

Management of Healthcare Waste and Solid Waste Potentially Contaminated with the Ebola Virus

Presentation to Healthcare Staff
December 2014



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Prof Dr Babacar NDOYE

- 1. Important References**
- 2. Notes about the Ebola Virus**
- 3. Basic Principles**
- 4. Segregation**
- 5. Collection**
- 6. Transport and Storage**
- 7. Treatment**
 - **African Technology**
- 8. Disposal**
- 9. Cleaning and Disinfection**
- 10. Hand Hygiene**
- 11. Personal Protection Equipment**
 - **PPE for waste workers**
 - **Key practices**
 - **PPE: gloves**
 - **Donning PPE**
 - **Removing PPE**
- 12. Medical Waste Management Organization**
- 13. Medical Waste Management Plan**

Ebola Virus Disease (EVD): Key questions and answers concerning health care waste

WHO Geneva, November 2014

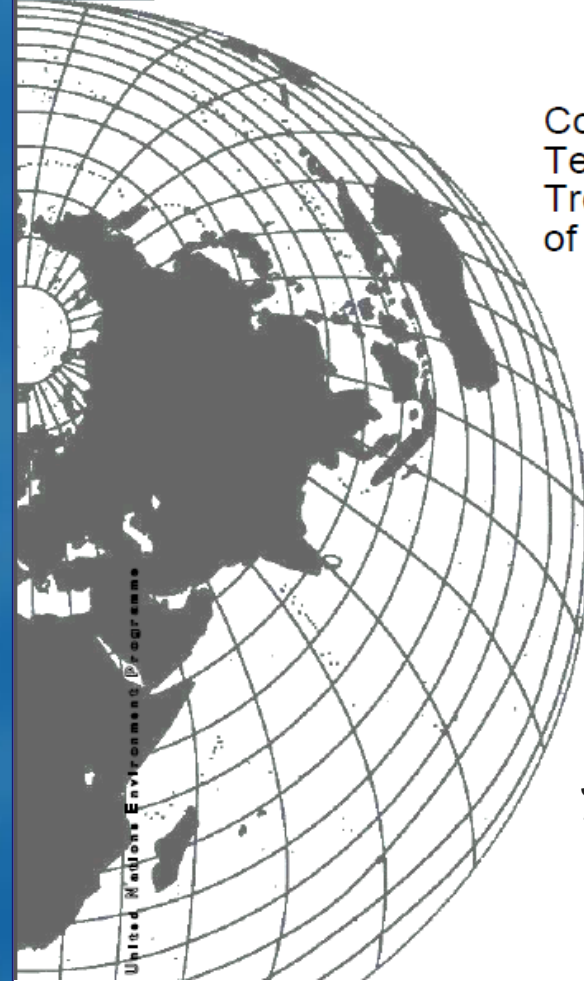
Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings, with Focus on Ebola,
WHO Geneva, November 2014

These are available for free in the Internet

Safe management of wastes from health-care activities

Second edition

Edited by Yves Chartier, Jorge Emmanuel, Ute Pieper,
Annette Prüss, Philip Rushbrook, Ruth Stringer,
William Townsend, Susan Wilburn and Raki Zghondi



Compendium of
Technologies for
Treatment/ Destruction
of Healthcare Waste

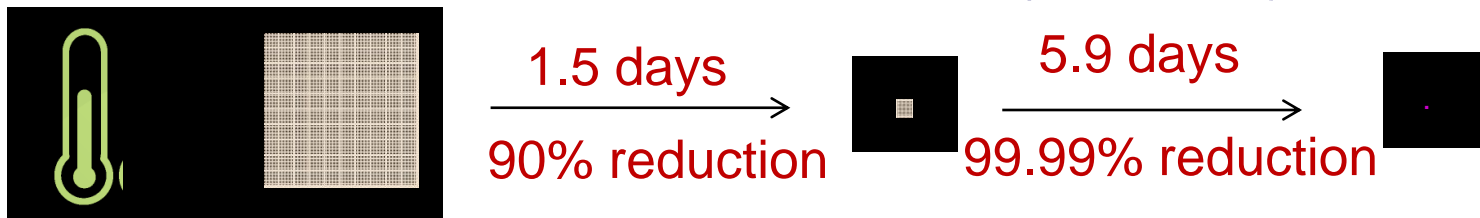
Jorge Emmanuel

These are available for free in the Internet

❖ Persistence in the Environment

- Laboratory studies:

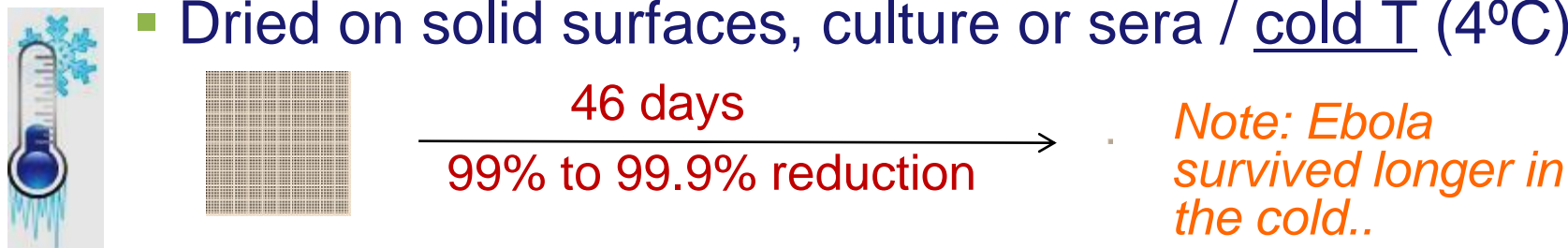
- On solid surfaces / room T (20-25°C) / total darkness



- Dried on plastic, metal, glass / room temperature



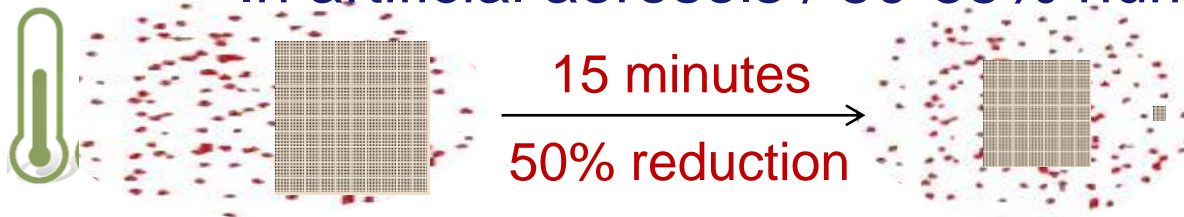
- Dried on solid surfaces, culture or sera / cold T (4°C)



❖ Persistence in the Environment

- Laboratory studies:

- In artificial aerosols / 50-55% humidity / room T (22°C)



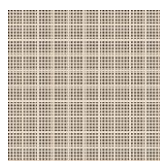
Note: Aerosol droplets fall to the ground and do not remain suspended in air.

- Patient Care Environment during an outbreak

- No virus detected in bed frame, intravenous fluid support pole, light switch, bedside chair, spit bowl, intravenous tubing
 - Virus detected in two samples that were visibly bloody

Note: Cleaning & disinfection in the patient care environment increases protection..

- Outside environment (direct solar radiation at noon)

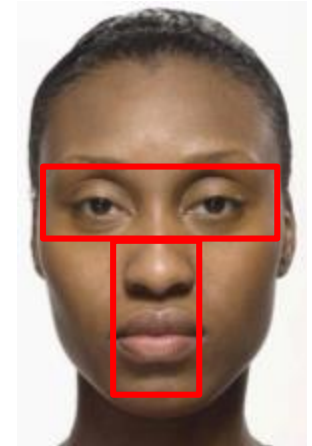


1.5 hours
→
90% reduction



Estimate based on solar UV radiation at noon in West Africa from November 1-16, 2014

- ❖ Likely portals of entry
 - Mucous membranes, conjunctiva, pharynx
 - Skin breaks



❖ Direct Transmission (from live or deceased infected patients)

- Direct contact with body fluids (blood, saliva, semen, faeces, urine, vomitus, sweat, breast milk, tears)
- Direct contact with contaminated tissues



❖ Indirect Transmission

- From contamination of environment of care (surfaces, devices such needles, PPE such as gloves, and healthcare waste)
- **Crucial role of hands (with and without gloves) in transferring the virus into the portals of entry → thus the importance of hand hygiene**

❖ Important Points

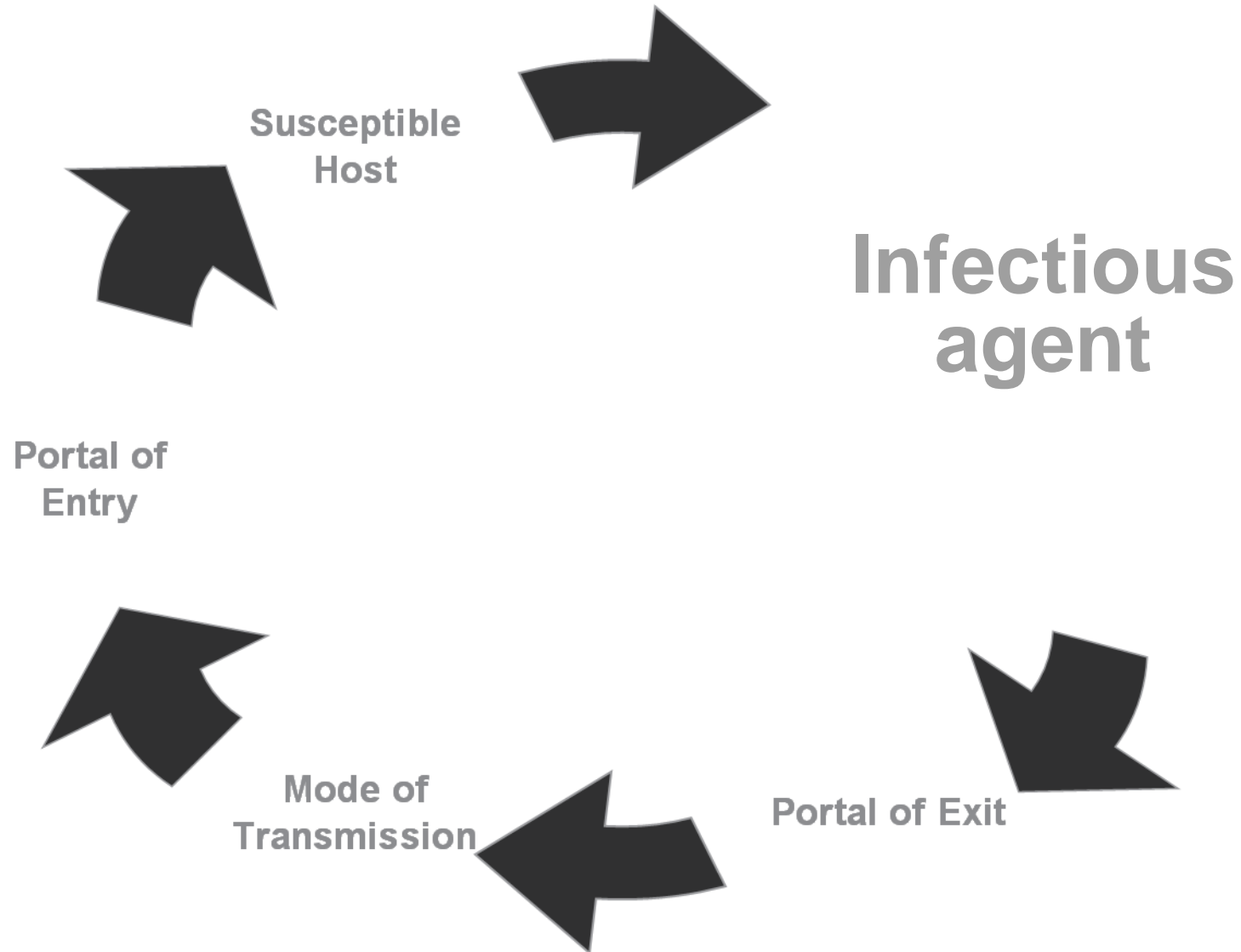
- Exposure to body fluids has high risk but during late phase of clinical illness the risk is even higher
- No clear evidence of airborne transmission to humans
- Droplet transmission is possible, thus the need for face masks & goggles (preferred for waste workers), or face shields

❖ Who is at risk from improper management of Ebola-contaminated waste?

- Medical and Laboratory Staff
- Waste Handlers
- Cleaning Staff
- Ambulance drivers, health aides helping sick patients
- Individuals handling Ebola-contaminated waste in communities



❖ The Chain of Infection



Elements of a Medical Waste Management System

Waste Segregation
Collection and Handling
Transport
Storage
Treatment
Final Disposal

FOR NON-EBOLA FACILITIES

❖ Segregation into at least **three** categories:

- Sharps waste



Puncture-resistant containers

- Non-sharp infectious waste

Color-coded bags
 ≥ 75 microns or double bags



- Regular (non-infectious) waste



GENERAL WASTE

FOR THE RED ZONE IN EBOLA TREATMENT UNITS

- ❖ **All waste** in high risk zones treated as potentially infectious waste
- ❖ Segregation into **two** categories:

- **Sharps waste**



Puncture-resistant containers

- **Non-sharp infectious waste**

Color-coded bags
 ≥ 75 microns or double bags



- ❖ Sharps waste management is crucial
 - The risk of Ebola infection from sharps injuries is virtually 100%.
 - The risk of Hepatitis B from needle-stick injury is 1-in-3 to 1-in-5.



- ❖ A lot of waste that is segregated as “infectious” may be clean

WHAT IS WRONG WITH THIS PICTURE?



- ❖ Sharps waste should not be discarded in non-sharps containers

WHAT IS WRONG WITH THIS PICTURE?



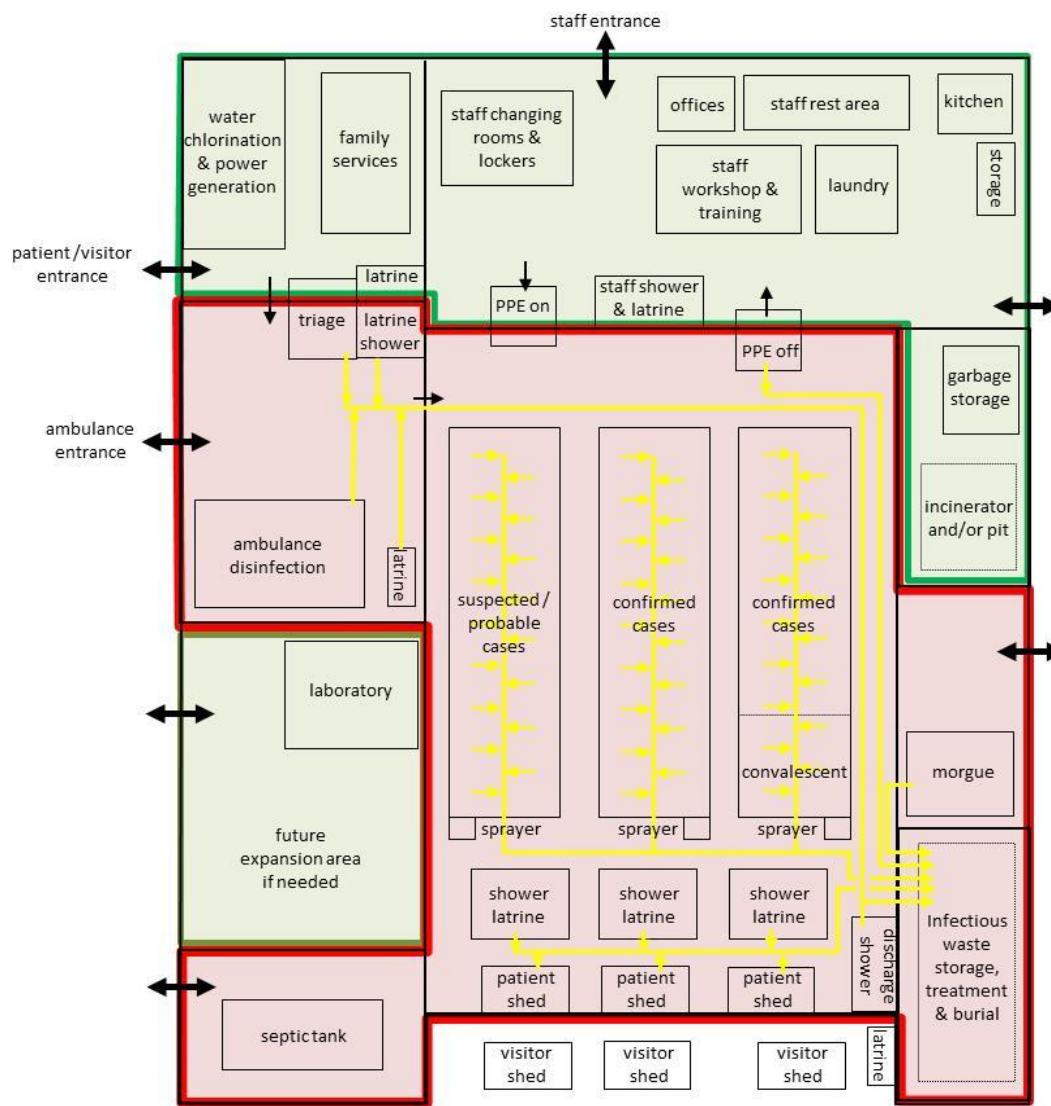


**This photo was taken in a country with the following color code:
 Yellow = infectious waste; Black = discarded medicines, cytotoxic and chemical waste**

Sample of an Educational Segregation Poster



❖ Develop a collection plan specifying the collection times and route



- ❖ Waste bags should be collected when 3/4th full or at least daily
- ❖ Sharps containers should be collected when 3/4th full
- ❖ Bag closure for Ebola-contaminated waste – goose-neck method



Seal bag when filled to the warning line.



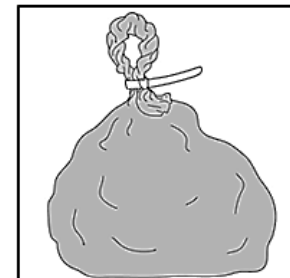
Twist firmly then double over.



Hold the twist firmly.



Pass the seal over the neck of the bag.



Tighten the seal manually to create an effective seal.

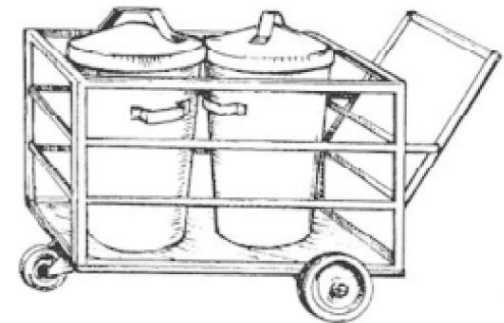
WHAT IS WRONG WITH THIS PICTURE?



**This photo was taken in a country with the following color code:
Red = infectious waste, Black = general waste**

- ❖ After removing the waste bag, place the same size bag in the bin or bag holder
- ❖ If the bin or bag holder has visible blood or body fluids:
 - Bring the bin outside of the ward
 - Wash the bin with soap and warm water
 - Wipe the bin with 0.5% chlorine disinfectant and wait 3 minutes
 - Return the bin to the ward

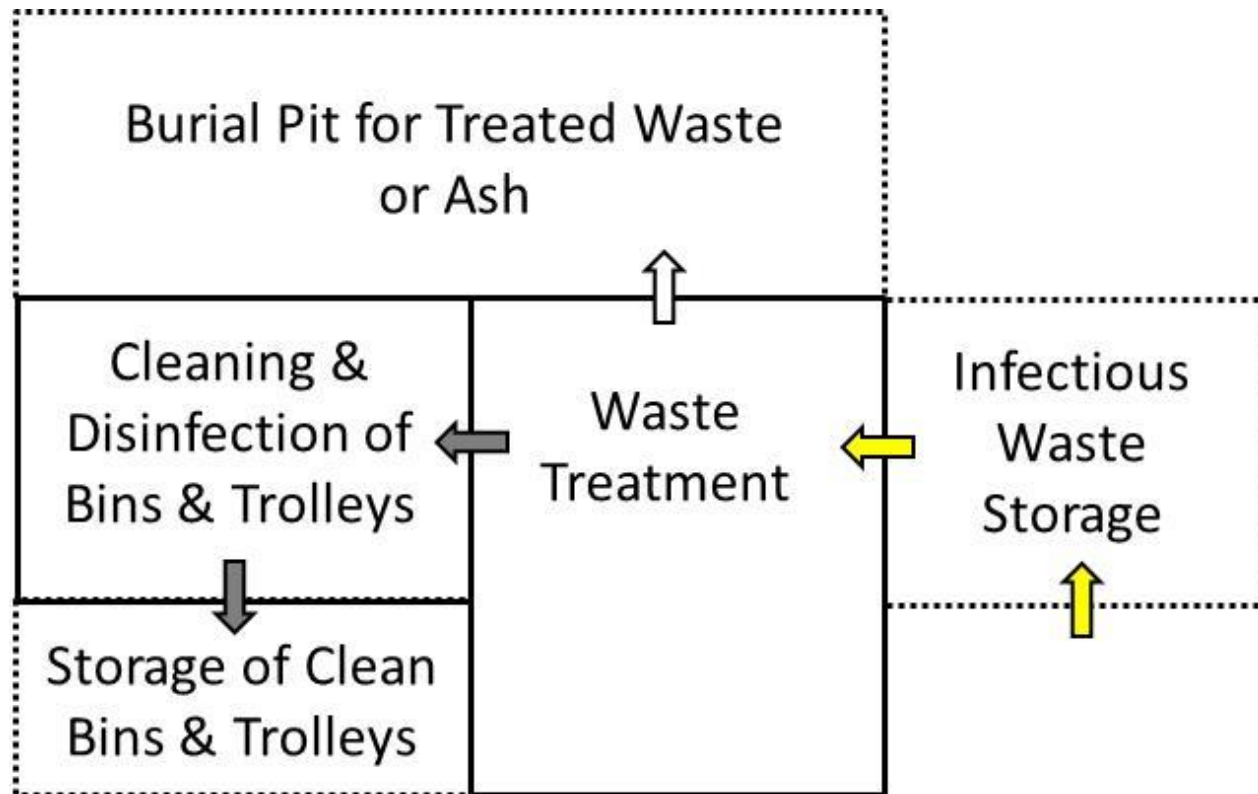
- ❖ Avoid transport by hand
- ❖ Use a covered trolley, wheeled bin, or closed cart to transport waste
- ❖ In none exist, a wheelbarrow or cart may be used
- ❖ Wash with soap and warm water after each use, then wipe handles and inner and outer surfaces of the trolley, bin or cart with 0.5% chlorine solution



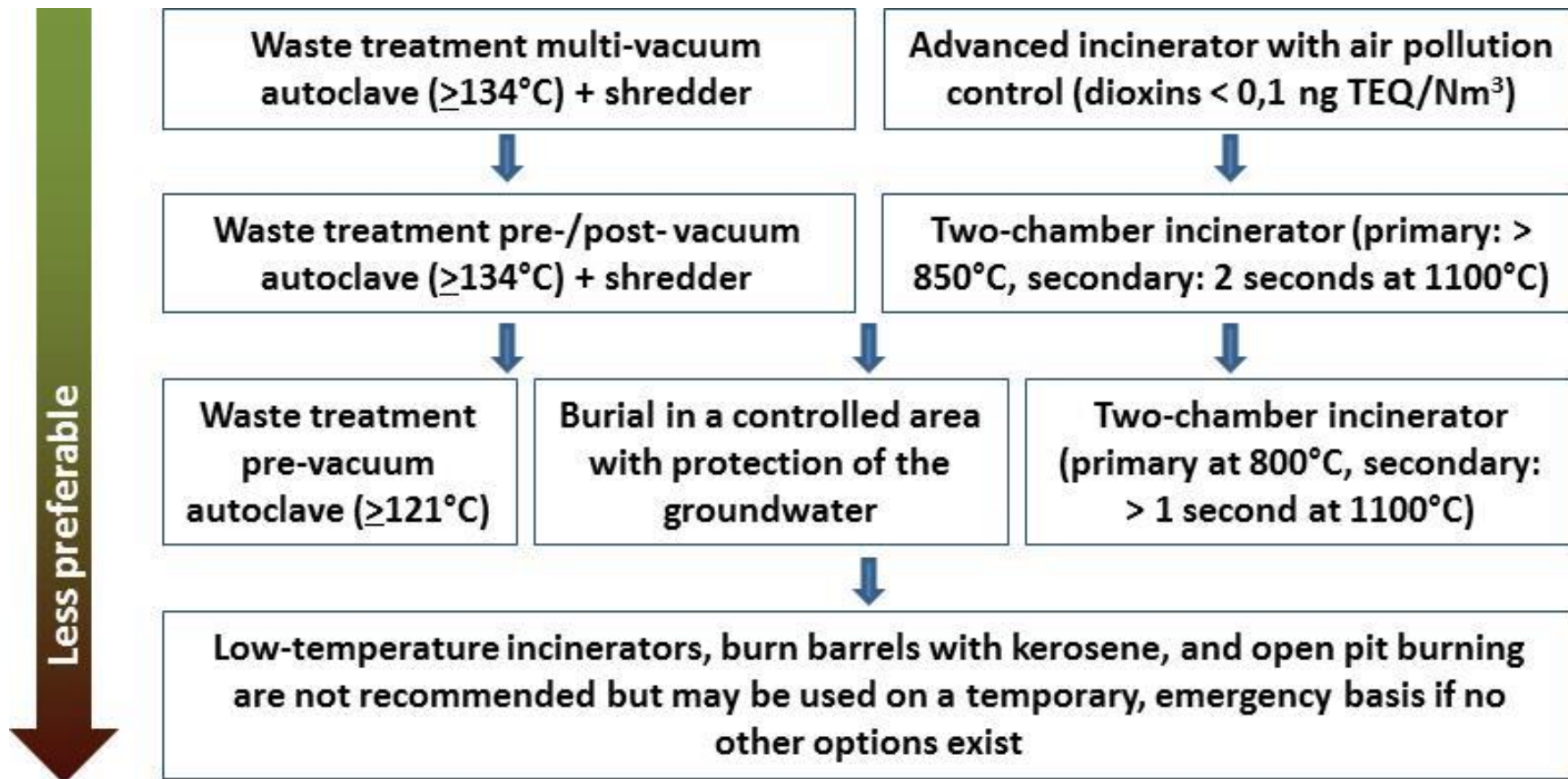
- ❖ Ebola-contaminated waste should be treated within 24 hours
- ❖ General requirements for storage of waste
 - Impermeable hard floor with good drainage
 - Disinfectant nearby for cleaning purposes
 - Inaccessible to animals, insects and birds
 - Protected from rain
 - Sign with biohazard symbol
 - Prevent access to unauthorized people



❖ Generic design of a storage and treatment area



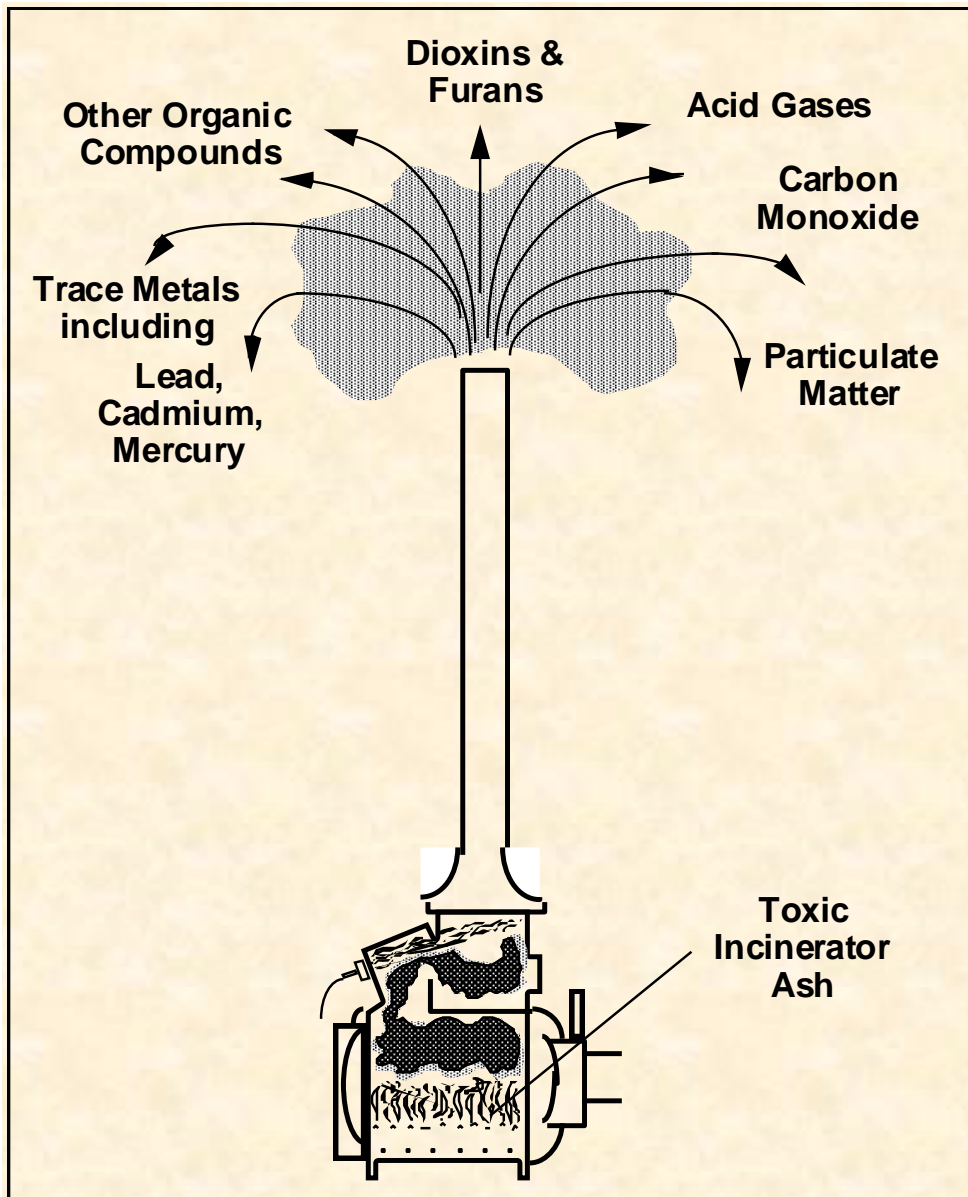
❖ Hierarchy of Waste Treatment Methods



❖ Incineration

- Traditional method for medical waste treatment
- Phased out in many industrialized countries
- Replaced by medical waste treatment autoclaves, microwaves, advanced steam systems, and other state-of-the-art technologies

Air Emissions From a Medical Waste Incinerator



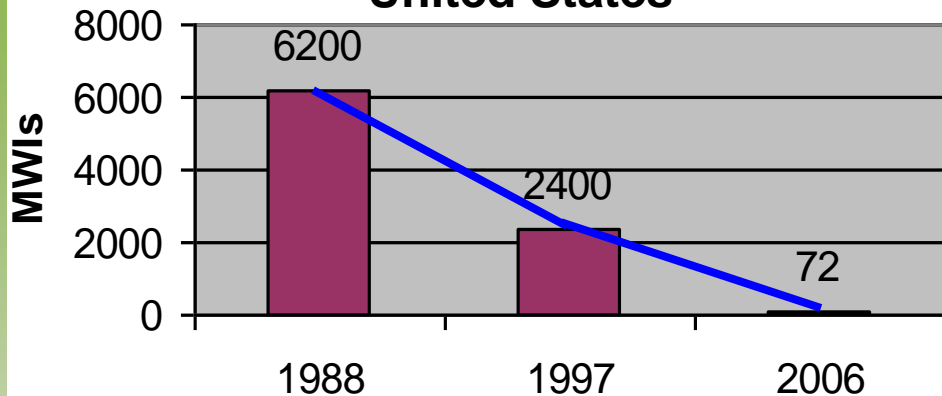
Findings of the WHO Risk Assessment Study

Assessment of Small-Scale Incinerators for Health Care Waste,” January 2004

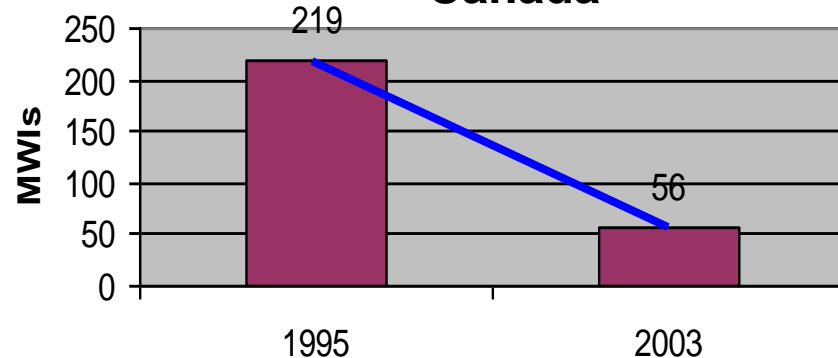
◦	Compared to WHO ADI	Compared to EPA Cancer Risk
Worst Case: High Use	unacceptable	unacceptable
Worst Case: Medium	unacceptable	unacceptable
Worst Case: Low Use	unacceptable	unacceptable
Expected: High Use	unacceptable	unacceptable
Expected: Medium Use	unacceptable	unacceptable
Expected: Low Use	Acceptable	unacceptable
Best Practice: High Use	Acceptable	unacceptable
Best Practice: Medium	Acceptable	Acceptable
Best Practice: Low Use	Acceptable	Acceptable

Some Trends in Medical Waste Incineration (MWI)

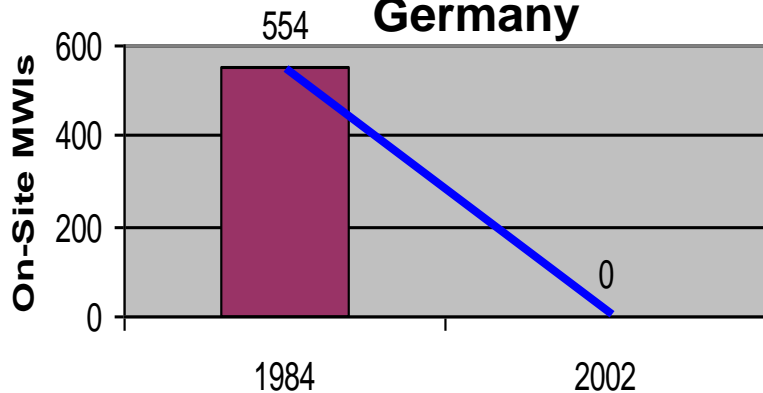
United States



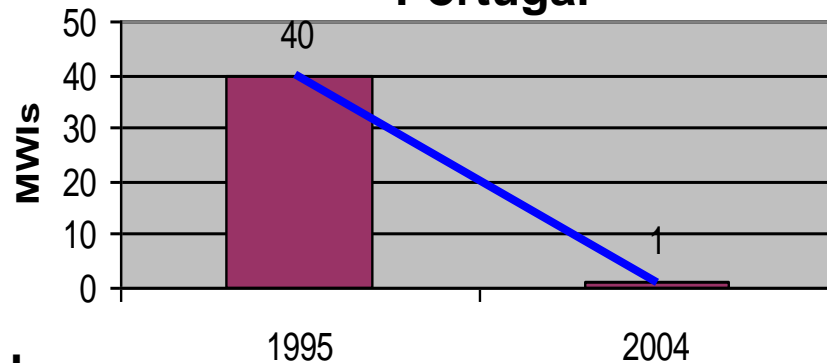
Canada



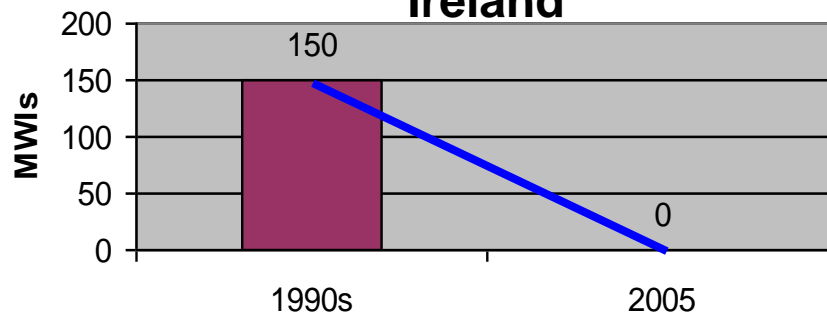
Germany



Portugal



Ireland



**GUIDELINES ON BEST AVAILABLE TECHNIQUES AND
PROVISIONAL GUIDANCE ON BEST ENVIRONMENTAL PRACTICES
RELEVANT TO ARTICLE 5 AND ANNEX C OF
THE STOCKHOLM CONVENTION ON
PERSISTENT ORGANIC POLLUTANTS**

BAT/BEP Expert Group
Stockholm Convention on Persistent Organic Pollutants

GENEVA, SWITZERLAND DECEMBER 2006

There are available for free in the Internet

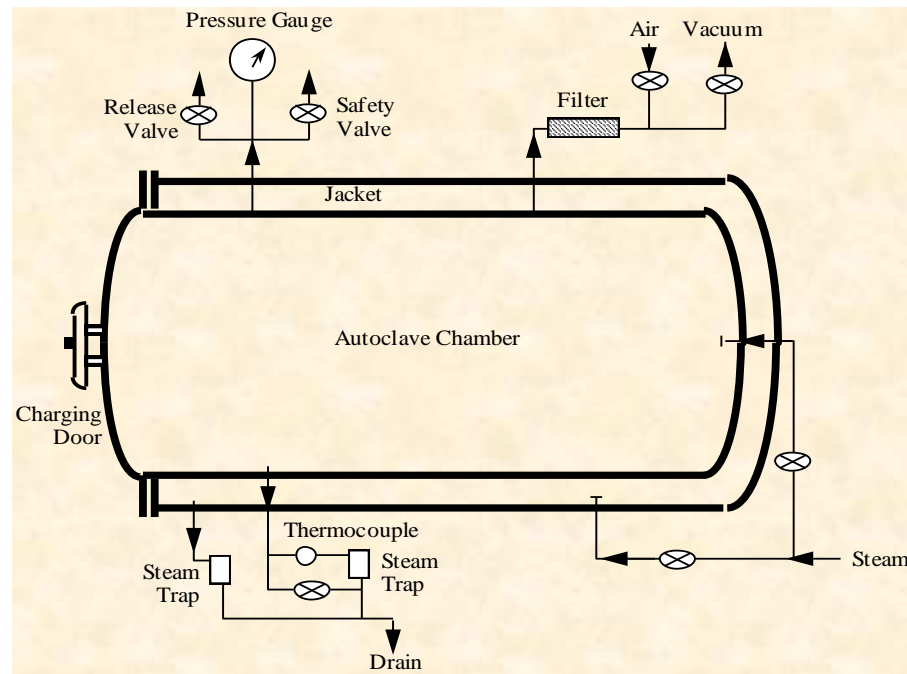


POLICY PAPER

Long-term

- Effective, scaled-up promotion of non-incineration technologies for the final disposal of health-care waste to prevent the disease burden from: (a) unsafe health-care waste management; and (b) exposure to dioxins and furans;
- support to countries in developing a national guidance manual for sound management of health-care waste;
- support to countries in the development and implementation of a national plan, policies and legislation on health-care waste;
- promotion of the principles of environmentally sound management of health-care waste as set out in the Basel Convention; and
- support to allocate human and financial resources to safely manage health-care waste in countries

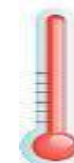
❖ Examples of waste treatment autoclave and shredder



❖ Inactivation of Ebola

○ Heat:

- Ebola is relatively fragile
- Ebola is reduced by 99.999% at 60°C in 22 minutes
 - ❖ **Heating to 60°C for 1 hour** gives an extra margin of safety
- Boiling would inactivate Ebola
- **Pressurized steam (autoclaving) would destroy Ebola rapidly**



New affordable non-incineration technology is now available for Africa

- Multiple vacuum autoclave with sterilization at 134 deg C
- Manufactured by Medi-Clave Pty Ltd (Pretoria, RSA)
- Developed in collaboration with the GEF/UNDP Project for use in Africa
- 175 liters per cycle, 1 to 1.5 hours per cycle
- Dimensions: 1.1m x 1.5m x 2m high
- Special trolley with barrel to collect waste; the whole barrel slides into the autoclave to be sterilized
- After treatment, the barrel can rotate to dump out treated waste
- Exceed international STAATT standard by 10 times



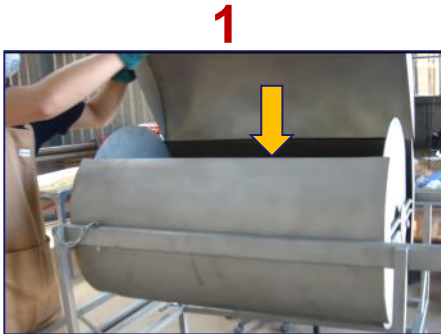
❖ Testing Autoclaving

- Microbial inactivation efficacy: Demonstrate at least 4 Log₁₀ reduction of *Geobacillus stearothermophilus* spores buried in at least three locations inside the waste, or corresponding results using Class 5 integrators

Microorganism	Examples
Highly resistant bacterial spores	<i>Geobacillus stearothermophilus</i>
Mycobacteria	<i>M. tuberculosis</i>
Non-lipid or small viruses	Polio virus, Hepatitis A virus
Fungi	<i>Aspergillus</i>
Vegetative bacteria	<i>Staphylococcus</i> , <i>Pseudomonas</i>
Lipid or medium-size viruses	HIV, HBV, Ebola, Lassa, Marburg



www.medi-clave.co.za



Place waste inside stainless steel barrel and close the lid



When barrel is full, take to autoclave



Slide barrel into autoclave



Close sliding door



Barrel and trolley are ready to pick up more waste



Unlock & rotate barrel to dump treated waste at the bottom



When finished, open door and remove sterilized barrel



Start heating, multi-vacuum and sterilization cycles

8

7

6

5

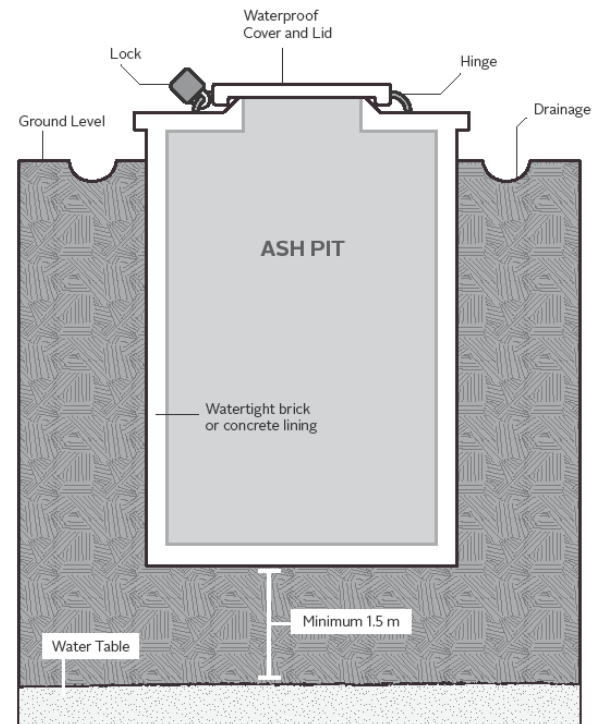
1

2

3

4

- ❖ Dispose of treated waste in a sanitary landfill or bury in land within the Ebola Treatment Unit
- ❖ Minimum depth between the floor of the burial site to the water table: 1.5 meters
- ❖ Keep the pit closed during filling
- ❖ After dumping each load, cover with 10 cm of soil



Refer to the text for more information about sizing.

❖ Inactivation of Ebola

○ Chemical disinfection:

- Ebola (lipid enveloped virus) is easier to destroy than non-enveloped viruses
- Use any disinfectant effective against non-enveloped virus
 - 60-90% ethanol (ethyl alcohol)
 - 2% quaternary ammonium compounds
 - 0.5% chlorine
- Dilute blood in 1:100 of 3% acetic acid (pH=2.5) for 15 minutes



❖ Formula for preparing 0.5% chlorine from bleach

$$\left[\frac{\% \text{ chlorine in liquid bleach}}{\% \text{ chlorine desired}} \right] - 1 = \text{Total parts of water for each part bleach}$$

Example: To make a 0.5% chlorine solution from 3.5%[†] bleach:

$$\left[\frac{3.5\%}{0.5\%} \right] - 1 = 7 - 1 = 6 \text{ parts water for each part bleach}$$

❖ Formula for preparing 0.5% chlorine from powder

$$\left[\frac{\% \text{ chlorine desired}}{\% \text{ chlorine in bleach powder}} \right] \times 1\,000 = \text{Grams of bleach powder for each litre of water}$$

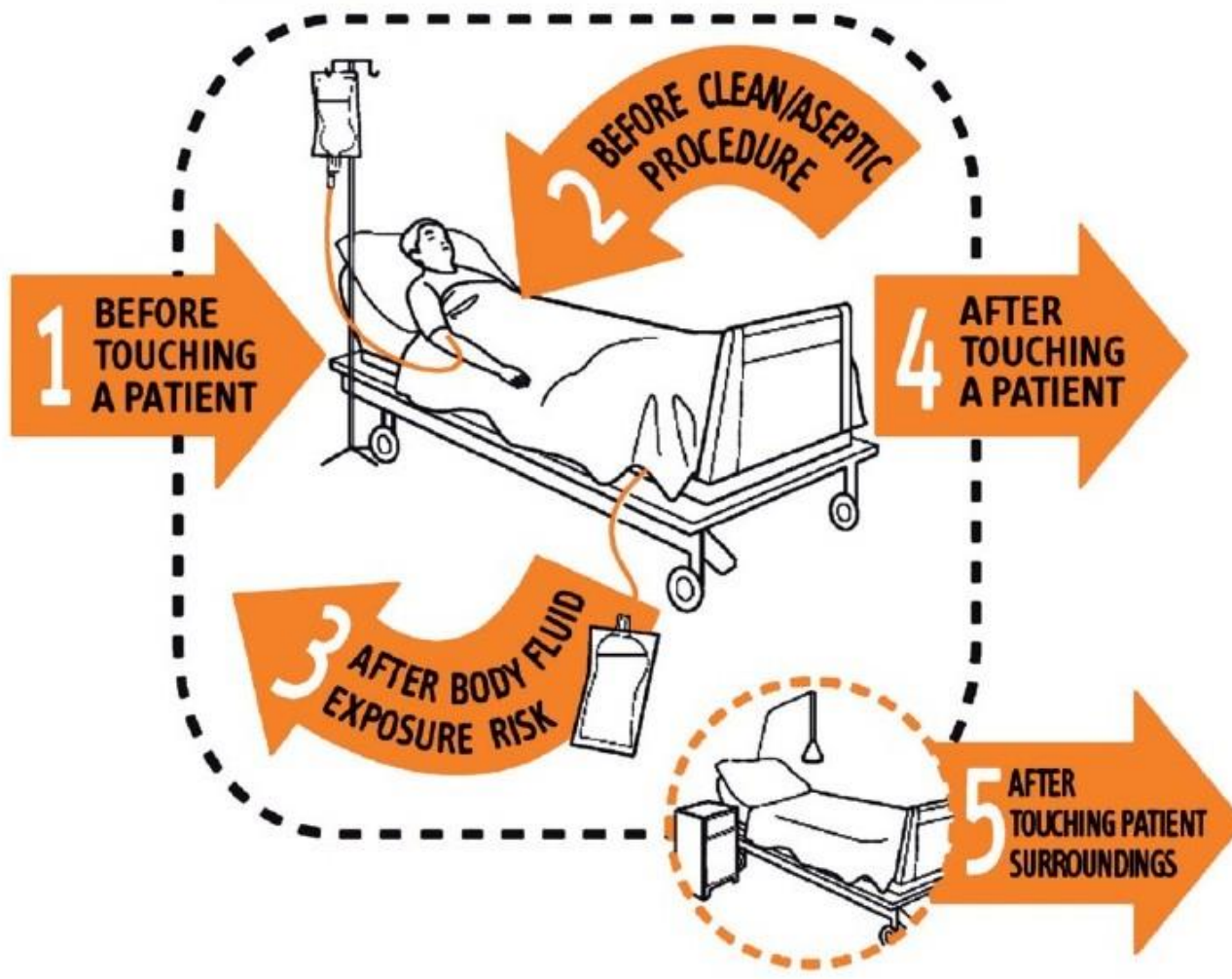
Example: To make a 0.5% chlorine solution from calcium hypochlorite (bleach) powder containing 35% active chlorine:

$$\left[\frac{0.5\%}{35\%} \right] \times 1\,000 = 0.0143 \times 1\,000 = 14.3$$

❖ Issue to consider for chlorine disinfection

- Chlorine solutions are not effective with high organic load (e.g., lot of body fluid) – **therefore it is important to clean with detergent (soap and water) before disinfection**
- Chlorine solution degrades with time, exposure to sunlight, and elevated temperatures
- Recommend wiping instead of spraying where possible to minimize occupational exposures
- Be sure to use the correct concentrations:
 - 0.05% chlorine for hand hygiene as an interim measure **if alcohol rub is not available**; also used for linen
 - 0.5% chlorine for surfaces and equipment

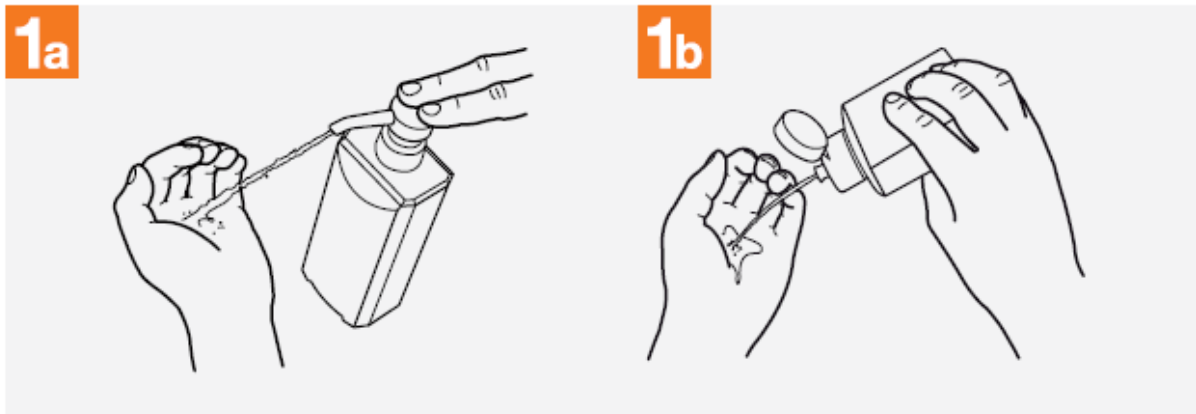
My 5 moments for HAND HYGIENE



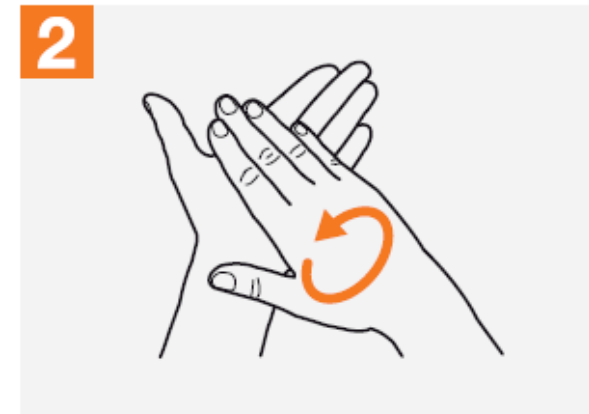
- **Alcohol-based rub is the preferred method**
- **Health facilities should make alcohol-based rubs available as much as possible**

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

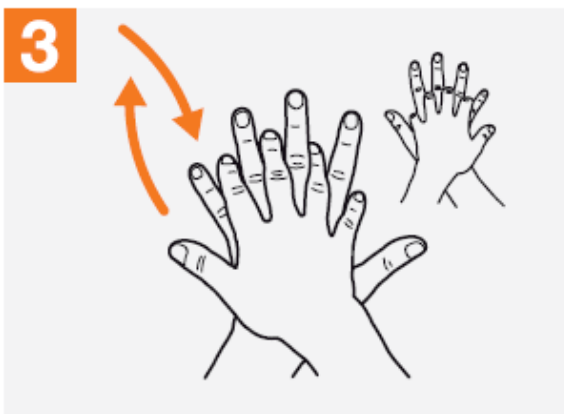
 **Duration of the entire procedure: 20-30 seconds**



1a Apply a palmful of the product in a cupped hand, covering all surfaces;



2 Rub hands palm to palm;



3 Right palm over left dorsum with interlaced fingers and vice versa;



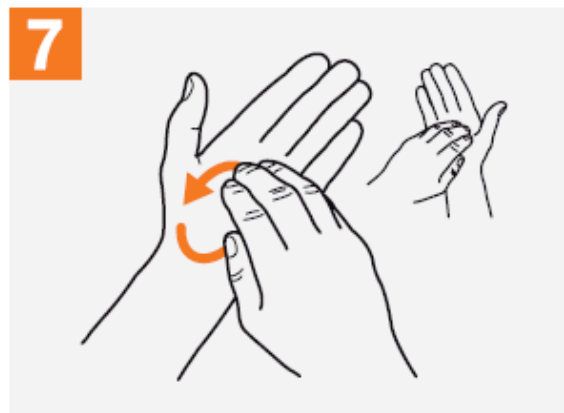
4 Palm to palm with fingers interlaced;



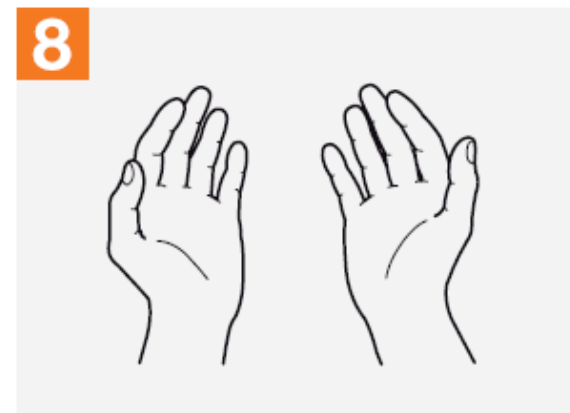
5 Backs of fingers to opposing palms with fingers interlocked;



6 Rotational rubbing of left thumb clasped in right palm and vice versa;



7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

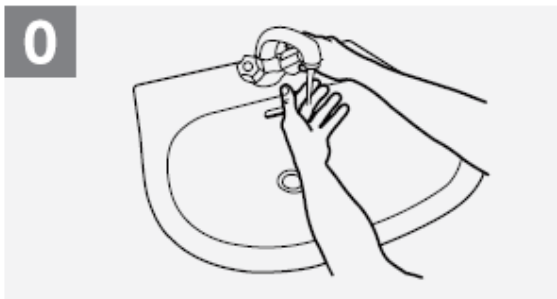


8 Once dry, your hands are safe.

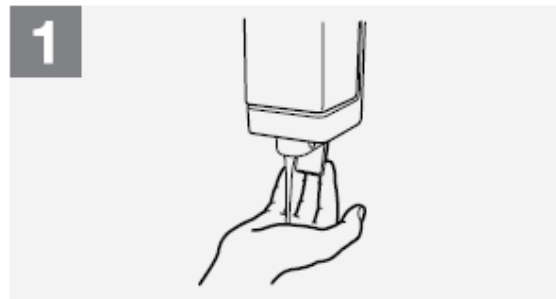
Recommendation: Use alcohol-based hand rub whenever possible

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

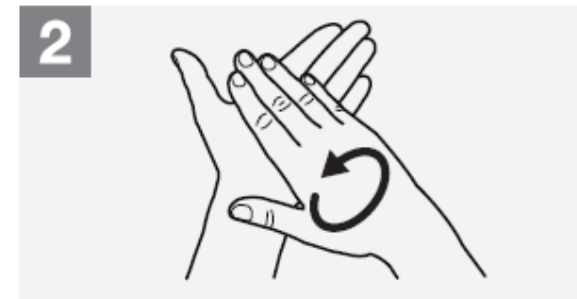
 Duration of the entire procedure: 40-60 seconds



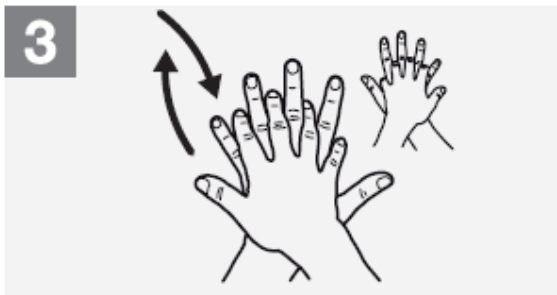
Wet hands with water;



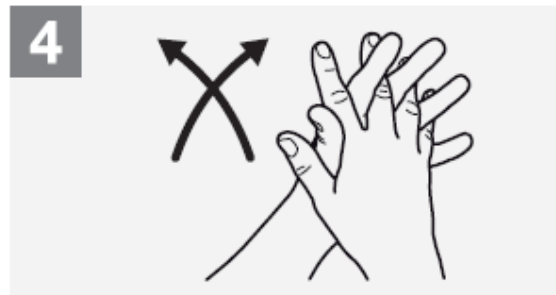
Apply enough soap to cover all hand surfaces;



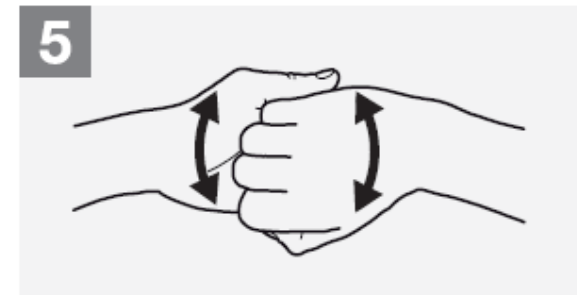
Rub hands palm to palm;



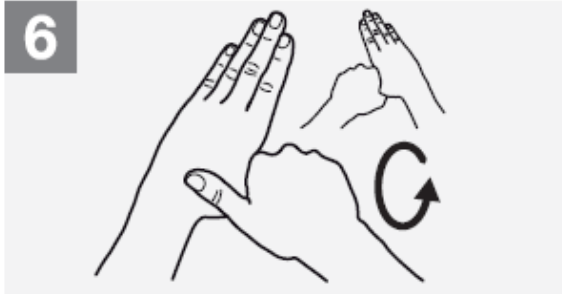
Right palm over left dorsum with interlaced fingers and vice versa;



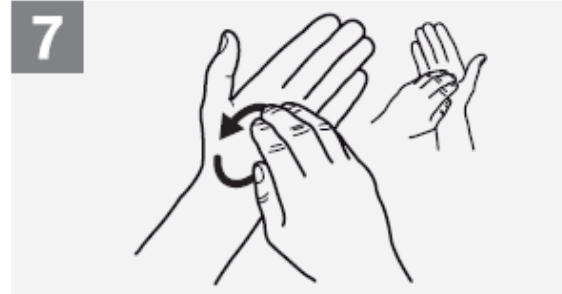
Palm to palm with fingers interlaced;



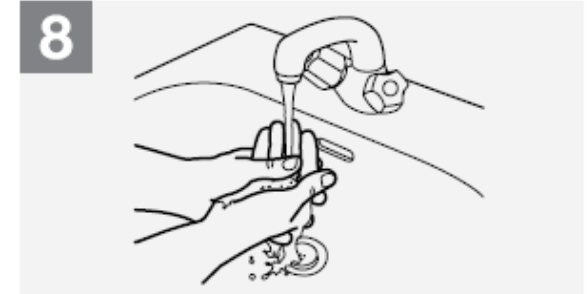
Backs of fingers to opposing palms with fingers interlocked;



6 Rotational rubbing of left thumb clasped in right palm and vice versa;



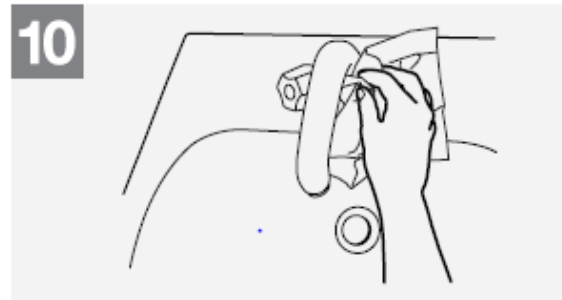
7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



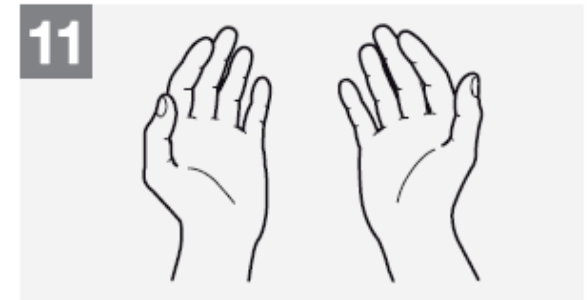
8 Rinse hands with water;



9 Dry hands thoroughly with a single use towel;



10 Use towel to turn off faucet;



11 Your hands are now safe.

- ❖ **Alcohol-based hand rub** is more effective and the preferred method
- ❖ When alcohol-based hand rub is not available during this interim period, it is acceptable to use **0.05% chlorine** but the duration of the procedure should be **40 to 60 seconds**.

❖ When should the waste worker conduct hand hygiene?

1. Before donning of PPE
2. After any exposure to body fluids of the patients
3. After the end of a waste collection route and storage
4. After the placement of waste bags in the treatment system
5. During and after removal of PPE

- ❖ Recommendation for waste workers inside high risk zone
 - Full PPE with no skin exposure
 - Shoe cover or boot, inner gloves, coverall or gown (Tyvek, Tychem, etc.), water resistant apron, water resistant face mask and goggles or face shield, hood, outer heavy duty gloves
- ❖ Recommendation for waste workers outside the high risk zone, in low risk zones or regular healthcare facilities
 - Inner gloves + outer heavy duty gloves
 - Water resistant face mask and goggles (preferable to face shield)
 - Gown or coverall
 - Water resistant apron
 - Shoe cover or boot

- ❖ All PPE after use should be considered as infectious
- ❖ Disposable PPE: Dispose in the infectious waste bags
- ❖ Reusable PPE: Wash and disinfect
 - Soak in decontamination solution for the specified time
 - Wash with soap and water
 - Disinfect
 - Allow to dry

IMPORTANT:

- ❖ Procedures for the removal of PPE must be followed carefully
- ❖ Removal of PPE must include a trained observer to ensure proper procedures
- ❖ Removal of PPE must be done in designated area

❖ Key Practices

- Use of PPE + no skin exposure for waste workers who enter high risk zones
- Repeated training
- Pairing of waste workers
- Use of puncture-resistant containers for sharps
- All waste in high risk zones treated as potentially infectious waste
- Proper segregation, collection, transport, storage, treatment and disposal

Technique for donning and removing non-sterile examination gloves

When the hand hygiene indication occurs before a contact requiring glove use, perform hand hygiene by rubbing with an alcohol-based handrub or by washing with soap and water.

I. HOW TO DON GLOVES:



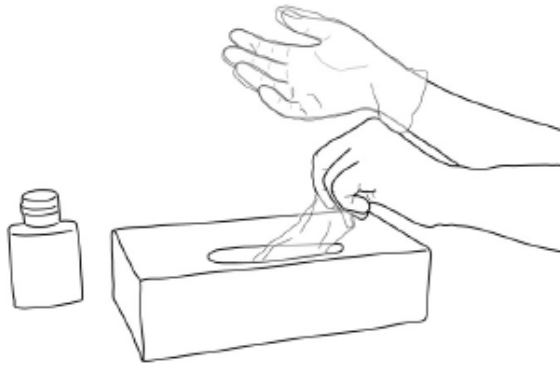
1. Take out a glove from its original box



2. Touch only a restricted surface of the glove corresponding to the wrist (at the top edge of the cuff)



3. Don the first glove



4. Take the second glove with the bare hand and touch only a restricted surface of glove corresponding to the wrist

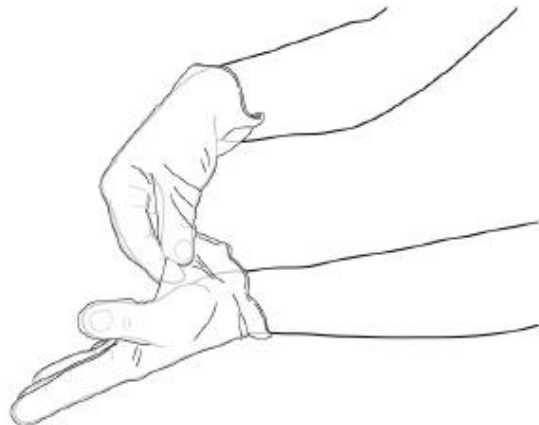


5. To avoid touching the skin of the forearm with the gloved hand, turn the external surface of the glove to be donned on the folded fingers of the gloved hand, thus permitting to glove the second hand

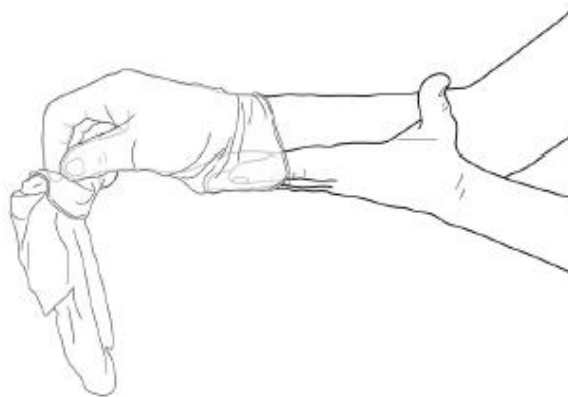


6. Once gloved, hands should not touch anything else that is not defined by indications and conditions for glove use

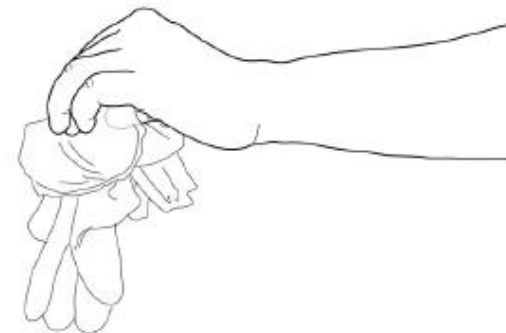
II. HOW TO REMOVE GLOVES:



1. Pinch one glove at the wrist level to remove it, without touching the skin of the forearm, and peel away from the hand, thus allowing the glove to turn inside out



2. Hold the removed glove in the gloved hand and slide the fingers of the ungloved hand inside between the glove and the wrist. Remove the second glove by rolling it down the hand and fold into the first glove



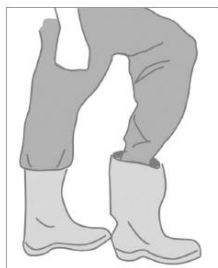
3. Discard the removed gloves

4. Then, perform hand hygiene by rubbing with an alcohol-based handrub or by washing with soap and water

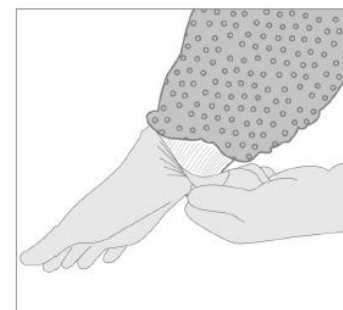
PROCEDURES FOR PUTTING ON AND REMOVING FULL SET OF PPE INCLUDING COVERALL

PROCEDURE FOR PUTTING ON PPE

1. Remove all personal items (e.g., jewelry, watches, cell phones, pens)
2. Put on scrub suit and rubber boots¹ in the changing room
3. Move to the clean area at the entrance of the isolation unit
4. By visual inspection, ensure that all sizes of the PPE set are correct and the quality is good
5. Always remove PPE under the guidance and supervision of a trained observer (colleague)
6. Perform hand hygiene
7. Put on gloves (examination, nitrile gloves)



OR,
IF BOOTS
UNAVAILABLE



8. Put on coverall^{2,3}
9. Put on a fluid-resistant medical/surgical mask with a structured design
10. Put on goggles or face shield



or



or



11. Put on head and neck covering:
Bonnet (preferable with face shield) or hood⁴
12. Put on a disposable waterproof apron (if not available, use heavy duty, reusable waterproof apron)
13. Put on second pair of (preferably long cuff) gloves over the cuff



If outer gloves are damaged:

- I. Conduct hand hygiene with the damaged glove
- II. Remove damaged glove safely
- III. Conduct hand hygiene with the inner gloves
- IV. Put on new outer glove



PROCEDURE FOR REMOVING PPE

1. Always perform the procedure of removing PPE under the guidance and supervision of a trained observer (colleague).
2. If apron is visibly soiled with blood or bodily fluids, perform hand hygiene on gloved hands and then clean apron with a disinfectant (e.g., chlorine solution or alcohol) using a wipe.
3. Perform hand hygiene on gloved hands

**Work
with
Trained
Observer**



Hand hygiene
on gloves



Disinfect visibly
soiled aprons



Hand hygiene
on gloves



4. Remove apron taking care to avoid contaminating your hands by peeling it off from inside to outside and dispose of safely or decontaminate (if heavy duty, reusable waterproof apron)
5. Perform hand hygiene on gloved hands
6. Remove outer pair of gloves and dispose of safely
7. Perform hand hygiene on gloved hands

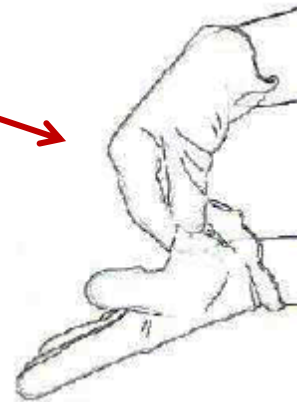
Remove apron



Hand hygiene on gloves



Remove outer gloves

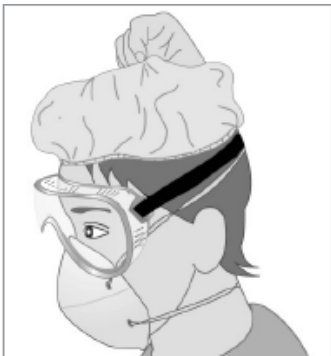


Hand hygiene on gloves



8. Remove head and neck covering taking care to avoid contaminating your face, and dispose of it safely
9. Remove coverall.
Tilt head back to reach zipper, unzip completely and then remove coverall from top to bottom. After shoulder and arms removed, roll down remaining suit all the way to boot heels from inside. Use one boot to pull off coverall from other boot and vice versa. Step away from coverall so it can be discarded safely.
10. Perform hand hygiene on gloved hands

Remove head-neck cover



Remove coverall from top to bottom



Hand hygiene on gloves



11. Remove eye protection from behind the head and dispose of safely or decontaminate if reusable
12. Perform hand hygiene on gloved hands
13. Remove the mask from behind the head by first untying the bottom string above the head and leaving it hanging in front; and then the top string next from behind head and dispose of safely.
14. Perform hand hygiene on gloved hands

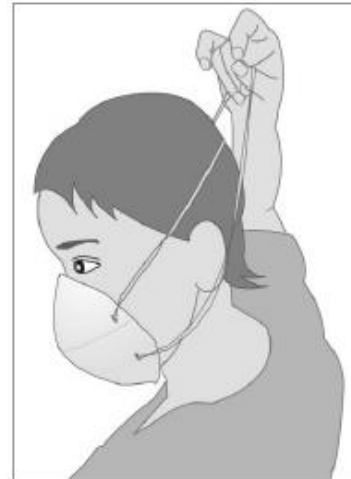
Remove eye protection



Hand hygiene on gloves



Remove face mask

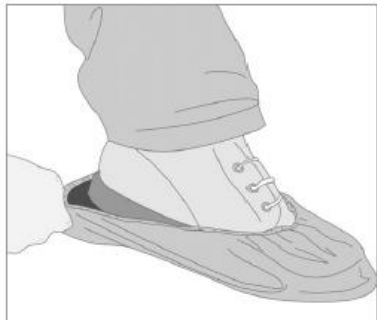


Hand hygiene on gloves



15. Remove rubber boots (or overshoes if wearing shoes) without touching them and decontaminate appropriately
16. Perform hand hygiene on gloved hands
17. Remove gloves carefully with appropriate technique and dispose of safely
18. Perform hand hygiene

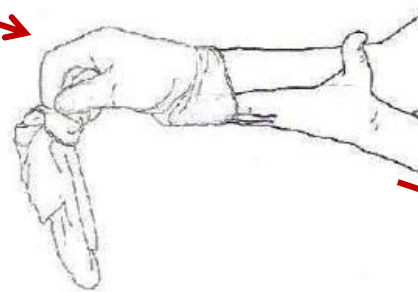
Remove shoe covers or boots



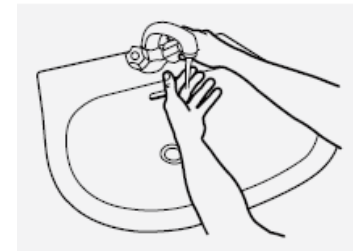
Hand hygiene on gloves



Remove inner gloves carefully



Hand hygiene



❖ Recommendation for National Level

- ❖ Creation of a **national level team** in the Ministry of Health to deal with healthcare waste management (this could be part of the national team for patient safety, infection control and prevention, etc.)
- ❖ Creation of a **multi-disciplinary, multi-sectoral committee** coordinated by MOH with participation of other ministries, NGOs, private sector, and other relevant stakeholders to provide recommendations on national policy, plan and roadmap

❖ Recommendation for the Regional Level :

- ❖ Replicate the national level organization

❖ Recommendation for the Health Facility Level:
 Each facility should have:

- A **local committee** dealing with patient safety and infection control, including healthcare waste management
 - The committee should be headed by the administrator with day-to-day technical activities managed by a coordinator
 - Role of the committee: to translate the national and local policies and guidelines on patient safety and infection control (including healthcare waste) into sound practices in the facility

- ❖ The **subcommittee, working group or individual** (depending on the size of the facility) responsible for healthcare waste management should have the following functions:
 - Development and implementation of local specific procedures
 - Practical training of healthcare staff, auxiliary staff and waste workers
 - Monitoring, evaluation and corrective actions
 - Monthly meeting and reporting of the subcommittee or working group; quarterly meeting and reporting to the committee
 - Monitoring the availability of equipment and consumable products for healthcare waste management.

- ❖ A **designated physician** in charge of emergency response to blood exposure accidents including needle-stick injuries of health workers in the facility



- ❖ Each healthcare facility should have a **roadmap**
 - ❖ Start with organizational measures: promulgate administrative orders for the:
 - ❖ Committee
 - ❖ Composition, roles and responsibilities, and operations
 - ❖ Coordinator
 - ❖ roles and responsibilities
 - ❖ Subcommittee
 - ❖ Composition, roles and responsibilities, and operations
 - ❖ Physician in charge of blood exposures
 - ❖ Role and responsibility

- ❖ Each healthcare facility should have a **roadmap**
 - ❖ Conduct a **situational analysis** (e.g. WHO Individual Rapid Assessment Tool (I-RAT) or similar tools)

**MEDICAL WASTE MANAGEMENT
RAPID ASSESSMENT TOOL**

User's guide : Each criterion is one point, except for segregation, which is from 0 to 5 points

FACILITY NAME =			
Awareness, training and training of staff			
	N°	Questions	RESPONSE
Staff	1	Is there a staff person responsible for the supervision of HCWM in your facility?	
Training	2	Did this person receive training in HCWM?	
	3	Did the training include observation?	
Waste handlers	4	Are the waste handlers trained and made aware of the risks?	
Vaccination	5	Has your staff been vaccinated for hepatitis B and tetanus?	
TOTAL			
Recommendations :			
Segregation and Handling of Medical Waste			
	N°	Questions	RESPONSE
Segregation of waste	6	Are the wastes segregated according to classification?	
PPE	7	Are the waste handlers provided with adequate personal protection equipment (PPE)?	
TOTAL			
Recommendations :			
Containment of Medical Waste			
	N°	Questions	RESPONSE
Containers	8	Do you use containers for medical waste?	
Sharps containers	9	Do you use proper sharps waste containers?	
Availability	10	Are sharps containers always available?	
TOTAL			
Recommendations :			
Intermediate Storage of Medical Waste			
	N°	Questions	RESPONSE
Storage area	11	Is the storage area secure and properly organized? (accessible only to authorized personnel)	
TOTAL			
Recommendations :			
Collection and On-Site Transport of Medical Waste			
	N°	Questions	RESPONSE
Collection	12	Are the medical waste collection practices safe?	
Internal transport	13	Are the means for internal transport safe?	
TOTAL			
Recommendations :			

External Transport of Medical Waste			RESPONSE	POINTS
	N°	Questions		
Transport system and equipment	14	Is the system of transport safe ?		
	15	Are there measures to ensure safety ? (transport documentation)		
TOTAL				
Recommendations :				
TREATMENT OF MEDICAL WASTE			RESPONSE	POINTS
	N°	Questions		
Treatment	16	Is the organization for off-site treatment safe ?		
	17	Are the sharps waste treated ?		
	18	Are non-sharps infectious waste treated ?		
	19	Are pharmaceutical waste treated ?		
	20	Do you take into account mercury waste ?		
	21	During the treatment, are there precautions to minimize the releases of toxins and fumes ?		
TOTAL				
Recommendations :				
Final Disposal of Waste			RESPONSE	POINTS
	N°	Questions		
Disposal site	22	Do you use a particular site for disposal ?		
	23	Do you use a particular site for storage ?		
	24	Are all needles and syringes completely treated and destroyed ?		
	25	Are the other infectious wastes completely treated ?		
TOTAL				
Recommendations :				
Regulation of Waste Management (procedures, management plan, policies...)			RESPONSE	POINTS
	N°	Questions		
National regulation	26	Do you have copies of the national regulations in your facility ?		
Local regulation	27	Do you have copies of the local regulations ?		
	28	Are standard procedures written and available in the facility ?		
TOTAL				
Recommendations :				
Policies and Budget for Medical Waste Management			RESPONSE	POINTS
	N°	Questions		
Budget allocation	29	Are there funds available for medical waste management ? (funds for hospital hygiene)		
	30	Are the funds for medical waste management sufficient ?		
	31	Are the funds available every year ?		
Continuous improvement	32	Date of the last medical waste audit in the facility (if the date is more than 2 years, points = 0)		
TOTAL				
TOTAL				

- ❖ Each healthcare facility should have a **roadmap**
 - ❖ Start with a **situational analysis** (e.g. WHO Individual Rapid Assessment Tool (I-RAT) or similar tools)
 - ❖ Develop a **plan for the short, medium and long-term to reduce the gaps**
 - ❖ Develop partnerships
 - ❖ Conduct training, monitoring, supervision
 - ❖ Procurement and maintenance of material resources
 - ❖ Implement communication (internal and external)
 - ❖ Involve the community
 - ❖ Apply quality and continuous improvement approach
 - ❖ **Quarterly monitoring and evaluation** of the plan by the committee

- ❖ Each facility should have a detailed infectious waste management plan
 - Layout and flow of the waste
 - Written procedures on waste management, from classification, segregation until treatment and disposal
 - Collection frequency, collection times
 - Communication plan (posters, handouts)
 - Training plan
 - Procurement plan and budget estimate for purchasing equipment and consumables

Thank you for your attention



Questions & Discussion