St. John of God Catholic Hospital

Lunsar, Sierra Leone

Collection of Infection Prevention and Control procedures

Lunsar, Sierra Leone

February 2015

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Brief introduction

This Document aims to summarize Infection Prevention and Control (IPC) procedures in place at St. John of God Catholic Hospital in Lunsar. The main reference document is the CDC Document "2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings", where the concept of transmission-based precautions was introduced. At the time of drafting of the present document (February 2015), Ebola outbreak is still ongoing in Sierra Leone, and in the Port Loko District in particular, where the St. John of God Catholic hospital is located. For this reason, and also to increase the confidence of healthcare workers (HCWs) and to reduce their worries, an "enhanced" version of recommended precautions is adopted.

1-Triage procedures

A triage is in place at St. John of God Catholic hospital. Two shifts of triage are planned (8 a.m. to 2 p.m., and 2 p.m. to 7 p.m.). The main objective of triage procedures at St. John of God Catholic Hospital is the well-timed and safe identification of patients with Ebola-like symptoms. At the time of the writing of this document, Ebola virus activity is still present in the country, and in Port Loko District in particular, where the hospital is located.

The role and capabilities of St. John of God Catholic Hospital doesn't include the possibility to give care to an Ebola suspected and confirmed patients. For this reason, a long-lasting agreement has been established with International Medical Corps (IMC), a global, nonprofit organization dedicated to health care and development programs. IMC experts set up the triage logistics and procedures, furnish staff and provide assistance in case of a patient suspected to be affected by Ebola, who is transferred to the IMC holding centre for the diagnosis.

The main responsibility in Triage setting and procedures relies on IMC. Here a short summary of roles and actions is reported.

STANDARD OPERATING PROCEDURES FOR THE TRIAGE		
STAFF DAILY TRIAGE	ACTIVITY	COMMENT
All staff and visitors of the st. John of God Catholic Hospital are to be screened before gaining access to the premises every morning	Temperature check to be done by the security personnel at the gate after washing of the hands with 0.05% chlorine solution	If febrile call the attention of the immediate supervisor or the IPC coordinator
TRIAGE FOR AMBULANT PATIENT		
At the gate	Patient gets a temperature check Patient is asked for wet symptoms (vomiting and diarrhoea)	If febrile or wet call the attention of the clinician attached to the triage
At the entrance	Patient gets a hand wash, foot	

	spray and temperature check and are ushered to the triage station through the patient entrance Staff goes in through the staff entrance.	
Triage station	The patient is asked questions that are stated in the ebola triage questionnaire of the hospital. The Ebola triage protocol will be used to confirm if the patient meets case definition for ebola	Patients who meet the case definition at this point are taken to the red zone and given ORS pending while the ambulance is called for evacuation to IMC
Triage red zone	This zone of the triage is kept aside for suspects who meet the case definition while within the triage of the hospital. All personnel to go in there either for patient management or as wash officers are to be clad in full PPE. All implements to be used in the red zone for cleaning or maintenance are to stay in the red zone After the triage process, the patient is taken by a nurse through the patient exit to the OPD.	
TRIAGE FOR NON AMBULANT PATIENTS		
At the gate	Patient is checked for temperature and asked for the signs of Ebola using the Hospitals triage protocol forms Patient relatives and all accompanying personnel are triaged using the same protocol. All persons to wash their hands using 0.05% chlorine solution at the gate. Non ambulant patients get their hands sanitized with alcohol. Patient is taken to the admission station for	

	evaluation and clinician informed.

For Micheal and Tom: for a complete document, and for a better understanding by the reader, the part about triage should include the Case Definition used, the Ebola Case Definition flow-chart (a copy of the sheet that is hanging just after the gate), and a copy of the form that is fulfilled for each patient at triage. Moreover, a brief description of PPE used for the different situations, the sequence for doffing, brief description of procedures for cleaning, laundry, waste management, could be added, in order to complete the document.

2-Admission of patients to Inpatients Department (IPD)

Patient flow from Triage to Admission Area

After triage, patients not presenting symptoms suggesting Ebola, proceeds to the main hospital. Ambulant patients, during the opening hours of Outpatient Department (OPD), proceed to OPD for the initial evaluation. If according to the physician's evaluation the patient should be admitted, she/he goes to Admission Area. During afternoon, or in case of not ambulant patients, they proceed directly to Admission Area. During the night, and in any case if triage is not operating (for example during holidays), patients proceed directly to Admission Area, where the case definition of Ebola suspected case should be applied, and suspected patients sent to IMC holding centre.

Generality about Inpatients Department (IPD)

IPD at St. Jphn of God Catholic Hospital includes 4 wards: two Adult Wards (one for females, one for males), where medical and surgical patients are admitted, a paediatric ward, and a maternity ward. The hospital has a 151 beds overall capacity. At the time of the drafting of this document (February 2015), only few are activated, because of the limited workforce. As the number of nurses will going to increase, as well as the confidence of the staff in IPC procedures, the number of beds will be progressively increased.

Setting up of Admission Area

The Admission Area is equipped with a desk, some plastic chairs, a container with chlorine 0.05% for hand washing, a closet for storage of PPE and relevant documents, adequate number of alcohol-based solution containers, a no-touch thermometer, an examination couch, a ward screen for the visit, a waste bin. An hospital bed may be set up in a different room for patients requiring mid-term observation. In this case, another chlorine 0.05% container and a waste bin should be available inside the patient room, and a boot decontamination basin with chlorine 0.5% should be placed outside the room exit to internal corridor.

IPC measures in Admission Area

The following IPC measures should be applied in Admission Area:

- Avoid to touch the patient if not necessary for visiting him;
- Anyone working in Admission Area should wear:
    - Boots,
    - Gown,
    - Gloves,
    - Hair cover.
- Only if it is necessary to touch the patient:
    - Wear Apron and Face Shield if the patient is bleeding or vomiting,
    - Wear a surgical mask if the patient has fever and cough/sneeze/difficult breathing.
- After touching the patient:
    - Remove gloves,
    - Wash your hand with alcohol solution,
    - Wear a new pair of gloves.
- If other PPE are used:

    - Remove them starting from back side,
    - Always wash your hands with chlorine/alcohol before to remove facial PPE (face shield and surgical mask),
    - Always wash your hands with chlorine/alcohol at the end of removal procedure.
- Before to leave the room (at the end of the shift or for other duties elsewhere in the hospital):
    - Remove gloves and discharge it,
    - Wash your hands with chlorine solution,
    - Exit from the room using the boots disinfection basin.

Patients' location criteria within IPD

From an IPC perspective, the location of patients within the IPD will be determined, in the Admission Area, on the basis of their risk of transmission. In particular:

- Patients with symptoms producing body fluids (such as vomiting, intense nausea with risk of vomiting, bleeding, open wounds or skin lesions, other similar conditions) should be admitted in "wet room", where "enhanced contact precautions" should be in place. Rooms where the production of fluids is expected, such as operational theatre, surgical recovery room, labour and delivery rooms, recovery room for post-partum, should be considered as "wet rooms";
- Patients with symptoms suggesting droplets transmission (fever and cough/sneeze/difficult breathing) should be admitted in "droplets rooms", where "enhanced droplets precautions" should be in place;
- Similarly, patients suspected to have an airborne-transmitted (mainly tuberculosis), should be admitted in "airborne isolation room", where "enhanced airborne precautions" are in place. Note: considering the rare occurrence of Tuberculosis cases (and other airborne transmitted diseases) requiring admission, this room should not be reserved for airborne diseases only, but it should be routinely used for other patients, according to the needs;
- Other patients not presenting the symptoms described above should be admitted in "dry rooms", where "enhanced standard precautions" should be in place.

It is advisable to set-up more beds than the overall number of patients to admit, in order to facilitate the movement to new room of patients presenting new symptoms.

The decision about the admission room should be taken within the Admission Area. In order to support this process, some Forms have been developed, here listed and attached:

- Admission Form (including patient demographics, contacts, clinical information and final decision),
- An Admission Flow-chart, developed to assist Doctors at Admission Area in the decision process,
- A Tuberculosis Screening Form, aiming to identify patients with increased risk to have TB, in order to admit them in "airborne room" if needed.

Admission Form

Registration number: _____ Date of Attendance: __/__/_____

Demographic Information

Surname/Family name: _____ Other names: _____

Date of birth: __/__/____ Age: ____ Sex: M / F Occupation: _____ __

Place of birth: _____ Educational level: _____

Marital Status: Single ( ) Married ( ) Divorced ( ) Widowed ( )

Current address: _____ District: _____

Contact information

Mobile: _____ Name of the nearest relative: _____

Home address and Mobile of nearest relative: _____

Clinical information

Main reasons for attendance: _____

Presenting symptoms: _____

_____

Pregnancy: Y ( ) N ( ) Ambulant patient: Y ( ) N ( )

Next step

Admitted: Adult Dry R. ( ) Wet R. ( ) Droplet R. ( ) Airborne R. ( )

Children Dry R. ( ) Wet R. ( )

Maternity Dry R. ( ) Wet R. ( ) Droplet/Airbone R. ( )

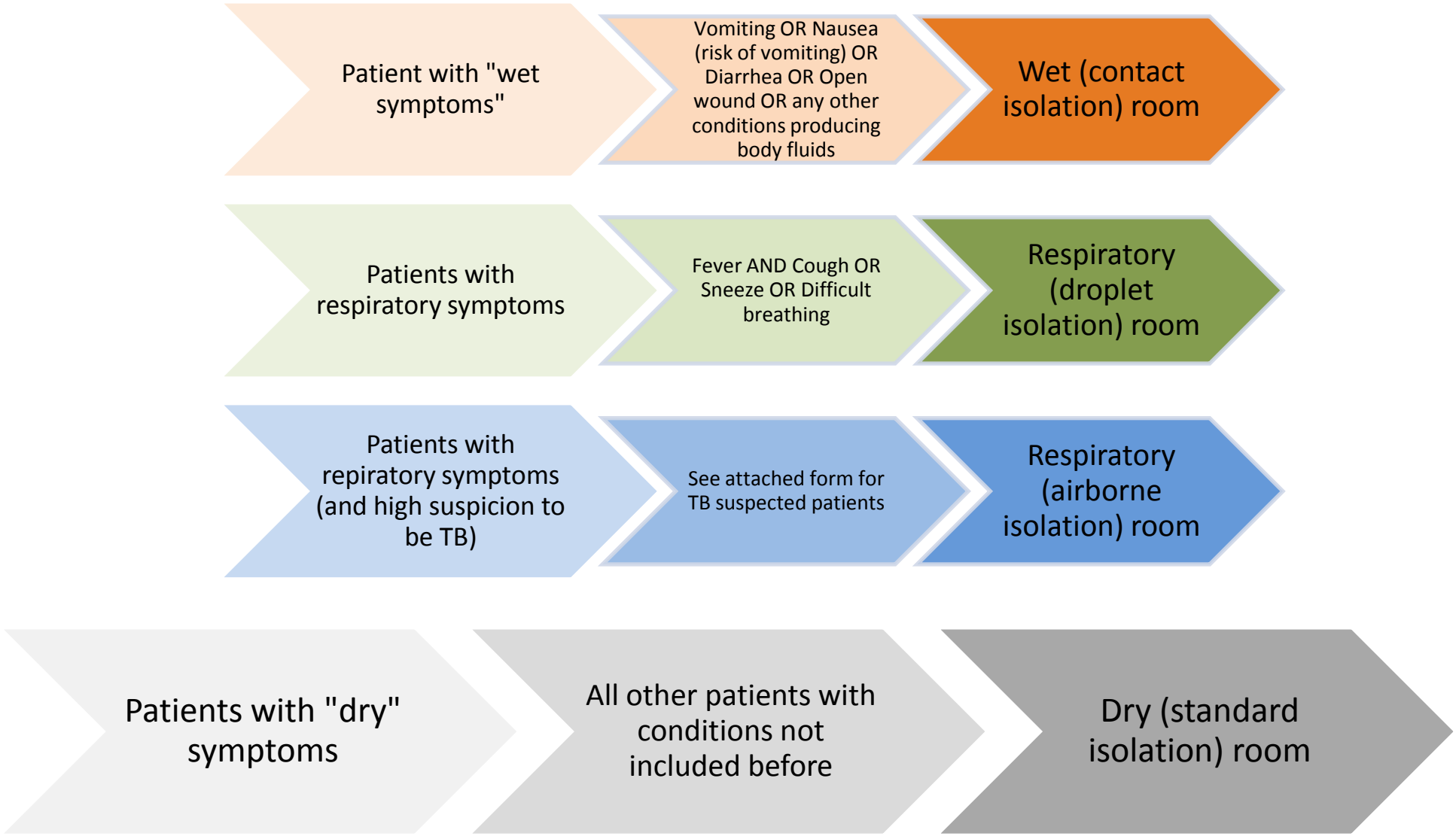
Sent to Outpatients ( ) Sent at home ( )

Observation ( ) Report Final Decision after observation: _____

Other (describe): _____

Date: __/__/____ Operator signature: _____

Admission Criteria – Flow chart



Tuberculosis Screening Form

In all patients presenting with respiratory symptoms explore the following items:

Fever

Haemoptysis

Night sweats

Cough lasting for more than 3 weeks

Weight loss > 3 kilogram

Chest pain

Suspect Tuberculosis and admit into airborne room if at least 3 symptoms are present

In high-risk patients (previous diagnosis of tuberculosis with incomplete or no therapy, HIV+ status, persons with household exposure to another person with known tuberculosis):

Suspect Tuberculosis and admit into airborne room if at least 2 symptoms are present

3-IPC management of patients in IPD

During the in-patients management, some IPC procedures should be applied, in order to protect patients themselves, the staff, and the whole community. In addition to enhanced version of standard and transmission based precautions, that will be described blow, some specific procedures must be in place considering the risk of Ebola.

Setup of IPD

The appropriate setup of rooms and common areas in IPD is a cornerstone for IPC. Each room should be equipped with:

- At least 2 bin containers, of which one of large size, with plastic bag inside,
- A container with 0.05% chlorine solution for hand hygiene and a receptacle for water (in dry room only, a large bottle of alcohol-based solution may substitute the chlorine station),
- A basin with 0.5% chlorine solution for the decontamination of face shields,
- Some small bottles of alcohol-based solution, to be used by HCWs, patients, and relatives,
- An adequate quantity of gloves of different size,
- A sharp-safety box,
- A trolley, or other portable table, where to put sharp-safety box during the procedures.

In the common areas:

- Some containers with 0.05% chlorine solution for hand hygiene and a receptacle for water should be disseminated around the common area or in the “passage” rooms (for example entrance, admission area), in particular near wet and droplets rooms,
- Large bin containers with plastic bag should be present,
- Basins with 0.5% chlorine solution for the decontamination of boots should be present near the wet/droplet rooms,
- Some places (wardrobes) should be placed around the ward where frequently used PPE are stored and available for all staff.

Note: when the hospital will be running with an higher number of beds, and considering that the chlorine solutions should be changed every day, this operation will require large amount of water and will be very time-consuming. For these reasons, it is important to assign 2 staff persons that every day should comply with this task.

Procedures for the continuous monitoring of Ebola related symptoms in admitted patients

Despite the presence of a Triage procedures for the rapid identification of patients with symptoms suggesting Ebola, it is impossible to completely exclude the risk that a patient with ongoing Ebola infection is admitted. Indeed, it is possible that a patient incubating Ebola is admitted for another reason, or, more frequently, a patient with initial signs of Ebola infection (for example, fever only) is admitted. For these reasons, it is fundamental to continuously monitor the presenting symptoms of patients admitted, in order to identify promptly and manage safely an Ebola suspected patient. A specific form has been developed, and it is attached below. **This “Monitoring Form for rapid identification of Ebola patients” should be fulfilled by nurses, for all patients, two times a day**.

In case of presence of fever and 2/3 symptoms, Ebola infection should be considered and a medical consultation should be solicited rapidly. The final decision about the activation of the procedure for the evacuation of the patient is responsibility of the on-duty doctor: he can decide to activate the evacuation of the patient even if the case definition is not complete, or decide to not evacuate the patient even in presence of a complete case definition, for the presence of an evident alternative diagnosis.

Monitoring Form for rapid identification of suspected Ebola patients

Symptoms	Day 1 Date:		Day 2 Date:		Day 3 Date:		Day 4 Date:		Day 5 Date:		Day 6 Date:		Day 7 Date:	
	Morn.	Aftern.	Morn.	Aftern.	Morn.	Aftern.	Morn.	Aftern.	Morn.	Aftern.	Morn.	Aftern.	Morn.	Aftern.
Fever (report the value)														
Easy bleeding														
Extreme weakness														
Nausea/anorexia														
Vomiting														
Diarrhea														
Abdominal pain														
Joint/muscle pain														
Headache														
Sore throat														
Red eyes														
Hiccoughs														
Trouble breathing														

In presence of fever AND 2 symptoms: **consider Ebola and ask for doctor's evaluation**

In presence of fever AND bleeding OR fever AND other 3 or more symptoms: **Ebola suspected case, alert doctors immediately**

Management of an inpatient presenting suspected symptoms

In case that, according to the on-duty doctor evaluation, a patient is considered Ebola suspected, the evacuation from the hospital should be started as soon as possible. Most of rooms in adult wards have a back door, going directly to the back side of the hospital, where the ambulance from IMC can take the patient in charge. Patients from the female adult ward, the maternity ward, and the children ward can exit (by the back door, if available, or through the established pathway) and reach the hospital back side passing through the female toilet corridor. Patients from the male adult ward may reach the back of the hospital through the central back door in the middle of the ward, or directly from the room's back door if they are admitted in the "wet room". The actions to be undertaken are listed below:

- Alert as soon as possible the IMC, in order to have an ambulance at the back side of the hospital,
- Limit the number of HCWs exposed (not more than 2-3 HCWs should manage the situation),
- Avoid, if possible (if the patient is ambulant), to touch the patient and the environment around,
- All HCWs dealing with the patient should wear:
    - Surgical mask (under the suite hood),
    - Complete suite including the hood,
    - Boots,
    - Double gloves,
    - Plastic apron,
    - Face shield (over the suite hood),
- If the patient is ambulant, she/he should be accompanied to the venue where the IMC ambulance is coming, without direct contact,
- If the patient is not ambulant, she/he should be transferred on a stretcher and transported to the same venue. If possible, move the patient touching the bed sheet only,
- After that the patient is in charge to IMC staff, the staff should disinfect the stretcher, if used, with 0.5% chlorine,
- The bed sheet should be discharged and incinerated,
- For the removal of PPE, other staff should move in an external place (in the back of the hospital):
    - A large bin with plastic bag for discharge of PPE,
    - A basin for non disposable PPE decontamination,
    - A sprayer with 0.5% chlorine solution,
    - A 0.05% chlorine solution hand-washing station,
- The procedure for PPE removal is:
    - Spray the exposed HCWs, in particular the hands, with chlorine 0.5% solution,
    - Remove apron and discharge it,
    - Remove external gloves and discharge them,
    - Spray the hands,
    - Remove face shield and put into disinfection basin,
    - Spray the hands,
    - Remove the tyvek suite (touching internal side only),
    - Spray the hands,
    - Remove surgical mask and discharge it,
    - Spray the boots,
    - Remove internal gloves and discharge them,
    - Wash your hands with 0.05% chlorine solution.

- Before the admit another patient, the patient bed and the environmental around should be cleaned. See “Cleaning and Disinfection” paragraph for details.

Hand-washing policies

In according to all international guidelines and a strong scientific evidence, hand-washing represent the single most effective IPC measure. For these reasons, the implementation of hand-washing policies is a cornerstone of our IPC protocols. Alcohol-based solution, both in little bottles (pocket size) and large bottles, are widely available, and it is recommended that all HCWs have in their pocket a little plastic bottle. Similarly, both size are present in all rooms. Containers with 0.05% chlorine solutions are disseminated around the hospital. These containers should be used by HCWs, as well as by patients and relatives/visitors. Moreover, sinks with running water and soap are available in staff rooms and in some other rooms.

The hand washing is recommended all times before to touch a patient and before any procedures involving body fluids exposure, as well as after touching a patient, body fluids or the environmental around, according to WHO indication. Hand-washing is always recommended before to move from a patient to another. Alcohol based solutions are recommended for frequent use, chlorine solution and running watr and soap are recommended for final hand washing and in case of contaminated hands.

In any case, it is advisable to touch the patient, and the environment around, only if strictly needed.

All moments for hand washing are clearly indicated in all procedures for PPE removal.

Sharp safety policy

Similarly, an appropriate sharp safety policy is essential in order to reduce risk of injuries and needle stick. Injuries and needle stick represent an high risk exposure for the staff, thus some indications should be carefully applied to reduce this risk:

- Use a covered, puncture-proof, leak-proof container clearly labelled “SHARPS”,
- Immediately discharge sharps and needles in the sharp safety box, just after the use,
- Never recap needles,
- Sharp containers should never be more than ¾ full,
- Never empty a sharp safety box,
- When ¾ full, discharge them as infectious waste and bring to incineration.

The complete procedure when injections and other procedures involving sharps is the following:

- A sharp safety box should be available in all rooms,
- Dispose on a trolley (or put on an area adequately large and comfortable) all equipments needed for the infusion/injection, including the sharp safety box (you may also prepare material for more than one patient). Sharp safety box should be stable, in order to avoid the risk of fall, and closed;
- Move with the trolley close to the patient;
- Open the sharp safety box;
- Just after the infusion/injection, put the needle/infusion set within the sharp safety box, without recapping;
- Close the sharp safety box before to move to another patient,
- At the end of all infusions/injections, close the sharp safety box, and bring the trolley back to place;

- When it is ¾ full, discharge the sharp safety box. Before discharge, spray the external side with chlorine 0.5% solution. Never open or empty it.

Use of PPE during the care in IPD

Appropriate use of PPE is very important to reduce risk of transmission for HCWs. Similarly, safe procedures for doffing of PPE has been largely discussed during the current Ebola outbreak. For these reasons specific recommendations for PPE selection and removal for all different hospital areas have been developed, and are reported in the following pages. In general, few key points about PPE selection and removal are reported below:

- Higher PPE does not mean safer PPE: as higher is the level of protection, as more uncomfortable they are. The doffing process is difficult and dangerous with high-level PPE, as well as the possibility of a mistake (including a needle stick) is increasing. The choice of PPE should represent a balance between safety and usability,
- During donning process, consider the doffing: remember the position of laces and knots,
- Perform hand-hygiene before starting the doffing process, and after each time that a PPE has been removed,
- **Never bring contaminated gloves or hands to the face or to facial PPE. Always wash your gloved hands (or naked hands) before to touch facial PPE or the face itself**,
- During the doffing process, consider that the back part of PPE is less contaminated, thus it is better to remove them starting from behind,
- Do not shake PPE during removal,
- Touch the internal side of PPE (gown, suites) when possible.

“Dry” Room – “Enhanced Standard Isolation Precautions”

Anyone entering in this room should wear:

- Boots,
- Gown,
- Gloves,
- Hair cover.

Only if you touch the patient:

- Remove gloves,
- Wash your hand with alcohol solution,
- Wear a new pair of gloves.

Before exiting from the room:

- Remove gown and discharge it,
- Remove gloves and discharge it,
- Wash your hands with chlorine/alcohol solution
- Boots and hair cover may be keep, and removed at the end of shift.

“Wet” Room – “Enhanced Contact Isolation Precautions”

Anyone entering in this room should wear:

- Boots,
- Gown,
- Double gloves,
- Plastic apron,
- Face shield,
- Hair cover.

After visiting each patient, or touching the environment around:

- Remove external gloves,
- Wash your hand with alcohol solution,
- Wear a new pair of gloves,
- Disinfect medical equipment (for example stethoscope) if used.

Before exiting from the room:

- Wash your gloved hands with chlorine solution,
- Remove apron and discharge it,
- Remove external gloves and discharge it,
- Wash your gloved hands with chlorine solution,
- Remove face shield and put into disinfection basin,
- Remove gown and discharge it.

Outside the room:

- Use decontamination basin for boots,
- Keep hair cover, or remove it if you are at the end of the shift,
- In any case, remove internal gloves and discharge it,
- Wash your hands with chlorine solution.

“Respiratory” Room – “Enhanced Droplets Isolation Precautions”

Anyone entering in this room should wear:

- Boots,
- Gown,
- Double gloves,
- Apron,
- Face shield,
- Surgical mask,
- Hair cover.

After visiting each patient, or touching the environment around:

- Remove external gloves,
- Wash your hand with alcohol solution,
- Wear a new pair of gloves,
- Disinfect medical equipment (for example stethoscope) if used.

Before exiting from the room:

- Wash your gloved hands with chlorine solution,
- Remove apron and discharge it,
- Remove external gloves and discharge them,
- Wash your gloved hands with chlorine solution,
- Remove face shield and put into disinfection basin,
- Wash your gloved hands with chlorine solution,
- Remove surgical mask and discharge it,
- Remove gown, and discharge it.

Outside the room:

- Use decontamination basin for boots,
- Keep hair cover, or remove it if you are at the end of the shift,
- In any case, remove internal gloves and discharge it,
- Wash your hands with chlorine solution.

“Respiratory” Room – “Enhanced Airborne Isolation Precautions”

Anyone entering in this room should wear:

- Boots,
- Gown,
- Double gloves,
- Apron,
- Face shield,
- FFP2 mask (perform seal check),
- Hair cover.

After visiting each patient, or touching the environment around:

- Remove external gloves,
- Wash your hands with alcohol solution,
- Wear a new pair of gloves.

Before exiting from the room:

- Wash your gloved hands with chlorine solution,
- Remove apron and discharge it,
- Remove external gloves and discharge it,
- Wash your gloved hands with chlorine solution,
- Remove face shield and put into disinfection basin,
- Remove gown and discharge it.

Outside the room:

- Remove FFP2 mask and discharge it,
- Use decontamination basin for boots,
- Keep hair cover, or remove it if you are at the end of the shift,
- In any case, remove internal gloves and discharge it,
- Wash your hands with chlorine solution.

PPE to be used during assistance to a labour and delivery

Anyone assisting to a labour/delivery should wear:

- Boots,
- Gown,
- Double gloves (the external one of obstetric type),
- Plastic apron,
- Face shield,
- Surgical mask,
- Hair cover.

If there is a need to assist more patients at the same time, for each patient:

- Remove external gloves,
- Wash your hand with alcohol solution,
- Wear a new pair of gloves,
- Disinfect any shared equipment, if used.

After the labour, before exiting from the room:

- Remove external gloves and discharge it,
- Wash your gloved hands with chlorine solution,
- Remove apron and discharge it,
- Wash your gloved hands with chlorine solution,
- Remove face shield and put into disinfection basin,
- Wash your gloved hands with chlorine solution,
- Remove surgical mask and discharge it,
- Remove gown and discharge it.

Outside the room:

- Use chlorine basin for boots disinfection,
- Remove internal gloves and discharge it,
- Wash your hands with chlorine solution.

Surgical theatre – "Enhanced Contact Isolation Precautions"

Anyone entering in the theatre room should wear:

- Boots,
- Gown,
- Double gloves (external elbow length gloves),
- Plastic apron,
- Face shield,
- Surgical mask,
- Hair cover.

After the operation, before exiting from the room:

- Remove external gloves and discharge it,
- Wash your gloved hands with chlorine solution,
- Remove apron and discharge it,
- Wash your gloved hands with chlorine solution,
- Remove face shield and put into disinfection basin,
- Wash your gloved hands with chlorine solution,
- Remove surgical mask and discharge it,
- Remove gown and discharge it,
- wash your gloved hands with chlorine solution.

Outside the room (in the room before the back door):

- Use chlorination basin for boots disinfection,
- Remove internal gloves and discharge it,
- Wash your hands with chlorine solution.

PPE to be used for HCWs performing X-ray and Echography

Any HCWs performing X-ray and Echography should wear:

- Gown,
- Gloves,
- Hair cover,
- Surgical mask (if the patient is coughing)
- Apron and Face Shield (if the patients may be vomiting or bleeding).

After each procedure:

- Remove the disposable tissue from the stretcher/x-ray bed,
- Disinfect the stretcher/x-ray bed with a 0.5% chlorine solution,
- Remove gloves,
- Wash your hand with alcohol solution,
- Wear a new pair of gloves.

Before exiting from the room:

- Remove gown (if visible contaminated AND in any case at the end of working day) and discharge it,
- Remove gloves and discharge it,
- Wash your hands with chlorine solution.

Policies in place about patients' movement

Some limitations in movements is suggested for special category of patients:

- Patients admitted in "dry room" shouldn't have special limitations in movement, and they can use common toilets,
- Patients admitted in "wet room" should remain in the room (unless special needs such as the use of toilet or medical/diagnostic procedures), and a toilet should be reserved to each of them (see the signal attached below),
- Patients admitted in "droplets room" should ideally remain in the room. If they need to exit from the room, they should wear a surgical mask in order to reduce the risk of droplet spreading. They can use common toilets,
- Patients admitted in "airborne room" should remain in the room (unless special needs such as the use of toilet or medical/diagnostic procedures). If they need to exit from the room, they should wear a surgical mask in order to reduce the risk of airborne spreading. During their admission, the room door should be closed, and the window, if possible, should be opened. The ventilation fan should be switched on, in order to facilitate the air change. They can use common toilets,

ATTENTION

This toilet is reserved

for patient in bed

_____

Use another common toilet

Thanks

Policies about relatives and visitors

The number of relatives should be limited as more as possible (ideally not more than one for each patient). The relatives should enter from the patient entrance, and should be asked to wash their hand frequently, and always when they exit from the room. Ideally, basic PPE should be used by relatives, in order to protect themselves:

- relatives giving care to patients in “wet room” should wear gloves, to be discharged before exiting from the room,
- relatives giving care to patients in “droplets room” should wear surgical mask, that could be used for all day long before to be discharged,
- access to relatives should be not allowed for patients in “airborne room”. If strictly needed, they should use a FFP2 mask, that could be used for all day long before to be discharged.

Access to visitors (other than relative that support the care) should be limited in the scheduled time only, and should be possible only for patients admitted in “dry room”. In any case, the entrance of children (as visitors) should not be allowed at any time.

4-Other IPC issues

Laboratory procedures

Laboratory workers may have specific risk of exposure to infectious diseases, and specific IPC measures are required. In particular, lab staff have contact with blood and other fluids, have risk of needlesticks, risk of splashes of body fluids during diagnostic procedures, and close contacts with patients.

At the moment of the drafting of this document, only lab procedures based on rapid tests (with the use of strips) are available. In addition, point-of-care haemoglobin test is available, too.

In order to reduce the risks, a procedure have been developed, that include the use of transparent disposable plastic bag for the handling and reading of strips. The procedure is detailed below:

<u>In the laboratory:</u>

- Prepare all materials needed for diagnostic procedures before. Prepare some material more in case of need,
- Prepare the plastic bags and write the patients' name (or other Identification code) on each plastic bag;
- Prepare also a piece of paper where to report haemoglobin results, and put it in a plastic bag with a pen.

<u>Before to enter in the room</u>:

- Wear PPE before to enter in the patients' room;
- PPE to be used are:
    - Boots,
    - Gown,
    - Double gloves,
    - Plastic apron,
    - Surgical mask,
    - Face shield,
    - Hair cover.

<u>Inside the room</u>:

- Lay all lab material on a trolley (or other surface comfortable and large enough), together with a sharp safety box;
- Move near to the patient bed with the trolley, and open the sharp safety box;
- Perfom the requested test,
- Just after the test, discharge the lancet into the sharp safety box,
- Wait for one minute, then pick the strips in the plastic bag,
- Close the sharp safety box,
- Remove the external gloves, wash your hands with alcohol-based solution, and wear a new pair of gloves
- Proceed to another patient,
- Repeat the procedure as many times as needed
- Before to exit, close all plastic bags.

PPE removal procedure (inside the room):

- Wash your gloved hands with chlorine (or alcohol solution if you are in the dry room),
- Remove apron and discharge it,
- Remove external gloves and discharge them,
- Wash your gloved hands with chlorine solution (or alcohol solution if you are in the dry room),
- Remove face shield and put into disinfection basin,
- Wash your gloved hands with chlorine solution (or alcohol solution if you are in the dry room),
- Remove surgical mask and discharge it,
- Remove gown and discharge it (if you do not need to go in other rooms),

Outside the room:

- Remove internal gloves and discharge it,
- Wash your hands with chlorine solution,
- Wear a new pair of gloves and return to the laboratory.

In the laboratory:

- Evaluate tests' results without opening the bags,
- Report them on a registry / report,
- Discharge the bag without opening them again,
- Disinfect the pen with a wipe/paper with chlorine 0.5% solution,
- Remove gloves, and wash your hands with chlorine 0.05% solution.

Transfusion services

Transfusion services are essential for clinical care, and for this reason it is important to have the service running and able to operate.

Procedures for the collection and transfusion of blood will be not different from the procedure applied at St. John of God Catholic Hospital before the closing. These procedures, focused on IPC issues, are summarized below:

- The donors should be tested for haemoglobin, HIV, HBV, HCV and syphilis. The tests should be performed within the laboratory, according to the same procedures described above in the "Laboratory procedures" section,
- If eligible for the donation, the Blood Group testing (rapid screening) should be performed, within the laboratory, applying the same IPC procedures as above,
- In the meanwhile, another staff person should perform Blood Group testing to the receiver, within the ward where the patient is admitted, applying the same procedures,
- If compatible, the donor should proceed to the dedicated room in the laboratory back, and perform the blood collection according to the procedure already in place. The PPE to be used by the lab staff are the same as for the blood testing. It is important that a sharp safety box is available in the room, in order to immediately discharge the needle at the end of the collection,
- At the end of the procedures, when the donor is gone out, the couch in the dedicated room should be disinfected with chlorine 0.5%. All disposable material should be discharged within a waste bin inside the room,

- PPE removal procedures should be performed in an external place (in the backyard of laboratory), that should be equipped with a large waste bin, a chlorine 0.05% station for hand hygiene, a small basin with 0.5% chlorine for the decontamination of face shield, and a basin with 0.5% chlorine for decontamination of boots,
- The collected blood should be transported by a lab staff person (or a nurse coming from the ward, in a dedicated container. Person transporting the blood should wear basic common PPE (boots, gown, gloves and hair cover). After the carriage of blood, PPE should be removed in the usual way (wash your hands, then remove gown, then remove gloves, wash your hands again. Hair cover and boots may be removed, before gloves, if you are at the end of the shift),
- Inside the ward, all procedures should be applied in order to avoid to contaminate the environment with the blood,
- When the transfusion is finished, the needles should be immediately discharged within the sharp safety box. Similarly, the blood bag should be immediately discharged in a dedicated plastic bag, that should be closed and carried to the nearest waste collection point for incineration.

Cleaning and disinfection

Special risks for cleaners include the direct contact with body fluids, and the risk of splashes and inhalation of infectious aerosols during the cleaning. Moreover, special procedure is needed in case of heavily contaminated environment (such as vomiting and bleeding from a patient).

The divide the cleaning in routine cleaning/disinfection, and special cleaning.

Routine cleaning should be performed every day, using hospital-approved disinfectant products. Routine cleaning should be performed in patients rooms, with special attention to the environment around the patients and the frequently touched surfaces (handles, bedside tables, seats), and in external common areas. For routine cleaning, cleaners should wear: boots, gown, gloves, surgical mask (or respirator in the airborne room if a patient with a suspected airborne-transmitted disease is admitted), and hair cover. At the end of cleaning, cleaners should apply the following procedure:

- Wash the hands with chlorine 0.05% solution,
- Remove gown and discharge it,
- Wash the hands with chlorine 0.05% solution,
- Remove surgical mask and discharge it,
- Remove gloves and discharge it,
- Use basin with chlorine 0.5% solution for boot disinfection.

Special cleaning should be applied in case of extensive contamination of environment (such as a patient vomiting or with extensive bleeding, or presence of a patient Ebola suspected, or in case of death inside the hospital). In this case cleaners should wear: boots, gown, apron, double gloves, surgical mask (or respirator in the airborne room if a patient with a suspected airborne-transmitted disease is admitted), face shield and hair cover. The cleaning process should follow the following steps:

- Dispose adsorbent powder or chlorine powder on the fluids (if any), in order to disinfect the environment and reduce the contaminated area,
- Wait for some minutes and then clean with adsorbent disposable clothes,
- Discharge the clothes into the container and close the bag,

- Wash the area with a chlorine 0.5% solution,
- If any linen is heavily contaminated, or in any case in case of suspected Ebola or patient death, these linen should be discharged in a plastic bag and considered as an infectious waste,
- Carry the closed bag with clothes (and linen) inside to waste collection point.

After the end of procedure, cleaners should proceed to PPE removal according to the following points:

- Wash your gloved hands with 0.05% chlorine solution,
- Remove apron and discharge it,
- Remove external gloves and discharge it,
- Wash your gloved hands with 0.05% chlorine solution,
- Remove face shield and put into disinfection basin,
- Wash your gloved hands with 0.05% chlorine solution,
- Remove surgical mask/respirator and discharge it,
- Remove gown and discharge it,
- Remove internal gloves and discharge it,
- Wash your gloved hands with 0.05% chlorine solution,

Waste management

Special risk for waste handlers include needlestick injuries (for inappropriate discharge or use of needles and sharps), direct contacts with body fluids (for bags not leak-proof or broken), inhalation of infectious aerosol (during waste handling).

The collection of waste should be done two times a day. The cleaners, during their routine cleaning activities, should collect waste from each room and bring them, in closed bags, in the 4 large waste containers in the internal courtyard. If the bags is damaged, put it into another bag. Minimize as more as possible the direct handling of waste and avoid to empty waste bin to another bin or plastic bag. Two times a day, the person in charge for the collection of waste will collect the waste from the large containers and transport them, using the wheelbarrow, to the waste collection points identified. Waste from the surgery are discharged directly in the back of the hospital, through a dedicated door, and from there will be transported to collection points or directly to incineration. All waste present in the collection points are transported to incineration, with wheelbarrow, two times a day.

In case of highly contaminated waste (such as clothes used for cleaning of body fluids, or sharp safety box before their discharge), the external side of the bag should be sprayed with chlorine 0.5% solution.

Staff in charge for waste handling and management should wear boots, complete suite including the hood, double gloves (External rubber gloves), apron, surgical mask. Removal of PPE should be in an external place, following these steps:

- Wash your hands with chlorine 0.05% solution,
- Remove apron and discharge it,
- Remove external gloves and put into decontamination basin,
- Wash your gloved hands with chlorine 0.05% solution,
- Remove complete suite (touching the internal side) and discharge it,
- Wash your gloved hands with chlorine solution,
- Remove surgical mask and discharge it,

- Remove internal gloves and discharge it,
- Wash your hands with chlorine solution.

Kitchen and laundry

Staff from the kitchen has very low risk of exposure to Ebola and other infectious disease. It is advisable that the kitchen staff, during food distribution, do not enter in the rooms, in order to avoid exposure. Some areas in the inner courtyard should be used as "distribution points" for food, where patient's relatives or patients themselves may come to take food. Dishes and spoon used by patients should be of personal use only, and discharged after the end of patient's admission. Common kitchen instruments (pot, ladles, other, should be washed according to usual procedure before to be used again. The person in charge for food distribution should wear basic PPE before to enter into clinical area: boots, gown, gloves, hair cover. Before to exit from the hospital area and return to kitchen, the person should:

- Wash hands with chlorine 0.05% solution,
- Remove gown and discharge it,
- Remove hair cover and discharge it,
- Remove gloves and discharge it,
- Wash hands with chlorine 0.05% solution.

Some additional risk is possible for staff working in laundry. Indeed, it is possible the exposure to body fluids, if linen are contaminated, and also a minimal risk for infectious aerosol (during the shaking of linen) and for needlestick injuries (for needle and sharps in the linen) are present. In order to reduce these risks, it is advisable to handle the linen as less as possible, and in any case in a carefully way. Do not shake the linen before washing. In case of linen heavily contaminated, it is advisable to close them in a plastic bag and to discharge them as waste. Similarly, linen in close contact with a suspected Ebola patient and with a patient who dead in the hospital should be closed in a plastic bag, and discharged as waste after spraying with chlorine 0.5% the external part of the bag.

In any case, when entering within clinical area, laundry staff should wear the same PPE as for kitchen staff, and remove them in the same way. Refer above for details.

Management of dead bodies

According to Sierra Leone National policies, the Burial Team should be called for each death occurred within the hospital. It is highly discouraged to touch the body. Also parents and relatives should be allowed only to see the body, without touching it. It is advisable to put a ward screen around the bed, in order to protect the dignity of the dead person.

If, for some reasons, it is necessary to touch the body, number of staff exposed should be limited. Persons in charge to touch the body should wear:

- Surgical mask (under the suite hood),
- Complete suite including the hood,
- Boots,
- Double gloves,
- Plastic apron,
- Face shield (over the suite hood),

For the removal of PPE, other staff should move in an external place (in the back of the hospital):

- A large bin with plastic bag for discharge of PPE,
- A basin for non disposable PPE decontamination,
- A sprayer with 0.5% chlorine solution,
- A 0.05% chlorine solution hand-washing station,

The procedure for PPE removal is:

- Spray the exposed HCWs, in particular the hands, with chlorine 0.5% solution,
- Remove apron and discharge it,
- Remove external gloves and discharge them,
- Spray the hands,
- Remove face shield and put into disinfection basin,
- Spray the hands,
- Remove the tyvek suite (touching internal side only),
- Spray the hands,
- Remove surgical mask and discharge it,
- Spray the boots,
- Remove internal gloves and discharge them,
- Wash your hands with 0.05% chlorine solution.

Before the admit another patient, the patient bed and the environmental around should be cleaned. This procedure is usually performed by the members of the burial team. In any case, see "Cleaning and Disinfection" paragraph for details.

Protocols for accident management

Despite the presence of IPC procedures, accidents may occur during the care to patients. Some of them may involve patients with symptoms compatible with Ebola, but also measures against other diseases should be undertaken. Some general indications in frequent situations are described below.

PPE breakage: a PPE breakage, especially gloves, is a frequent situation. When it occur, if possible, stop working as soon as possible and change your damaged PPE, proceeding to doffing process according to protocols. In case that it is impossible to stop working (need for urgent assistance to a patient), continue to work but call for a colleague that may substitute you as soon as possible. Consider that the exposure of internal PPE (for example, if double gloves are present) do not present a real risk. Similarly, the exposure of intact skin represent a really minimal risk. In any case, of skin is exposed after PPE brakeage, wash it with alcohol solution or chlorine 0.05% solution.

Protected exposure to a suspected Ebola patient: as already said, despite the presence of triage and the strong clinical awareness, it is possible that an Ebola suspected patient may be admitted to the hospital. Refer to previous dedicated section for details. In any case, even if the patient is then tested positive, it is important to confirm that protected exposure does not represent a risk, and HCWs who applied correctly the protocols should not be considered at additional risk. For this reason, they should be not removed from shift (unless different indications from local/national health authorities). As prudential measure, they should:

- Communicate the protected exposure to IPC responsible and to on-duty doctor,
- Describe in details their exposure, in order to receive a risk assessment of the risk,
- Remain available for health check, and furnish details (mobile telephone number, address) for tracing them,
- Self-check their temperature every day for 21 days,
- Alert IPC responsible and on-duty doctor if some symptoms appear,
- Follow indications according to National Rules and Procedures.

Intact skin unprotected exposure to body fluids from a patient **without** Ebola suggesting symptoms: this exposure is very low risky. Indeed, Ebola and other agents that may be transmitted with body fluids are not able to pass through the intact skin. In any case, follow this procedure:

- Stop working immediately if possible, or call for a colleague that may substitute you,
- Remove PPE according to the suggested procedure,
- Carefully and kindly wash the exposed skin with chlorine 0.05% solution, or with running water and soap. If the hair has been exposed, care should be taken to ensure that rinse water does not drip from the hair into the eyes, nose, or mouth,
- Alert the IPC responsible and to on-duty doctor,
- Describe in details your exposure, in order to receive a risk assessment of the risk,
- If possible, and according to the on-duty doctor assessment, you may continue to work,
- No special surveillance measures are recommended.

Intact skin unprotected exposure to body fluids from a patient **with** Ebola suggesting symptoms: even if the patient present symptoms suggesting Ebola, this exposure remains very low risky. Indeed, Ebola and other agents that may be transmitted with body fluids are not able to pass through the intact skin. In any case, follow this procedure:

- Stop working immediately if possible, or call for a colleague that may substitute you,
- Remove PPE according to the suggested procedure,
- Carefully and kindly wash the exposed skin with chlorine 0.05% solution, or with running water and soap. If the hair has been exposed, care should be taken to ensure that rinse water does not drip from the hair into the eyes, nose, or mouth,
- Alert the IPC responsible and to on-duty doctor,
- Describe in details their exposure, in order to receive a risk assessment,
- If possible, according to the on-duty doctor assessment, you may continue to work,
- If not on duty, remain available for health check, and furnish details (mobile telephone number, address) for contacting you,
- Self-check your temperature every day for 21 days,
- Alert IPC responsible and on-duty doctor if some symptoms appear,
- Follow indications according to National Rules and Procedures.

Mucosae unprotected exposure to body fluids from a patient **without** Ebola suggesting symptoms: even if the patient has not suggesting symptoms, this kind of exposure may represent a risk for the transmission of other diseases, especially if the involved body fluid is the blood. For these cases, follow these steps:

- Stop working immediately if possible, or call for a colleague that may substitute you,
- Remove PPE according to the suggested procedure,

- Carefully and kindly wash the exposed area with running water and soap. If the hair has been exposed, care should be taken to ensure that rinse water does not drip from the hair into the eyes, nose, or mouth,
- Mucous membranes of the eyes, nose or mouth should be flushed with running water if contaminated with blood, body fluids, secretions or excretions,
- Non-intact skin should be rinsed thoroughly with running water if contaminated with blood, body fluids, secretions or excretions,
- Alert the IPC responsible and to on-duty doctor,
- Describe in details their exposure, in order to receive a risk assessment,
- On-duty doctor should consider the possibility to perform HIV, HBV and HCV rapid tests to the source patient:
    - If HBV positive, a dose of anti-HBV vaccination is strongly suggested to exposed HCW as soon as possible and in any case within 14 days (if not already vaccinated),
    - If HIV positive, consider the possibility of a anti-HIV post-exposure prophylaxis, that should be carefully evaluated by a doctor
    - If HCV positive, consider the possibility of surveillance of HCW,
- If possible, according to the on-duty doctor assessment, you may continue to work,
- If not on duty, remain available for health check, and furnish details (mobile telephone number, address) for contacting you,
- Follow surveillance measures as suggested on the basis of the risk assessment Follow surveillance measures as suggested on the basis of the risk assessment (basic suggestion: check of HIV, HBV and HCV status after 3 and 6 months).

Mucosae unprotected exposure to a patient **with** Ebola suggesting symptoms: this kind of exposure needs special attention, since the risk of disease transmission is high, both regarding Ebola and other diseases. In case of exposure:

- Stop working immediately if possible, or call for a colleague that may substitute you,
- Remove PPE according to the suggested procedure,
- Carefully and kindly wash the exposed area with running water and soap. If the hair has been exposed, care should be taken to ensure that rinse water does not drip from the hair into the eyes, nose, or mouth,
- Mucous membranes of the eyes, nose or mouth should be flushed with running water if contaminated with blood, body fluids, secretions or excretions,
- Non-intact skin should be rinsed thoroughly with running water if contaminated with blood, body fluids, secretions or excretions,
- Alert the IPC responsible and to on-duty doctor,
- Describe in details their exposure, in order to receive a risk assessment,
- The on-duty doctor should consider the possibility to perform Ebola test, and HIV and HBV rapid tests to the source patient:
    - Contact Health Authorities or other humanitarian organization (e.g. IMC) to explore the possibility to perform an Ebola test to the source patient, even if she/he does not completely fulfil the case definition,
    - Ask to the patient to perform an HBV rapid test. If HBV positive, a dose of anti-HBV vaccination is strongly suggested to exposed HCW as soon as possible and in any case within 14 days (if not already vaccinated),

    - Ask to the patient to perform an HIV rapid test. If HIV positive, consider the possibility of a anti-HIV post-exposure prophylaxis, that should be carefully evaluated by a doctor,
    - Ask to patient to perform an HCV rapid test. If HCV positive, consider surveillance to HCW,
- The HCW should be asked to stay away from the work,
- The HCW should be asked to follow some measures (these measures should be applied also if the source patient has been tested negative for Ebola):
    - Self-check the temperature every day for 21 days,
    - remain available for health check, and furnish details (mobile telephone number, address) for contacting,
    - Alert immediately the hospital IPC responsible and on-duty doctor if some symptoms appear,
- If the source patient has been tested positive for Ebola, the HCW should follow indications according to National Rules and Procedures (home quarantine),
- Follow surveillance measures as suggested on the basis of the risk assessment for the other diseases (basic suggestion: check of HIV, HBV and HCV status after 3 and 6 months).

Needlestick injury with a patient **without** Ebola suggesting symptoms: needlestick injury is considered an high-risk exposure. Even if the patient does not have symptoms suggesting Ebola, a consistent risk persists for blood-borne diseases, such as HIV, HBV, HCV. These steps should be followed:

- Stop working immediately if possible, or call for a colleague that may substitute you,
- Remove PPE according to the suggested procedure,
- The site of a percutaneous injury should be thoroughly rinsed with running water, and any wound should be gently cleansed with soap and water. Perform additional first aid as required (e.g. for cuts to the skin),
- Alert the IPC responsible and to on-duty doctor,
- Describe in details their exposure, in order to receive a risk assessment,
- The on-duty doctor should consider the possibility to perform HCV, HIV and HBV rapid tests to the source patient:
    - Ask to the patient to perform an HBV rapid test. If HBV positive, a dose of anti-HBV vaccination is strongly suggested to exposed HCW as soon as possible and in any case within 14 days (if not already vaccinated),
    - Ask to the patient to perform an HIV rapid test. If HIV positive, consider the possibility of a anti-HIV post-exposure prophylaxis, that should be carefully evaluated by a doctor,
    - Ask to patient to perform an HCV rapid test. If HCV positive, consider surveillance to HCW,
- If possible, according to the on-duty doctor assessment, you may continue to work,
- If not on duty, remain available for health check, and furnish details (mobile telephone number, address) for contacting you,
- Follow surveillance measures as suggested on the basis of the risk assessment (basic suggestion: check of HIV, HBV and HCV status after 3 and 6 months).

Needlestick injury with a patient with Ebola suggesting symptoms: it is the exposure at highest risk, and requires immediate attention by colleagues, IPC responsible persons, and on-duty doctor. The steps to be followed are:

- Stop working immediately or as soon as possible, and call for a colleague that may substitute you,
- Remove PPE according to the suggested procedure,
- The site of a percutaneous injury should be thoroughly rinsed with running water, and any wound should be gently cleansed with soap and water. Perform additional first aid as required (e.g. for cuts to the skin),
- Alert the IPC responsible and to on-duty doctor,
- Describe in details their exposure, in order to receive a risk assessment,
- The on-duty doctor should consider the possibility to perform Ebola test, and HIV and HBV rapid tests to the source patient:
    - Contact Health Authorities or other humanitarian organization (e.g. IMC) to explore the possibility to perform an Ebola test to the source patient, even if she/he does not completely fulfil the case definition,
    - Ask to the patient to perform an HBV rapid test. If HBV positive, a dose of anti-HBV vaccination is strongly suggested to exposed HCW as soon as possible and in any case within 14 days (if not already vaccinated),
    - Ask to the patient to perform an HIV rapid test. If HIV positive, consider the possibility of a anti-HIV post-exposure prophylaxis, that should be carefully evaluated by a doctor,
    - Ask to patient to perform an HCV rapid test. If HCV positive, consider surveillance to HCW,
- The HCW should be asked to stay away from the work,
- The HCW should be asked to follow some measures (these measures should be applied also if the source patient has been tested negative for Ebola):
    - Self-check the temperature two times a day, every day for 21 days,
    - remain available for health check, and furnish details (mobile telephone number, address) for contacting,
    - Alert immediately the hospital IPC responsible and on-duty doctor if some symptoms appear,
- If the source patient has been tested positive for Ebola, the HCW should follow indications according to National Rules and Procedures (home quarantine),
- Follow surveillance measures as suggested on the basis of the risk assessment for the other diseases (basic suggestion: check of HIV, HBV and HCV status after 3 and 6 months).

Conclusion

This document is intended to be used during Ebola outbreak only. Procedures described in this document have been developed to be applied in the context of St. John of God Catholic Hospital of Lunsar, Sierra Leone, and despite most of these indications may be applied in other context and healthcare settings, a specific adaptation could be needed.

Most of the indications could be adapted and maintained when the Ebola outbreak will be finished, also. A specific reassessment of needs and activities will be required to adapt the procedures.

This document can be modified after consultation with the main authors.