The purpose of contact tracing is to:

- Monitor those who have been in close contact with an Ebola Virus Disease (EVD) case to ensure early detection of disease if they have been infected. This will lead to early treatment and, in most cases, better clinical outcomes

- Prevent onward transmission to others

Contact tracing is done by public health in conjunction with the hospital team (infectious disease consultant/admitting physician, infection prevention and control, clinical microbiologist and occupational health physician). It is proposed that community based contacts will be monitored by public health; healthcare workers, including laboratory staff, will be monitored by occupational medicine and hospital in-patient contacts will be monitored by infection prevention and control and clinical microbiologist.

Contact tracing is initiated immediately after a case of EVD is confirmed, in Ireland. Humanitarian aid workers, including healthcare workers, who have returned from EVD affected countries will also require risk assessment regarding their exposure.

Definition of a contact

A contact of an EVD case is defined as an asymptomatic person who has been exposed in the previous 21 days to a symptomatic infected person or to a symptomatic infected person's secretions, excretions or tissues which could include laboratory specimens, soiled environment or contact with infected human remains

Contact tracing and the subsequent management of contacts are based on the following current knowledge about EVD:

- The incubation period of EVD can be as long as 21 days
- Only symptomatic patients can transmit the disease. Infectiousness starts with the onset of symptoms
- Transmission may occur through direct contact (of exposed mucous membranes or non-intact skin) with the patient or blood or other bodily fluids of the patient
- Dead bodies and their blood and bodily fluids remain infectious
- There is no evidence of airborne transmission but precautions are warranted when droplet-generating symptoms (such as vomiting) are present or aerosol-producing procedures are performed.
- Transmission via inanimate objects contaminated with infected bodily fluids (fomites) is possible

Once a case is confirmed, the following steps should be taken when identifying contacts:

- Consider the stage of the illness and the level of viraemia at the time of exposure – infectiousness increases with progression of clinical illness

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- Trace the movements of the index EVD patient for up to 21 days prior to onset of illness with a view to establishing the source of infection;
- Prepare a list of all potential contacts who are at risk of developing the disease (**EVD Case Exposure Assessment & Contact Identification Form**); This will be obtained from the index case or his/her proxy
- Identify and interview all potential contacts using the standardised form (**EVD Contact Assessment Form)** and assign a risk category to these potential contacts (see risk categorisation below)
- The process of informing a contact of their status should be done with tact and empathy since being a contact can be associated with a serious health outcome. It is important that appropriate and sufficient support is provided to the contact throughout the follow-up period.
- Use the high-risk contact surveillance form (**EVD Contact Surveillance Form**) to log the surveillance of high-risk contacts.

Categories of Exposure to an EVD case
The associated risk of infection depends on the level of exposure, which will in turn determine the type of monitoring.

Definition of high risk exposure

- close face-to-face contact (e.g. within one metre) without appropriate personal protective equipment (including eye protection) with a probable or confirmed case[1] who is coughing, vomiting, bleeding, or who has diarrhoea
- direct contact (of exposed mucous membranes or non-intact skin) with body fluids or any materials soiled by body fluids from a probable or confirmed case
- percutaneous injury (e.g. with needle) or mucosal exposure, including mouth-to-mouth kissing, to bodily fluids, tissues or laboratory specimens of a probable or confirmed case
- participation in autopsy, resuscitation or funeral rites with direct contact with human remains, including body fluids, in or from affected area without appropriate personal protective equipment;
- has had unprotected sexual contact with a case within three months after the case has recovered from EVD;
- direct contact with bush meat, or bats or primates, living or dead in/from affected areas.

Definition of Low risk exposure

- Close face-to-face or physical contact (including skin-to-skin contact, such as hugging or shaking hands) with a symptomatic case who has no coughing, vomiting, bleeding or diarrhoea.
- Household contact of a symptomatic case

[1] See Appendix A for EU case definition of a probable and confirmed Ebola Virus Disease Case

Approved by Ebola Virus Disease Sub-committee of the Scientific Advisory Committee of the Health Protection Surveillance Centre 10/11/2014

- Other settings such as classroom or office room level contact with a symptomatic case, subject to risk assessment.
- Casual or physical contact with a feverish but ambulant and self-caring EVD case (e.g. sharing a seating area including airplane transport; receptionist tasks; etc.)

Definition of Healthcare workers with occupational exposure

Occupational exposure of anyone working in a healthcare setting involved in:

- Caring for a case of EVD *or*
- Dealing with inanimate objects contaminated or possibly contaminated with blood and/or bodily fluids *or*
- Laboratory workers processing specimens of an EVD case

while using appropriate personal protective equipment (PPE) is considered to be a Low risk exposure.

However, given the continuous nature of the occupational exposure for some staff when caring for EVD patients, such healthcare workers will be actively monitored in the same way as those contacts with a High risk exposure.

Occupational exposure of anyone working in a healthcare setting involved in caring for a case of EVD *or* dealing with inanimate objects contaminated or possibly contaminated with blood and/or bodily fluids *or* laboratory workers processing specimens of an EVD case:

- where there is a breach in PPE (e.g. needle-stick injury) *or*
- when not wearing appropriate PPE

is considered to be a High risk exposure.

Main actions for the management of asymptomatic contacts

Tables 1 and 2 give full details on the management of asymptomatic contacts.

Table 1: ***Management of asymptomatic contacts***

Non Health Care Worker

Risk Category	Monitoring	Movement Restriction	Work/Social activities Restriction
Contact with High Risk Exposure	Active daily* monitoring for fever (≥37.5^{0}C) or EVD symptoms. This will include twice daily temperature check and report to Public Health/ once a day.	Contacts should: - Not travel outside the Republic of Ireland, as per WHO advice - Remain reachable during the active monitoring period. - Discuss re travel within Ireland with Public health and advise them of their location so that arrangements can be put in place to continue active daily monitoring and to provide support to access healthcare if become symptomatic or as required	Generally no work restrictions or restrictions in social activities, but this should be assessed on a case by case basis. Defer blood donation for at least 2 months from date of last exposure to symptomatic case.[2]
Low risk exposure	Self monitoring for fever (twice daily temperature check) or EVD symptoms. Report to Public Health if develop fever (≥ 37.5^{0}C) or symptoms	- Generally no travel restrictions, but this should be assessed on a case by case basis. - Remain reachable during monitoring period.	No work restrictions or restrictions in social activities Defer blood donation for at least 2 months from date of last exposure to symptomatic case.

[2] ECDC. Risk of transmission of Ebola virus via donated blood and other substances of human origin in the EU, 6 October 2014. Stockholm: ECDC; 2014

Table 2: ***Management of asymptomatic contacts of a confirmed or probable EVD case***

Health Care Worker

Risk Category	Monitoring	Movement Restriction	Work/Social activities Restriction
Healthcare worker with high risk exposure while they wore appropriate PPE but may have had a breach in PPE *OR* wore no PPE	Active daily* monitoring for fever (≥37.5^{0}C) or EVD symptoms. This will include twice daily temperature check and report to Public Health/Occupational Health once a day.	Contacts should: - Not travel outside the Republic of Ireland, as per WHO advice - Remain reachable during the active monitoring period. Discuss re travel within Ireland with Occupational Health / Public health and advise them of their location so that arrangements can be put in place to continue active daily monitoring and to provide support to access healthcare if become symptomatic or as required	Can attend office-based work. No clinical care or work in patient care areas. Generally no restrictions in social activities, but this should be assessed on a case by case basis, depending on level of exposure. Defer blood donation for at least 2 months from date of last exposure to symptomatic case.
Healthcare worker with low risk exposure who wore appropriate PPE	Active daily monitoring as for HCW with inappropriate /no PPE. This will include twice daily temperature check and report to Public Health/Occupational Health once a day.	Contacts should: - Generally no travel restrictions, but this should be assessed on a case by case basis. - Remain reachable during the active monitoring period. - Discuss re travel within Ireland with Occupational Health / Public health and advise them of their location so that arrangements can be put in place to continue active daily monitoring and to provide support to access healthcare if become symptomatic or as required	No work restrictions. No restrictions in social activities Defer blood donation for at least 2 months from date of last exposure to symptomatic case.

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***Active monitoring** should consist of, at a minimum, daily reporting of measured temperatures and symptoms consistent with EVD (including severe headache, fatigue, muscle pain, weakness, diarrhoea, vomiting, abdominal pain, or unexplained haemorrhage) by the individual to public health or occupational health. Temperature should be measured using an approved thermometer. People being actively monitored should measure their temperature twice daily, monitor themselves for symptoms, report as directed to public health or occupational health , and immediately notify public health/occupational if they develop fever of ≥ 37.5^{0}C or other symptoms. **Note:** that initial symptoms can be as nonspecific as fatigue.

Avoid use of anti-pyretics while undertaking active and self monitoring.

Contact persons should immediately self isolate and contact public health in the event of a fever ≥ 37.5^{0}C or symptoms of EVD appearing within 21 days of the last exposure to the infected case. If no symptoms appear within 21 days of the last exposure then the contact person is no longer considered to be at risk of developing EVD.

Monitoring information on all contacts (community-based, hospital-based and healthcare workers) should be provided to Public Health each day who will co-ordinate and analyse the outputs.

Appendix A

Ebola virus disease case definition for reporting in EU

The classification of cases under this definition relies on clinical, epidemiological, laboratory and high-risk exposure criteria, allowing the identification of persons required to be investigated for EVD and the differentiation of probable and confirmed cases for reporting. The definition aims to classify cases for epidemiological reporting.

Criteria

Clinical criteria

Any person currently presenting or having presented before death:

- Fever ≥ 38.6°C

AND any of the following:

  - Severe headache
  - Vomiting, diarrhoea, abdominal pain
  - Unexplained haemorrhagic manifestations in various forms
  - Multi-organ failure

OR a person who died suddenly and inexplicably

Laboratory criteria

Any of the following:

- Detection of Ebola virus nucleic acid in a clinical specimen and confirmation by sequencing or a second assay on different genomic targets.
- Isolation of Ebola virus from a clinical specimen.

Epidemiological criteria

In the 21 days before the onset of symptoms:

- having been in an area with community transmission;

OR

- having had contact with a probable or confirmed EVD case.

High-risk exposure criteria

Any of the following:

- close face-to-face contact (e.g. within one metre) without appropriate personal protective equipment (including eye protection) with a probable or confirmed case who was coughing, vomiting, bleeding, or who had diarrhoea; or had unprotected sexual contact with a case up to three months after recovery;
- direct contact with any material soiled by bodily fluids from a probable or confirmed case;
- percutaneous injury (e.g. with needle) or mucosal exposure to bodily fluids, tissues or laboratory specimens of a probable or confirmed case;

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- participation in funeral rites with direct exposure to human remains in or from an affected area without appropriate personal protective equipment;
- direct contact with bats, rodents, primates, living or dead, in or from affected areas, or bushmeat.

Person under investigation

A person

- meeting the clinical and the epidemiological criteria;

OR

- with high-risk exposure and any of the listed symptoms, including fever of any grade.

Case classification for reporting at EU level

Only confirmed cases are to be reported at the European level using the EWRS. The 'probable case' classification is provided for information only.

Possible case

- Not Applicable.

Probable case

- A person meeting the clinical and high-risk exposure criteria.

Confirmed case

- A person meeting the laboratory criteria.

References

EU case definition for viral haemorrhagic fevers. Commission Implementing Decision 2012/506/EU of 8 August 2012, amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council. (p48)
CDC - Case definition for Ebola virus disease 2014-08-07
WHO - Case definition recommendations for Ebola or Marburg Virus Diseases 2014-04-09