Interim Infection Control Recommendations for Care of Patients with Suspected or Confirmed Filovirus (Ebola, Marburg) Haemorrhagic Fever

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This document provides a summary of infection control recommendations when providing direct and non-direct care to patients with suspected or confirmed Filovirus haemorrhagic fever (HF), including Ebola or Marburg haemorrhagic fevers. These recommendations are interim and will be updated when additional information becomes available.

DIRECT PATIENT CARE (FOR KNOWN OR SUSPECTED HF PATIENTS)

- Restrict all non-essential staff from HF patient care areas.
- Maintain a log of persons entering the patient's room.
- Limit the number of visitors allowed access to the patient to include only those necessary for the patient's well-being and care, such as a child's parent.
- Ensure that all visitors use personal protective equipment (PPE) according to the health care facility (HCF) guidance and are provided with instructions in its use and in hand hygiene practices prior to entry into the isolation room/area.
- Do not allow other visitors to enter the care area and ensure that any visitors wishing to observe the patient do so from an adequate distance from the care area (approximately 15 m).
- Apply infection control precautions to avoid any possible unprotected direct contact with blood and body fluids when providing care to any HF patient, including suspected cases:
    - Perform hand hygiene before and after direct patient care, after any contact with potentially contaminated surfaces, and after removal of PPE. Neglecting to perform hand hygiene after removing PPE will reduce or negate any benefits of the protective equipment.
    - Wear gloves (non-sterile examination gloves or surgical gloves) when entering the patient care area.
    - Wear a disposable, impermeable gown to cover clothing and exposed skin. Wear a waterproof apron over any non-impermeable gown or when undertaking any strenuous activity (e.g. carrying a patient).
    - Wear facial protection to prevent splashes to the nose, mouth and eyes. Facial protection can be achieved by means of (1) medical mask and eye protection (eye visor or goggles), or (2) with a face shield.
- Before exiting the isolation area of a patient with suspected HF, carefully remove and dispose of protective equipment.
- When removing protective equipment, be careful to avoid any contact between the soiled items (e.g. gloves, gowns) and any area of the face (i.e. eyes, nose or mouth).
- Ensure that clinical and non-clinical personnel are assigned exclusively to HF patient care areas and that members of staff do not move freely between the HF isolation areas and other clinical areas during the outbreak.
- Limit the use of needles and other sharp objects as much as possible.
- Limit the use of phlebotomy and laboratory testing to the minimum necessary for essential diagnostic evaluation and patient care.

- If the use of sharp objects cannot be avoided, ensure the following precautions are observed:
    - Never replace the cap on a used needle.
    - Never direct the point of a used needle towards any part of the body.
    - Do not remove used needles from disposable syringes by hand, and do not bend, break or otherwise manipulate used needles by hand.
    - Never re-use syringes or needles.
    - Dispose of syringes, needles, scalpel blades and other sharp objects in appropriate, puncture-resistant containers.
        - Ensure that containers for sharps objects are placed as close as possible to the immediate area where the objects are being used ('point of use') to limit the distance between use and disposal, and ensure the containers remain upright at all times.
        - Ensure that the containers are securely sealed with a lid and replaced when ¾ full.
        - Ensure the containers are placed in an area that is not easily accessible by visitors, particularly children (e.g. containers should not be placed on floors, or on the lower shelves of trolleys in areas where children might gain access).
- Closed, resistant shoes (e.g. boots) should be used by all individuals in the patient care area to avoid accidents with misplaced, contaminated sharp objects.

NON-PATIENT CARE ACTIVITIES (FOR KNOWN OR SUSPECTED HF PATIENTS)

COMMUNITY TRIAGE

- Contact tracing and case finding interviews should be conducted outdoors whenever possible and a distance of more than one metre should be maintained between interviewer and interviewee. Protective equipment is not required if this distance is assured.
- Protective equipment is not required when interviewing asymptomatic individuals.

DIAGNOSTIC LABORATORY ACTIVITIES

Activities such as micro-pipetting and centrifugation can mechanically generate fine aerosols that might pose a risk of transmission of infection through inhalation.

- Laboratory personnel handling potential HF clinical specimens should wear gown, gloves, particulate respirators (e.g., EU FFP2, US NIOSH-certified N95[1]) and eye protection or face shields, or powered air purifying respirators (PAPR) when aliquotting, performing centrifugation or undertaking any other procedure that may generate aerosols.

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[1] EU FFP2: European Union filtering face piece class 2; US NIOSH: United States National Institute for Occupational Safety and Health

- When removing protective equipment, avoid any contact between the soiled items (e.g. gloves, gowns) and any area of the face (i.e. eyes, nose or mouth).
- Perform hand hygiene immediately after the removal of protective equipment used during specimen handling and after any contact with potentially contaminated surfaces.
- Place specimens in clearly-labelled, non-glass, leak-proof containers and deliver directly to designated specimen handling areas.
- Disinfect all external surfaces of specimen containers thoroughly (using an effective disinfectant) prior to transport.

> Example of effective disinfectant:
> sodium hypochlorite at 0.05%, 500 ppm available chlorine (i.e. 1:100 dilution of household bleach at initial concentration of 5%).

POST-MORTEM EXAMINATIONS

- Post-mortem examination of HF-patient remains should be limited to essential evaluations only and should be performed by trained personnel.
- Personnel examining remains should wear eye protection, mask, gloves and gowns as recommended for patient care.
- In addition, personnel performing autopsies of known or suspected HF patients should wear a particulate respirator and eye protection or face shield, or a powered air purifying respirator (PAPR).
- When removing protective equipment, avoid any contact between soiled gloves or equipment and the face (i.e. eyes, nose or mouth).
- Hand hygiene should be performed immediately following the removal of protective equipment used during post-mortem examination and that may have come into contact with potentially-contaminated surfaces.
- Place specimens in clearly-labelled, non-glass, leak-proof containers and deliver directly to designated specimen handling areas.
- All external surfaces of specimen containers should be thoroughly disinfected (using an effective disinfectant) prior to transport.
- Tissue or body fluids for disposal should be carefully placed in clearly marked, sealed containers for incineration.

MOVEMENT AND BURIAL OF HUMAN REMAINS

- The handling of human remains should be kept to a minimum. The following recommendations should be adhered to in principle, but may need some adaptation to take account of cultural and religious concerns:
  - Remains should not be sprayed, washed or embalmed.
  - Only trained personnel should handle remains during the outbreak.
  - Personnel handling remains should wear personal protective equipment (gloves, gowns, apron, surgical masks and eye protection) and closed shoes.

  - Protective equipment is not required for individuals driving or riding a vehicle to collect human remains.
  - Protective equipment should be put on at the site of collection of human remains and worn during the process of collection and placement in a body bag.
  - Protective equipment should be removed immediately after remains have been placed in a body bag and then placed inside a coffin.
  - Remains should be wrapped in sealed, leak-proof material and should be buried promptly.

CLEANING

- Environmental surfaces or objects contaminated with blood, other body fluids, secretions or excretions should be cleaned and disinfected using standard hospital detergents/disinfectants. Application of disinfectant should be preceded by cleaning.
- Do not spray (i.e. fog) occupied or unoccupied clinical areas with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.
- Wear gloves, gown and closed shoes (e.g. boots) when cleaning the environment and handling infectious waste. Cleaning heavily soiled surfaces (e.g. soiled with vomit or blood) increases the risk of splashes. On these occasions, facial protection should be worn in addition to gloves, gown and closed, resistant shoes.
- Soiled linen should be placed in clearly-labelled, leak-proof bags or buckets at the site of use and the container surfaces should be disinfected (using an effective disinfectant) before removal from the site. Linen should be transported directly to the laundry area and laundered promptly with water and detergent. For low-temperature laundering, wash linen with detergent and water, rinse and then soak in 0.05% chlorine for approximately 30 minutes. Linen should then be dried according to routine standards and procedures.
- Linen that has been used by HF patients can be heavily contaminated with body fluids (e.g. blood, vomit) and splashes may result during handling. When handling soiled linen from HF patients, use gloves, gown, closed shoes and facial protection.
- If safe cleaning and disinfection of heavily soiled linen is not possible or reliable, it may be prudent to burn the linen to avoid any unnecessary risks to individuals handling these items.

WASTE MANAGEMENT DURING HF OUTBREAKS

- Waste should be triaged to enable appropriate and safe handling.
- Sharp objects (e.g. needles, syringes, glass articles) and tubing that has been in contact with the bloodstream should be placed inside puncture resistant containers. These should be located as close as practical to the area in which the items are used.
- Collect all solid, non-sharp, medical waste using leak-proof waste bags and covered bins.

- Waste should be placed in a designated pit of appropriate depth (e.g. 2 m deep and filled to a depth of 1–1.5 m). After each waste load the waste should be covered with a layer of soil 10–15 cm deep.
- An incinerator may be used for short periods during an outbreak to destroy solid waste. However, it is essential to ensure that total incineration has taken place. Caution is also required when handling flammable material and when wearing gloves due to the risk of burn injuries if gloves are ignited.
- Placenta and anatomical samples should be buried in a separate pit.
- The area designated for the final treatment and disposal of waste should have controlled access to prevent entry by animals, untrained personnel or children.
- Wear gloves, gown and closed shoes (e.g. boots) when handling solid infectious waste.
- Waste, such as faeces, urine and vomit, and liquid waste from washing, can be disposed of in the sanitary sewer or pit latrine. No further treatment is necessary.
- Wear gloves, gown, closed shoes and facial protection, when handling liquid infectious waste (e.g. any secretion or excretion with visible blood even if it originated from a normally sterile body cavity). Avoid splashing when disposing of liquid infectious waste. Goggles provide greater protection than visors from splashes that may come from below when pouring liquid waste from a bucket.

MANAGING EXPOSURE TO INFECTION

- Persons including health care workers (HCWs) with percutaneous or mucocutaneous exposure to blood, body fluids, secretions, or excretions from a patient with suspected HF should immediately wash the affected skin surfaces with soap and water. Mucous membranes (e.g. conjunctiva) should be irrigated with copious amounts of water or eyewash solution.
- Exposed persons should be medically evaluated and receive follow-up care, including fever monitoring, twice daily for 21 days after exposure. Immediate consultation with an expert in infectious diseases is recommended for any exposed person who develops fever within 21 days of exposure.
- HCWs suspected of being infected should be isolated, and the same recommendations outlined in this document must be applied until a negative diagnosis is confirmed.

Contact tracing and follow-up of family, friends, co-workers and other patients, who may have been exposed to an HF virus through close contact with the infected HCW is essential.

USEFUL REFERENCES:

WHO. Ebola haemorrhagic fever. Fact sheet N°103, provisional revision: September 2007. Available at http://www.who.int/mediacentre/factsheets/fs103/en/index.html.

CDC. Interim Guidance for Managing Patients with Suspected Viral Hemorrhagic Fever in U.S. Hospitals. May 2005. Available at http://www.cdc.gov/ncidod/dhqp/bp_vhf_interimGuidance.html.

New South Wales Department of Health. Infection Control Policy. May 2007. Available at http://www.health.nsw.gov.au/policies/pd/2007/PD2007_036.html

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