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IPC CONSIDERATIONS IN EMS CONTEXT

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- Patient status and needs earlier communicated as well as the ambulance team position.
- Any documentation to be handed over remains in a clear bag in the Driver cabin and is usually handed over earlier as ambulance approaches its designated parking/offloading area.



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How to doff PPE

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 on 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, tilt head back to reach zipper, unzip completely without touching any skin or scrubs, and start removing coverall from top to bottom. After freeing the shoulder, remove the outer gloves while pulling the arms out of the sleeves. With inner gloves roll the coverall from the waist down and from the inside of the coverall, down to the top of the boots. Use one boot to pull off coverall from the other boot and vice versa, then step away from the coverall






7 Perform hand hygiene on gloved hands



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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 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	
11	Perform hand hygiene on gloved hands	
12	Remove rubber boots without touching them (or overshoes if applicable). If the same boots are to be used outside the high-risk area, keep them on, but clean and decontaminate them properly before leaving the area where you are undressing.	
13	Perform hand hygiene on gloved hands	
14	Remove the inner pair of gloves	
15	Perform hand hygiene	

Waste management principles

- All waste generated in an ambulance must be segregated in a red biohazard bag
- Treat all waste from the patient as infectious
- Consider the following waste categories
 - Low risk—generated in the green zone
 - High risk—generated in the red zone
- Close garbage bag and wipe with 0.5% chlorine solution. Place in designated waiting area to await transfer for destruction



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Ambulance decontamination

- Decontamination of ambulances used to transport patients with confirmed or suspected EVD is critical to avoid the infection of health workers, other patients and caregivers.
- Decontamination must be performed after each patient transport.
- The ambulance must not be used again before it is decontaminated – this may lead to infection!
- The driver's cabin must be physically separated and is treated as the green zone – patients or staff in PPE must not enter this area.
- Prior to decontamination, vehicles transporting a patient are considered a high-risk zone. Never enter without full PPE.

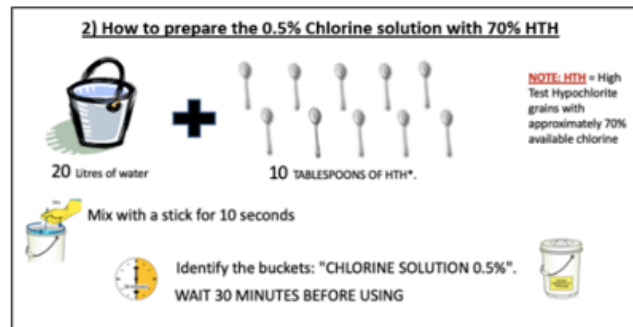
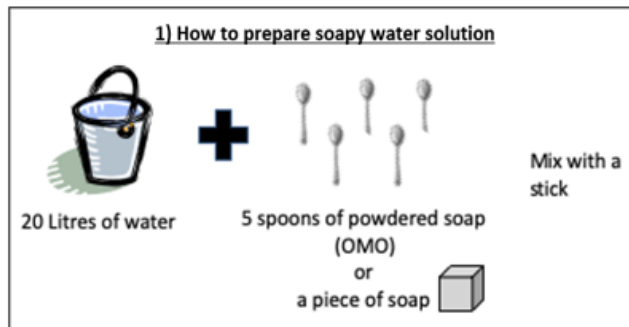
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Step 1: Prepare the team	<ul style="list-style-type: none"> Ambulance crew OR Cleaning agent OR hygienist (ideally at least two individuals) and observer/supporter 	
Step 2: Prepare equipment	<p>PPE for each hygienist:</p> <ul style="list-style-type: none"> latex or nitrile gloves thick rubber gloves/heavy duty gloves protective goggles or faceshield medical masks rubber boots gown or coveralls aprons hair nets/head gear 	<p>Cleaning and disinfection products:</p> <ul style="list-style-type: none"> Signaling device for contaminated area (e.g.: easel floor signaling) 4 plastic buckets: Bucket 1 (water + soap), bucket 2 (water), bucket 3 (chlorine 0.5%), bucket 4 (water) Cleaning cloths and absorbent paper (e.g. paper towel) Waste bags 50l (at least 4) Plastic bag 100l (for linen, if any) (at least 2) Plastic bag 100l for reusable PPE 1 bin to collect waste 1 bin to collect linen 1 bin to collect reusable PPE Hand hygiene resources (alcohol hand rub) Mop with detachable and replaceable pads OR floor squeegee + cleaning cloth
Step 3: Prepare the ambulance	<ul style="list-style-type: none"> Move the ambulance to ambulance washing area. Establish a secure perimeter for safety of the public and decontamination personnel. Install the signaling device to alert the disinfection procedure is ongoing. The driver's cabin should receive regular cleaning. There is no need to apply disinfectant. 	

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Step 4: Prepare chlorinated water and soapy water

- Lay out and organise all materials/equipment on plastic sheeting outside the ambulance and prepare the chlorinated water and soapy water solutions: Bucket 1 (water + soap), bucket 2 (water), bucket 3 (chlorine 0.5%), bucket 4 (water)



Step 6: Perform hand hygiene and put on PPE

- Perform hand hygiene. Put on PPE according to WHO procedure (gloves, goggles or face shield, face mask, coveralls or gowns, apron, rubber boots). Heavy rubber gloves should be worn over latex/nitrile gloves. Ask the observer to review if there are breaches in the PPE.

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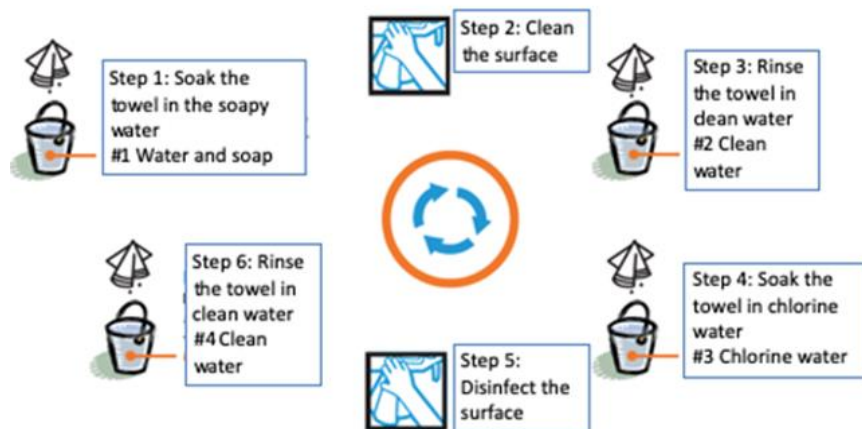
Step 7: Identify waste collection area	<ul style="list-style-type: none">• Identify the area for collection of waste and soiled linen outside the ambulance. One person should be outside the ambulance with the container open (bag or bin) to collect the waste and linen. This will be the clean outer container. A bin/bag to collect the contaminated PPE should be installed in this area
Step 8: Remove contaminated waste	<ul style="list-style-type: none">• Leave the rear doors of the ambulance open to allow proper ventilation• A person inside the ambulance carefully remove contaminated waste and put in the waste bag.• Carefully remove all the linen and put in the plastic bag.• Carefully transfer the bagged waste and linen to the outside bins.• Carefully inspect the inner part of the ambulance for organic material (blood or body fluids, e.g. vomiting)• Remove all the excess of organic material by using absorbent paper, handling with care to avoid splashes and making unidirectional movement to not disperse the organic material

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Step 9: Perform cleaning and disinfection (internal surfaces)

- Start the cleaning of the internal ambulance surfaces from the end to the front door and from the top to the bottom
 - Step 1: Clean with soap and water
 - Step 2: Disinfect with 0.5% chlorine
 - Step 3: After contact time (10 mins), remove chlorine residue with clean water
 - Step 4: let air dry

System of 4-Buckets Technique for cleaning



- Always proceed from the cleanest to the dirtiest area
- Always proceed from the highest to the lowest area
- ***Do not spray disinfectant:*** The spraying of disinfectants such as 0.5% chlorine is not recommended due to the toxic effects of chlorine on health.

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Step 9: Perform cleaning and disinfection (internal surfaces)

- Ensure that all horizontal surfaces and all vertical surfaces in the ambulance (windows, panel) are cleaned and disinfected, even if they don't have visible soil.
- Special attention should be done to matts to ensure that all surfaces are cleaned
- Take care with the oxygen cylinder to avoid accidents during the cleaning procedure. Do not use chlorine on the oxygen cylinder.
- Once a cleaning cloth has contact with the surface, this should **not be returned to the bucket** to avoid contamination of the soap, water and disinfectant. In the event of limited availability of cloths, soak the cloth in water (this is the reason for a 4 bucket system).
- Cleaning cloths should be discarded into the waste bag whenever it becomes dirty
- Content of the buckets should be discarded whenever they became dirty and replaced by a fresh one. During the decontamination process, ensure that only the person involved in the process will be in the ambulance (i.e. no patient or caregiver)

Electronic devices and monitors

Switch off before cleaning.
Wipe with a cloth moistened with at least 70% alcohol.
Keep dry and moisture free.

Patient cables and sensors

Wipe blood & body fluids with a soapy detergent then disinfect with 70% alcohol.



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Step 9: Perform cleaning and disinfection (floor)	<ul style="list-style-type: none">• Clean the ambulance floor, using the same unidirectional procedure, starting from the end of the ambulance to the front door using separate buckets or newly prepared solutions<ul style="list-style-type: none">○ Step 1: Clean with water + soap○ Step 2: Disinfect with 0.5% chlorine○ Step 3: After contact time (10 mins), remove chlorine residue with clean water○ Step 4: Let air dry
Step 10: Perform cleaning and disinfection (External)	<ul style="list-style-type: none">• Clean thoroughly the external ambulance surface using separate buckets or newly prepared solutions<ul style="list-style-type: none">○ Step 1: Clean with soap and water○ Step 2: Disinfect with 0.5% chlorine - The exterior of ambulance does not require a full disinfectant wipe down⁴, except for the door handles○ Step 3: After contact time (10 mins), remove chlorine residue with clean water.○ Step 4: Let air dry• Allow the ambulance to be open and ventilated for about 20 to 30 minutes to minimize the odor of disinfectant

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Step 11: Disposal of contaminated items	<ul style="list-style-type: none">• Discard the dirty cleaning cloth in the waste bag• Discard the removable pad of the mop in the waste bag• Disinfect the handling part of the mop OR floor squeegee and place outside the ambulance• Discard the remaining content of the buckets safely into a designated area
Step 12: Removal of PPE	<ul style="list-style-type: none">• Remove the PPE outside the ambulance, according to the standard procedure. An observer should supervise doffing to ensure the safety of the procedure. Discard the PPE that is disposable on the waste bin/bag. Remove boots and reusable aprons and place them in appropriate plastic bag/bin to send to PPE decontamination area. Perform hand hygiene.
Step 13: Report	<ul style="list-style-type: none">• Remove the signaling device and record the ambulance identification, <u>date</u> and time of procedure

All waste from the decontamination process including PPE is infectious waste and must be disposed off at a dedicated waste disposal site – ETU/Holding area where patient was dropped

Key actions to remember

- Basic principles of IPC save lives (regardless of an outbreak)
- Use space to reduce your risk of infection wherever possible
- Stay alert
- Consider each step before it is carried out
- The community has the potential for chaos; therefore, your personal protection comes first. If it is not safe to carry out your role you may need to withdraw
- No medical decision is too rapid NOT to consider your personal safety first
- Remember to consider safety to approach before the A, B, C, D, E approach, and expand to is it asking this prior to every action. Will it be safe, and for actions in the vehicle, how will I react if the vehicle bumps, can I remain safe.
- Decision making in VHF means that sometimes, you have to decide to do nothing for personal safety. This can be hard, but it is the correct thing to do.



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EMS Videos

- Safe Transfer of a Patient with a Highly Infectious Disease
 - <https://youtu.be/Vvq1HmHxpMg>
- Ambulance Decontamination
 - https://youtu.be/QeRK3s_n-gc
- Safe Transfer of a Woman (mother) in Labor
- <https://youtu.be/Z8Eeju2fsLg>

Thank you