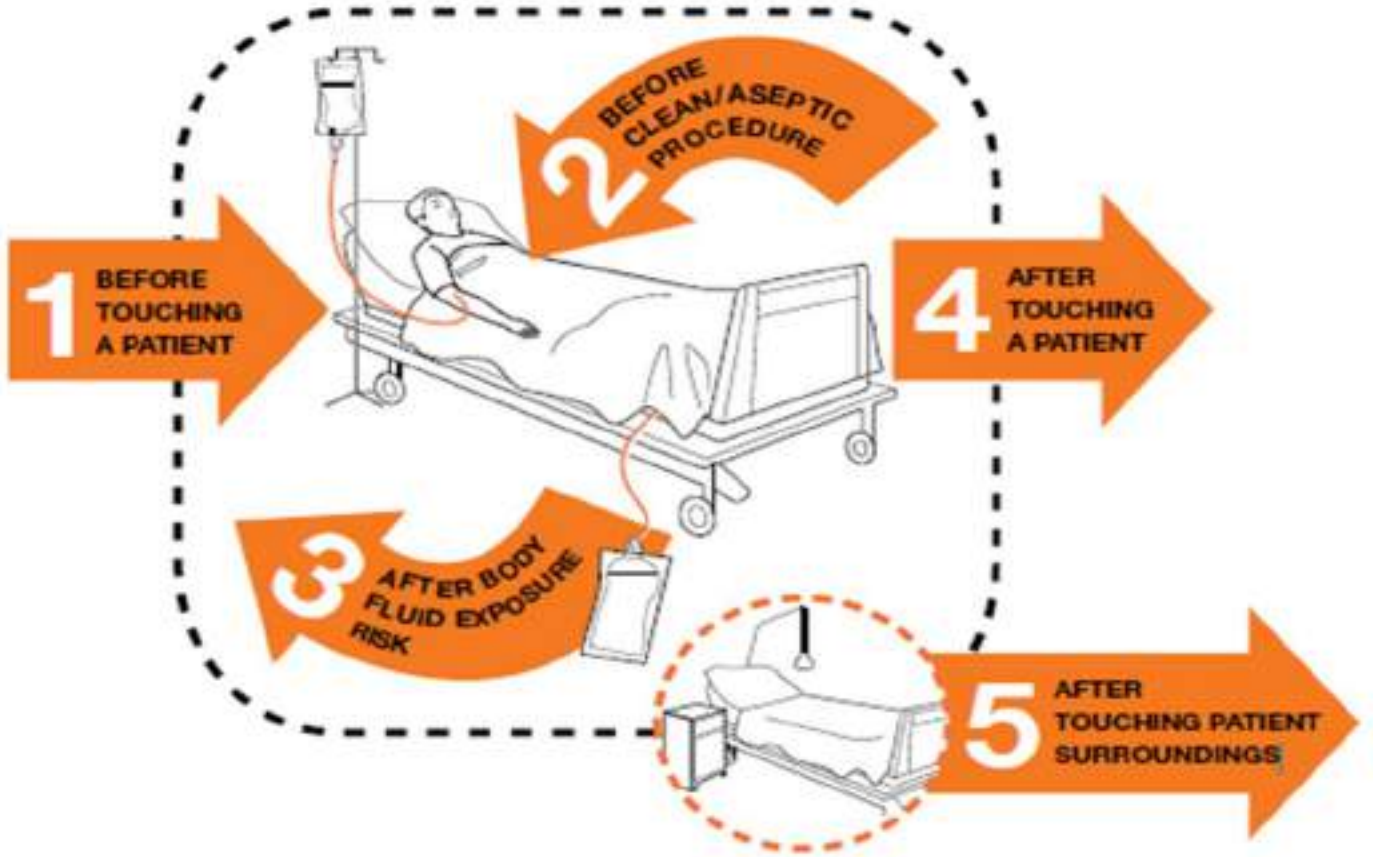

Aseptic technique


Risk assessment

Ha

with

My 5 Moments for Hand Hygiene



eak (0.05%)
lorine
ater and soap
NOT available

Screening, Triaging, Isolation and Notification during an EVD outbreak

Screening, Triage, and Isolation

Screening

- Observing patient, taking non-contact temperature, and asking questions
- Key outcome: determine **if** patient is suspected EVD case
- Does not require close or physical contact

Triage

- Assessment of patient to determine severity of illness and prioritize care
- Key outcome: determine **how sick** is the suspected EVD case
- Likely requires close or physical contact

Isolation

- Separation of patient from others (to reduce risk of contact/spread)
- Key outcome: patient is transferred for testing and further care
- Patient care in isolation area likely requires close or physical contact

Screening

What is it?

- Identifies individuals that meet suspect case definition for Ebola Sudan Virus (or other VHFs)

Where should it be done?

- **Before entrance** into a healthcare facility

What is process?

- Assessing for **symptoms** (including fever) **and exposures**

Who should be screened?

- **Everyone** entering the facility (including patients and health workers)

MINISTRY OF HEALTH

World Health Organization

CASE DEFINITIONS FOR EBOLA VIRUS DISEASE

COMMUNITY CASE DEFINITION

Illness with onset of fever and 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

Illness with onset of fever and no response to treatment for usual causes of fever AND 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

OR any person with a history of fever (≥38°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

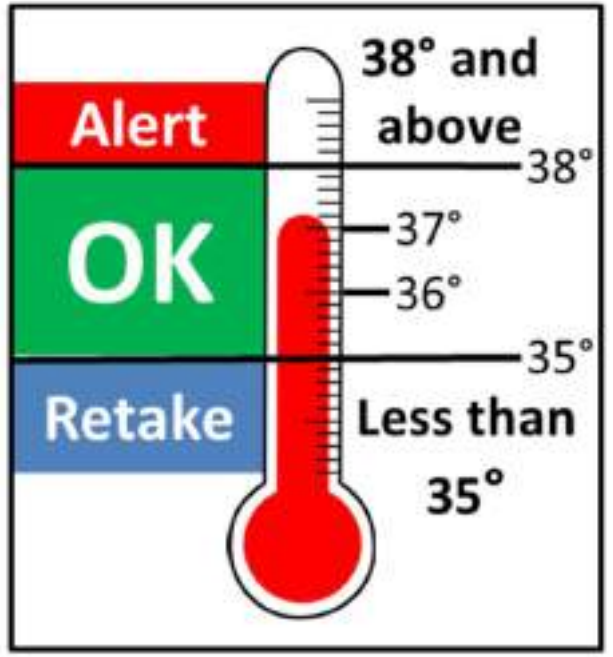
OR: unexplained bleeding

PROBABLE CASE

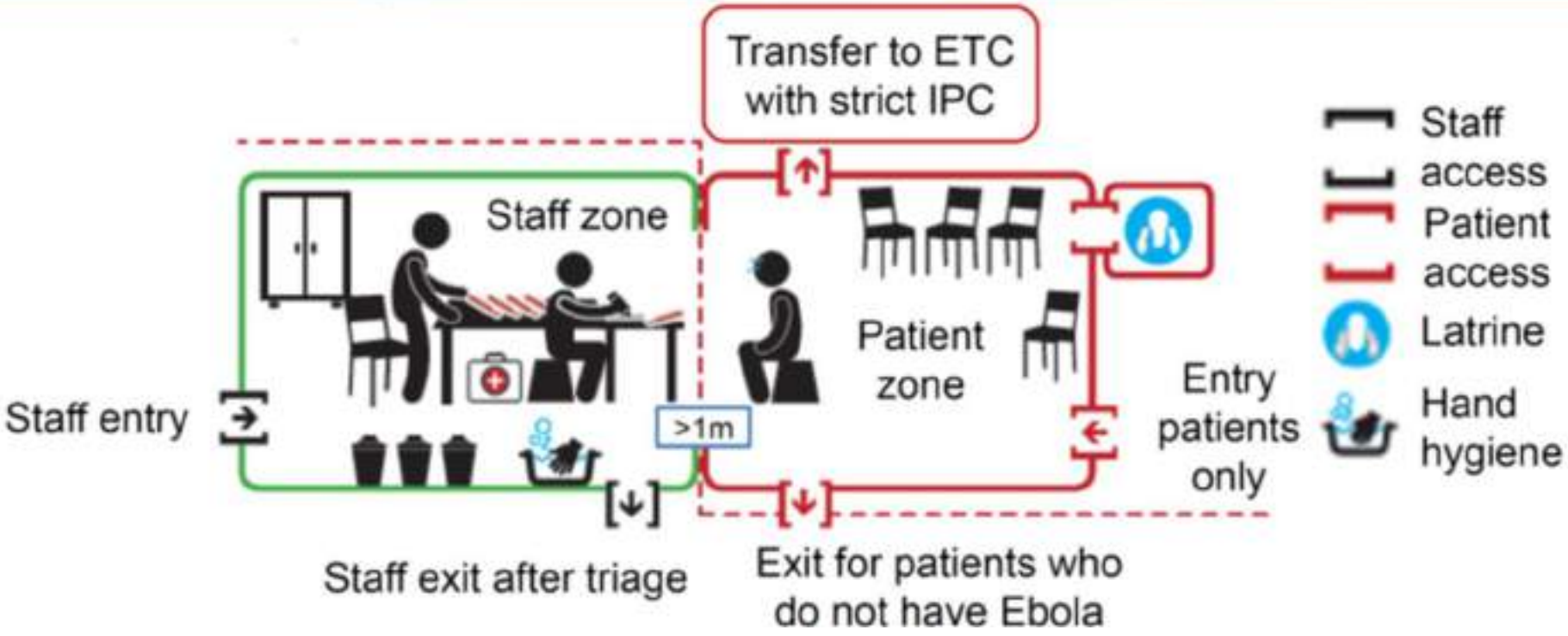
Any person who died from 'suspected' EVD and had an epidemiological link to a confirmed case but was not tested and did not have laboratory confirmation of the disease

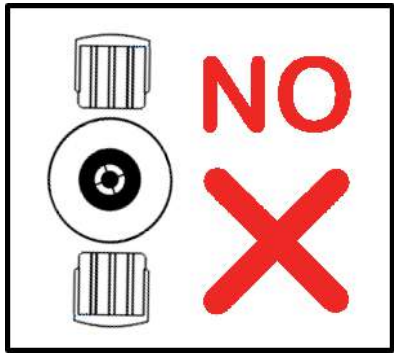
CONFIRMED CASE

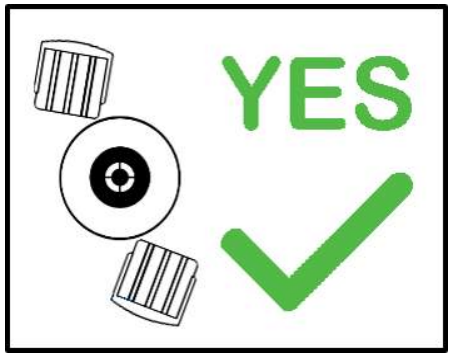
A suspected case with a positive laboratory result for either virus antigen or to viral RNA detected by RT-PCR or IgM antibodies against Ebola.



Screening setup







- Maintain at least 1 meter and a physical barrier (table or desk) between staff and individuals requiring screening
- Provide waiting area with adequate space
- Provide access to a dedicated toilet (if feasible)

Personal protective equipment (PPE)

- Key is risk assessment at all times
  - Always assess the risk of exposure associated with particular actions and what is the mode of transmission of the organisms
  - Follow correct technique for putting on (to ensure adequate protection) and off the PPE (to avoid self contamination)
  - Dispose the PPE correctly after use
  - Correct use of PPE

PPE for EVD

Risk stratification	PPE items
Physical contact with patients with suspected or confirmed EVD, their body fluids or objects contaminated by their body fluids	• Examination gloves (double gloves) • Eye protection (Face shield/goggles) • Medical mask • Coverall or gown with hood • Disposable aprons • Gumboots
For dead body management and cleaning/decontamination	On top to the items above, heavy duty gloves and heavy-duty aprons are recommended.
*Mixing disinfectants	Gloves, respirator, apron/disposable gown, goggles/face shield

PPE use during screening

- If the screener **cannot maintain distance** (for example, needs to assist the patient), then PPE is put on to protect from risk of exposure to blood or other body fluids

(Gloves, medical mask, eye protection and gown)

Refer to Job Aid 5b for more on PPE use during screening

PPE use in Isolation/ treatment Area

- HCW puts on PPE for patient care activities in the isolation area

Refer to Job Aid 5a for more on PPE use in the isolation area

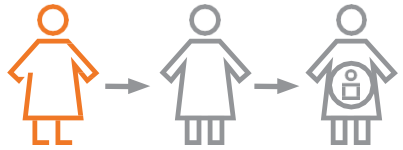
OBSTETRIC DEPARTMENT

Re-screening in the obstetrics department is indicated. Use the following PPE based on patient assessment.

STANDARD PPE for deliveries

1. Face shield, or surgical mask and goggles
2. Long-sleeved gown
3. Long gloves to the elbows
4. Rubber boots or closed shoes with overshoes

EVD survivor who becomes pregnant after recovery



All other pregnant women not in the risk group for EVD transmission during pregnancy

OBSTETRIC DEPARTMENT

FULL PPE
For deliveries with risk of EVD transmission

1. Headgear
2. Surgical mask
3. Goggles or face shield
4. Long-sleeved coverall or gown
5. Apron
6. Double pairs of gloves including long gloves to the elbows, outside
7. rubber boots

Pregnant woman with EVD

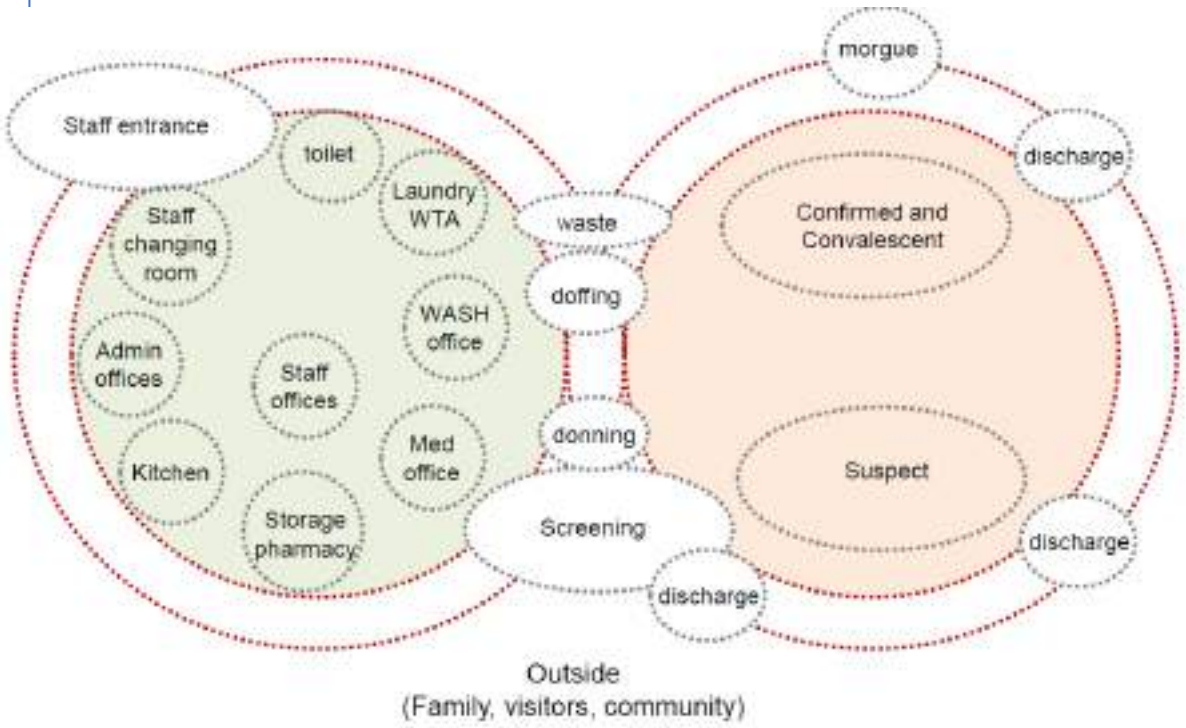
Pregnant woman who survives EVD
(with an ongoing pregnancy)

Pregnant woman in contact with an EVD case
(for 21 days, monitoring period)

Setting up isolation

Built environment

- Indicate high and low risk zones before starting patient admission
- Use barriers/scaffolding to guide movement in outdoor spaces or large wards
- Prioritize using areas with a solid walls and ability to restrict access (doors or gates)
- Patient care areas should have adequate natural ventilation and natural light



Source: WHO

Isolation Area: Examples

- Existing facilities can be modified to serve as isolation areas
  - Outdoor areas
  - Empty wards
  - Temporary tents

- Isolation area is for **temporary use** until transfer can be arranged for testing and further evaluation/care

EVD Standard Operating Procedure Job Aides

Putting on and taking off PPE in the context of Ebola VI in Uganda: EVD job aids for TRAINEES

Putting on PPE (Coveralls)

1	Remove all personal items (jewelry, watches, phones, pens, etc.)	☐
2	Put on the scrub suit and rubber boots	☐
3	Perform Hand Hygiene	☐
4	Put on first pair of gloves (inner gloves)* (examination / think gloves)	☐
5	Put on coverall	☐
6	Put on face mask	☐
7	Put on face shield OR goggles	☐
8	Put on head and neck covering OR hood (attached to coverall)	☐
9	Put on waterproof apron (disposable or heavy duty)	☐
10	Put on a second pair of gloves (outer gloves) over the cuff of the coverall. Do not use adhesive tape to attach the gloves	☐

EVD Standard Operating Procedure Job Aides

Taking off PPE (Coveralls)

Points to remember when removing PPE

- Slowly remove PPE under the direction and supervision of a trained observer (colleague)
- Make sure the outside of the PPE does NOT touch your skin or any part of your body
- Contaminated hands (bare and gloved hands) are the most common way to transfer contaminated material to the eyes, nose and mouth
- Remove the outermost PPE first, this is likely to be the most contaminated PPE
- Remember not to rub your eyes when removing the PPE near your head
- Keep gloved hands clean so that they can remove PPE without contaminating the skin
- Dispose of disposable PPE in the medical waste bin

Place reusable PPE (shoes, rubber gloves, aprons, goggles, face shields) in a designated bucket

1	**Perform hand hygiene on gloved hands**	☐
2	**Remove the apron** – by bending forward and taking care to avoid contaminating your hands	☐
3	**Perform hand hygiene on gloved hands**	☐
4	**Remove head and neck covering or hood**—starting from the bottom of the hood or the back and rolling from back to front and from inside to outside	☐
5	**Perform hand hygiene on gloved hands**	☐
6	**Remove coverall** and outer pair of gloves* in front of a mirror, bit maintain to reach upper, undo completely without touching (any dirt on scrubs, and start removing coverall from top to bottom. After having the coverall, remove the outer gloves while pulling the arms out of the sleeves. With inner gloves still the coverall from the waist down and from the inside of the coverall, down to the top of the boots. Use one boot to push off coverall from the other boot and vice versa. Then step away from the coverall	☐
7	**Perform hand hygiene on gloved hands**	☐
8	**Remove eye protection** – by pulling the string from behind the head (keep eyes closed)	☐
9	**Perform hand hygiene on gloved hands**	☐
10	**Remove face mask** – remove it by behind the head (keep eyes closed), by first untying the bottom string above the head and leaving it hanging in front and then the top string next, from behind the head	☐
11	**Perform hand hygiene on gloved hands**	☐
12	**Remove rubber boots** without touching them (or inside) if applicable. If the same boots are to be used outside then keep ready them on, but under not recommended. Then proceed to before leaving the area where you are undressing	☐
13	**Perform hand hygiene on gloved hands**	☐
14	**Remove the inner pair of gloves**	☐

EVD Standard Operating Procedure Job Aides

PPE for screening and triage in the context of Ebola Virus Disease (EVD) job aids

Screening

- Screening is a sorting process encompassing observation of the patient, taking the patients temperature with an infrared non-contact, and asking the patient questions (symptoms and potential EVD contact history).
- The key outcome of screening is to determine if the patient is a suspected EVD case.
- Screening does not require close or physical contact with the patient. It is recommended that screening is conducted using a no touch technique (**maintaining a distance of at least 1m**).
  - When a no touch technique and distance of at least 1m **can be maintained** – additional PPE is not recommended (note: staff should wear a medical mask for COVID protection and ensure hand hygiene)
  - When a no touch technique or distance of at least 1m **cannot be maintained** – staff are advised to wear the following PPE:
    - Medical mask
    - Eye protection (protective goggles or face shield)
    - Gown
    - Examination gloves

Triage

- Triage involves assessment of patients using validated tools to determine the severity of illness and prioritise care.
- The key outcome of triage is to determine how sick the suspected EVD case is.
- Triage is likely to require close or physical contact with the patient for assessment.
- Triage can take place in different locations depending on facility size and layout. If triage occurs at the point of screening, the following PPE is recommended:
  - Medical mask
  - Eye protection (protective goggles or face shield)
  - Gown
  - Examination gloves
- If triage occurs within the isolation area, separate from screening, the following PPE is recommended:
  - Medical mask
  - Eye protection (protective goggles or face shield)
  - Coverall or gown
  - Waterproof apron
  - Examination gloves (2 pairs)

Putting on PPE (Procedure for gowns)

1	Remove all personal items (jewelry, watches, phones, pens, etc.)	☐
2	Put on the scrub suit and rubber boots	☐
3	**Perform Hand Hygiene**	☐
4	**Put on gown**	☐

EVD Standard Operating Procedure Job Aides

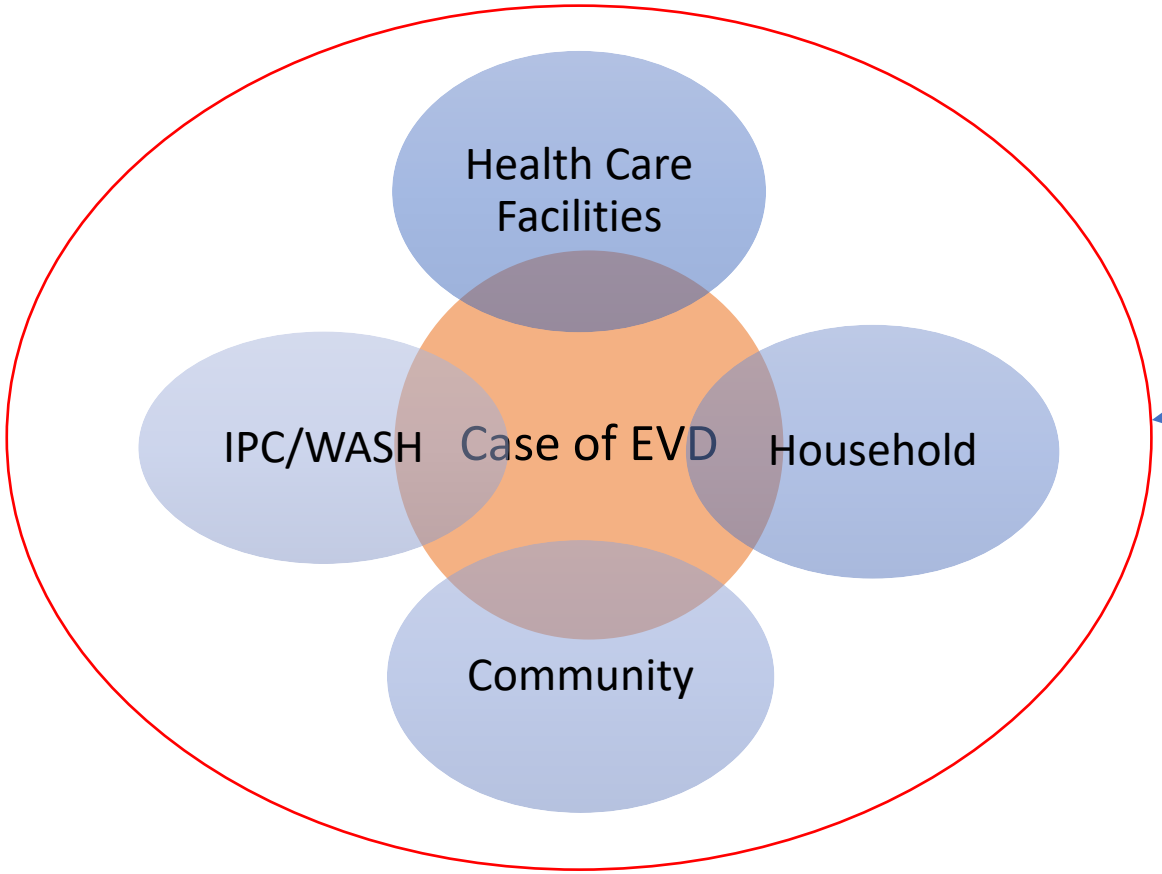
5	Put on face shield OR goggles	☐
7	Put on a pair of gloves over the cuff. Do not use adhesive tape to attach the gloves.	☐
9	Self-check in mirror and with buddy to ensure proper fit and no breaches	☐

Taking off PPE (procedure for gowns)

1	Perform hand hygiene on gloved hands	☐
2	**Remove gown and gloves** – untying the knot first, then pulling from the back to front, rolling it from inside to outside	☐
3	**Perform hand hygiene**	☐
4	**Remove eye protection** – by pulling the string from behind the head (keep eyes closed)	☐
5	Perform hand hygiene	☐
	Remove face mask If overhead straps – remove from behind the head (keep eyes closed), by first untying the bottom string above the head and leaving it hanging in front and then the top string next, from behind the head If ear loops – hold and unhook both ear loops and gently lift the mask away from your face	
6	**Perform hand hygiene**	☐

What is the IPC Ring Approach?

Non-affected community



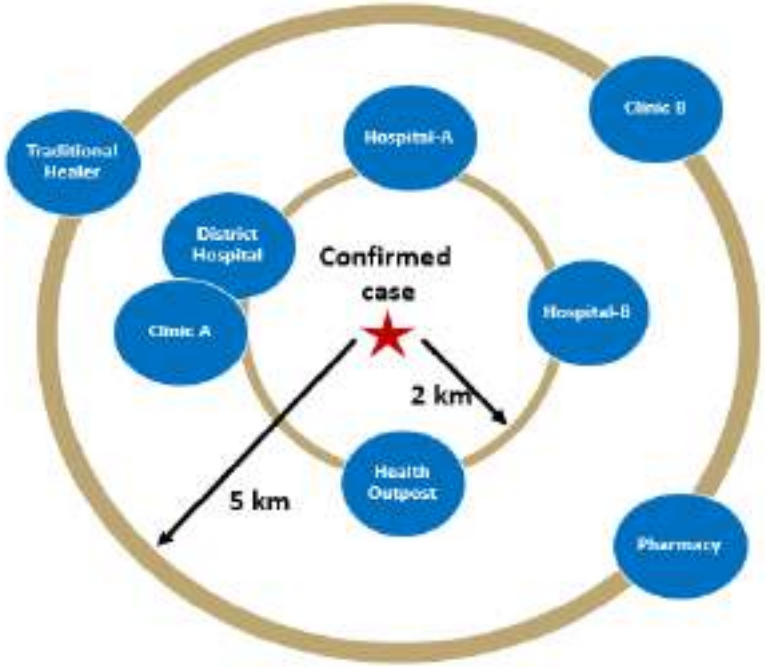
IPC RING APPROACH

Definition: The IPC ring approach rapidly mobilizes teams to assist affected health facilities and the community in implementing IPC measures to reduce Ebola transmission in a predetermined risk area whenever a case is identified

- Response activity that focuses limited resources on highest-risk healthcare facilities, affected households, and community settings in response to active SVD cases in the surrounding community.

- Ring IPC is an intensive, targeted approach to:
  1. Decontaminate health facilities, affected households, and community settings to limit further transmission
  2. Increase detection of SVD through screening and triage
  3. Manage healthcare worker occupational risk exposures and management
  4. Rapidly isolate suspect SVD patients, and quickly notify public health authorities
  5. Reinforce use of Standard Precautions during patient care

- Supported by supervision (i.e., capacity enhanced) to ensure effective implementation of <u>Screening, Isolation, and Notification</u>.



Example of an IPC ring; distances can vary (rural vs. urban, number of facilities, etc.)

Screen. Isolate. Notify.

1. Screening

- Do not touch patient
- Stay at least 2 meters from patient
- Take temperature
- Screen all patients using case definition algorithm

2. Isolate

- Avoid contact with patient/body fluid (≥2m)
- Explain to patient/family
- Transfer patient to isolation area

3. Notify

- SMS 'ALERT' to 6767

AND

- Notify district surveillance person _____
- Surveillance officers and district rapid response team will provide support

4. Minimal Care

- Provide no/minimal touch care
- Wear extended PPE when entering isolation area
- Encourage patient to drink and eat

Clean and Dispose of Waste

- Wear PPE for cleaning
- Clean screening area after suspect patient using strong (0.5%) chlorine
- Clean isolation area and materials appropriately after patient is transferred to ETU
- Sequester solid and liquid Ebola waste from non-Ebola waste and dispose of appropriately

5. Transfer to ETU

- Ambulance will arrive to transport case
- District rapid response team will assist

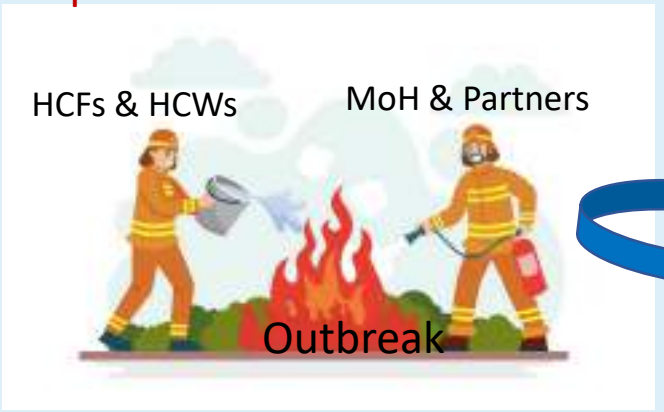
IPC Preparedness

Guided planned, systematic, documented and well monitored implementation of IPC

From reactive to proactive IPC implementation

Whats been happening

During outbreaks Very active IPC Implementation

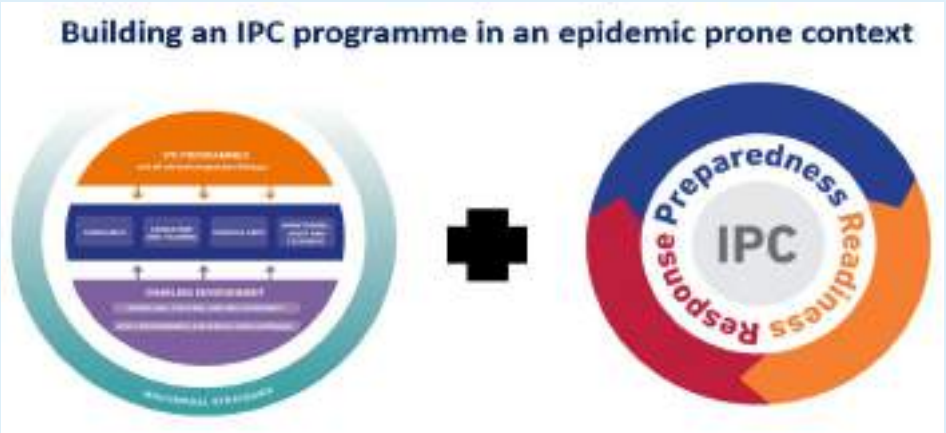


- Enormous support from all players
- Adequate IPC supplies prepositioned
- IPC Training
- Monitoring (Different IPC assessment tools)

After outbreak Relaxed

- HCWs lower guard
- IPC committees don't meet
- Some guidelines, SOPs not there
- No or inadequate IPC supplies
- No infrastructure

What we are doing to ensure sustainability of the programme



- The establishment of an effective IPC programme with the WHO core components at National level and facility level minimum requirement
- Ensure readiness and preparedness to respond in the event of future outbreak
- Develop policies to ensure sustainability (IPC Strategy, guidelines, IPC Curriculum)
- Standardise IPC assessment tools reporting to a central database

World Health Organization

Disclaimer images from the internet for demonstration purposes

Ward Infrastructure Survey

Period Number*

- The survey should be completed by the hand hygiene programme co-ordinator or an identified and informed health-care worker working within the ward (e.g. a senior nurse who can complete the survey while walking around the ward).
- This questionnaire is in two parts: 1) **questions** on handwashing and handrub facilities and resources available in the ward; 2) a **grid** to assess the exact number of hand hygiene resources and products in place, to be completed by walking to each room or area where patient care/treatment takes place (i.e. the point of care).
- **Short Glossary:**

Alcohol-based handrub formulation: an alcohol-containing preparation (liquid, gel or foam) designed for application to the hands to kill germs.

Facility: health-care setting where the survey is being carried out (e.g. hospital, ambulatory, long-term facility, etc).

Handrubbing: treatment of hands with an antiseptic handrub (alcohol-based formulation).

Handwashing: washing hands with plain or antimicrobial soap and water.

Service: a branch of a hospital staff that provides specified patient care.

Perception Survey for Health-Care Workers

Period Number*

You are in direct contact with patients on a daily basis and this is why we are interested in your **opinion** on health care-associated infections and hand hygiene.

- It should take you about 10 minutes to complete this questionnaire.
- Each question has **one answer only**.
- Please read the questions carefully and then respond spontaneously. Your answers are anonymous and will be kept confidential.

Hand Hygiene Knowledge Questionnaire for Health-Care Workers

Period Number*

- The knowledge required for this test is specifically transmitted through the WHO hand hygiene training material and you may find the questions more difficult if you did not participate in this training.
- Tick **only one answer** to each question.
- Please read the questions carefully before answering. Your answers will be kept confidential.

Soap/Handrub Consumption Survey

Measuring the Consumption of Products in Association with the Implementation of WHO Multimodal Hand Hygiene Improvement Strategy

Purpose

This tool provides a simple template to measure the consumption of products (e.g. soap and alcohol-based handrubs) associated with implementing a hand hygiene improvement strategy.

Measuring the consumption of these products is an indirect method of monitoring hand hygiene performance. This indicator can help to assess the uptake of the intervention as a whole and provides an overall indication of its success. It also provides the opportunity to control stock levels over the short- and medium-term and to help estimate likely increases in requirements, particularly relating to alcohol-based handrub.

Protocol for Evaluation of Tolerability and Acceptability of Alcohol-based Handrub in Use or Planned to be Introduced: Method 1

Summary

Introduction

User's acceptance and good skin tolerability are considered among the most important criteria for the selection of an alcohol-based handrub, according to the WHO Guidelines on Hand Hygiene in Health Care (2009). A product that is pleasant to use with no harmful effect to the hands is a major asset for the promotion of optimal hand hygiene practices.

Core component 6 – IPC practice monitoring, audit and feedback

To determine performance according to standards and provide targeted improvement plans in a step wise manner

Take home

- Implementation of IPC measures in health care
  - Screening and isolation protocols
  - hand hygiene
  - adequate personal protective equipment (PPE) supplies and rational use (risk assessment)
  - Proper waste management
  - Environmental cleaning
  - Disinfection
- Training of healthcare workers including support staff
- Ongoing monitoring and supervision for implementation to reduce risks of health care facilities amplifying the outbreak
- Ensuring the provision of safe and dignified burials
- Supporting IPC in community settings
  - Adequate WASH facilities, hand hygiene capacity and safe waste management
  - Community engagement and social mobilization to prevent and mitigate ongoing transmission

Key Resources

Uganda MOH IPC EVD SOPs

- Job aide 01 – IPC ring approach checklist
- Job aide 02 – Health facility cleaning and disinfection procedures during EVD
- Job aide 03 – Household cleaning and decontamination procedures during EVD
- Job aide 04 – IPC scorecard
- Job aide 05a – Putting on and removing PPE for EVD Coveralls
- Job aide 05b – PPE for screening and triage
- Job Aide 06a – Screening, triage and isolation during EVD
- Job aide 06b – How to use an infra-red thermometer
- Job aide 07 – Injection safety in the context of EVD
- Job aide 08 – Inpatient surveillance during EVD
- Job aide 09 – Sterilisation using an autoclave
- Job aide 10 – Healthcare waste management
- Job aide 11 - Ambulance decontamination
- Job aide 12 – Decontamination of patient mobile phones discharged from ETUs
- Job aide 13 – Management of HCWs with occupation exposures to EVD
- Job aide 14 – Providing safe and dignified burials during EVD
- Job aide 15 – Management of linen in the context of EVD
- EVD Screening tool

https://drive.google.com/drive/folders/1anJfenooVj4AnUpkmFBqRgxcgcE1bIGn?usp=sharing

Thank You
Any Questions?

Knowledge check

1. **Which of the following statements are correct about infection prevention and control in healthcare facilities?**
   a. Its primary aim is to protect healthcare workers against infections they may acquire from patients

   b. Implementation of infection prevention and control practices can contribute significantly to reduction of antimicrobial resistance in a healthcare facility

   c. Infection prevention and control mainly focuses on preventing epidemic prone pathogens like Ebola and COVID-19

   d. The most important intervention in infection prevention and control is ensuring that healthcare facilities are regularly fumigated