



衛生防護中心
Centre for Health Protection

Scientific Committee on Infection Control

Recommendations on Use of Personal Protective Equipment (PPE) in the setting of EBOLA VIRUS DISEASE (EVD) in Hong Kong

Background

Ever since the onset of EVD outbreak in West Africa in March 2014, there are various advices on use of PPE from different health authorities across the globe. Majority if not all of these guidelines are focusing on the gears to be used while caring for confirmed/suspected cases in the acute healthcare settings in the context of Ebola outbreak (also known as Ebola caring center or ECC). (1)

2. Despite the risk of importation of EVD cases to Hong Kong still exists due to extensive international travel, the immediate health impact caused by EVD on local Hong Kong population is low and the current response level is Alert Response Level. Given the current local situation (zero case and no direct flight connection with the affected countries of West Africa) and the wide variety of works other than healthcare workers (for example, Police and Immigration Officer) that may be involved in handling suspected/confirmed case (if any) in Hong Kong, the existing international guidelines designed for ECC may not be appropriate to be applied in whole for the local situation.

3. The current set of recommendation is designed specifically to ensure that the facilities and technique are ready when there is a case of imported EVD in Hong Kong. Although there are escalated infection control measures for patients with epidemiologic link (Travel Occupation Contact Cluster: TOCC), the prevailing infection control practices should not be altered or overshoot in standby situations. The recommendation will be reviewed and updated with time as necessary.



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Rationales behind

4. The recommendations are developed under the following rationales:

- (i) Healthcare workers should implement standard precautions at all time. Escalation of infection control measures should be considered when suspicious signals are detected (e.g. patients with positive TOCC).
- (ii) EVD spreads through human-to-human transmission, with infection resulting from direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other body fluids of infected people, and indirect contact with environments contaminated with such fluids. (1,2)
- (iii) The infectivity of the EVD is positively linked with the severity of the patient illness, in particular during the terminal stage of the disease.
- (iv) More than 60% of EVD patients have vomiting and diarrhea, (3,4) and these patients may frequently undergo procedures which may generate aerosols, additional protection are required to protect the mucosal areas of the healthcare workers from contamination by droplets and fluid. (1)

Therefore, standard, droplet and contact precautions should be applied in handling of EVD patients.

Recommendations

5. It is important to reiterate that PPE alone is not sufficient to prevent the spread of infection. Use of PPE needs to be united with other infection control measures, including early recognition and isolation of suspected patients, observance of hand hygiene, sharps injury prevention, and environmental hygiene and waste management.

A. Healthcare Settings

6. Staff working in healthcare setting should wear surgical scrub or working clothes underneath the PPE. (1). Emergency shower is recommended after accidental unprotected exposure to blood and body fluid.

7. The PPE recommendation for healthcare workers in inpatient and outpatient settings are stated in Table 1 and 2 respectively.

Table 1: PPE recommendation in health care setting (in-patient) (5)

PPE \ Mode	Standby mode: A&E triage	Escalated mode: Suspected/confirmed case
Cap	Cap (optional)	Water-resistant head cover/hood
Face or eye protection	Face shield /goggles/visor	Face shield /goggles
Respiratory protection	Surgical mask	N95 respirator
Gown	Water-resistant gown	Water-resistant gown
Gloves	As indicated [#]	Double gloves*
Shoe cover/boots	Shoe covers (optional)	Full length shoe covers/boots
Footnote: [#] For example, when presence of skin lesions or contact with blood or body fluids *Prefer nitrile gloves <i>Real time infection control supervision was recommended when handling the suspected cases of EVD</i>		

Table 2: PPE recommendation in health care setting (out-patient)

PPE \ Settings	OPD registration counter Private clinic Ambulatory care setting	When patient reports positive TOCC
Cap	/	/
Face or eye protection	/	Face shield /goggles
Respiratory protection	Surgical mask	Surgical mask**
Gown	/	Water-resistant gown
Gloves	/	Gloves ^D
Boots	/	As indicated ^{##}
Footnote: **Use N95 respirator if suspected case presents with cough, diarrhea, vomiting or bleeding; or for aerosol-generating procedures. ^D Wear double gloves when handle cases with haemorrhagic symptoms. ^{##} Use boots only if environment is grossly contaminated with blood or body fluid		

8. When encountering a patient with positive TOCC in the outpatient department, private clinics and ambulatory care settings, the healthcare staff should (6):

- (i) Minimize any physical contact with the patient
- (ii) Advice patient to wait in a single room
- (iii) Notify CHP
- (iv) Assign a staff member to change into PPE according to the table 2 before entering the single room.
- (v) Provide a surgical mask or vomit bag to the patient while pending transfer

B. Community Settings

9. Coverall suit with hood is in general not recommended for infection control in healthcare settings due to high risk of contamination during the doffing procedure (5). Its use should be limited to special duties involving or potentially involving strenuous activity, in field situations with heavy and / or unpredictable contamination. Extra care should be paid during doffing to avoid self-contamination.

Table 3: PPE recommendation for community settings (e.g. Public transport, hotel, property management, school)

PPE \ Staff group	General staff accompany the suspected case pending transfer	Cleansing staff
Cap	/	Cap (optional)
Face or eye protection	Face shield /goggles	Face shield /goggles
Respiratory protection	Surgical mask	Surgical mask
Gown	Water-resistant gown	Water-resistant gown
Gloves	Gloves	Double gloves Inner: latex or nitrile Outer: rubber gloves
Boots	As indicated ^{##}	Boots
Footnote: ^{##} Use boots only if environment is grossly contaminated with blood or body fluid		

Table 4: PPE recommendation for special duties

PPE \ Special duties	Police/Immigration/Fire department Agriculture, Fisheries and Conservation Department (AFCD) Food and Environmental Hygiene Department (FEHD) cleansing staff
Face or eye protection	Face shield
Respiratory protection	Surgical mask**
Coverall	Coverall suit with hood
Gloves	Double gloves
Shoe cover/boots	Full length shoe covers /boots
**Use N95 respirator if suspected case presents with cough, diarrhea, vomiting or bleeding; or for aerosol-generating procedures.	

10. This recommendation is subject to review if and when new evidence becomes available.

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Reference:

1. World Health Organization. Personal Protective Equipment in the Context of Filovirus Disease Outbreak Response Rapid advice guideline, 2014. Available from: <http://www.who.int/mediacentre/news/releases/2014/ebola-ppe-guidelines/en/>
2. Feldmann H, Geisbert TW. Ebola haemorrhagic fever. *The Lancet*. 2011; 377(9768):849-62.
3. Bah EI, Lamah MC, Fletcher T, Jacob ST, Brett-Major DM, Sall AA, et al. Clinical Presentation of Patients with Ebola Virus Disease in Conakry, Guinea. *The New England Journal of Medicine* [Internet]. 2014 Nov 5. [cited 2014 Dec 08]. Available from: <http://www.nejm.org/doi/full/10.1056/NEJMoa1411249>
4. Baize S, Pannetier D, Oestereich L, Rieger T, Koivogui L, Magassouba N, et al. Emergence of Zaire Ebola virus disease in Guinea. *The New England Journal of Medicine*. 2014; 371(15):1418-25.
5. Hospital Authority. Infection Control Plan (Ebola Virus Disease), 2014. Available from: http://ha.home/ho/cico/EVD_ICPlan.pdf
6. Evaluation of patients with possible Ebola virus disease (Ebola) in general practice in Australia 2014 [updated 7th November 2014]. Available from: <http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-ebola.htm>
7. Wong TK, Chung JW, Li Y, Chan WF, Ching PT, Lam CH, et al. Effective personal protective clothing for health care workers attending patients with severe acute respiratory syndrome. *American Journal of Infection Control*. 2004; 32(2):90-6.