

Ebola Virus Disease (EVD) Laboratory Diagnostics

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National Virus Reference Laboratory (NVRL)

- Located on campus in UCD
- Biosafety level 3 Facility (BSL-3)
- Member of ENIVD
 - European Network for Diagnostics of “Imported” Viral Diseases
- Website *<http://nvrl.ucd.ie>*



Ebola Virus Disease Laboratory Criteria Case Definition



Any of the following:

Isolation of Ebola virus from a clinical specimen.



Ebola Virus Disease

Laboratory Criteria Case Definition



Any of the following:

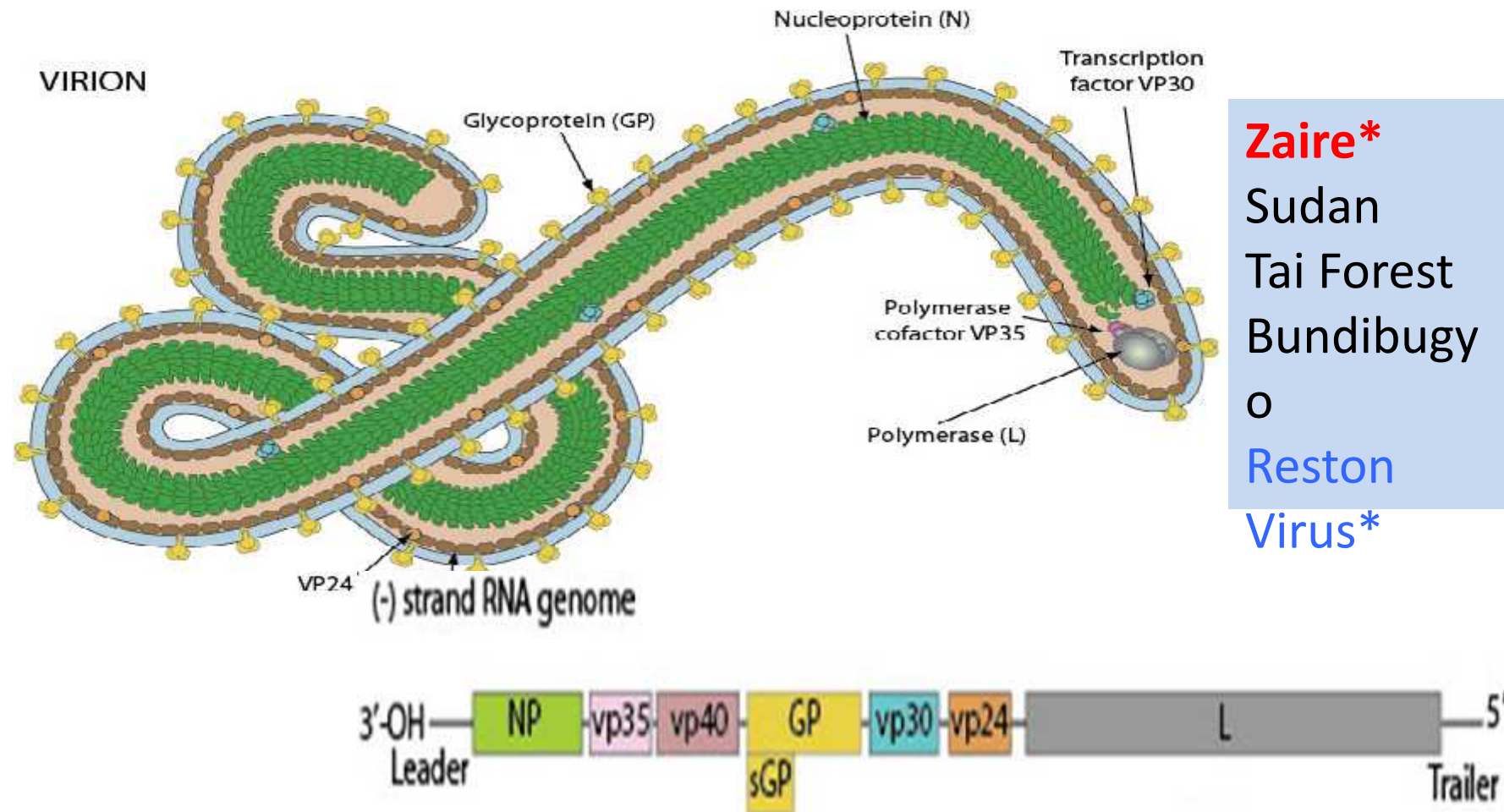
Isolation of Ebola virus from a clinical specimen.



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



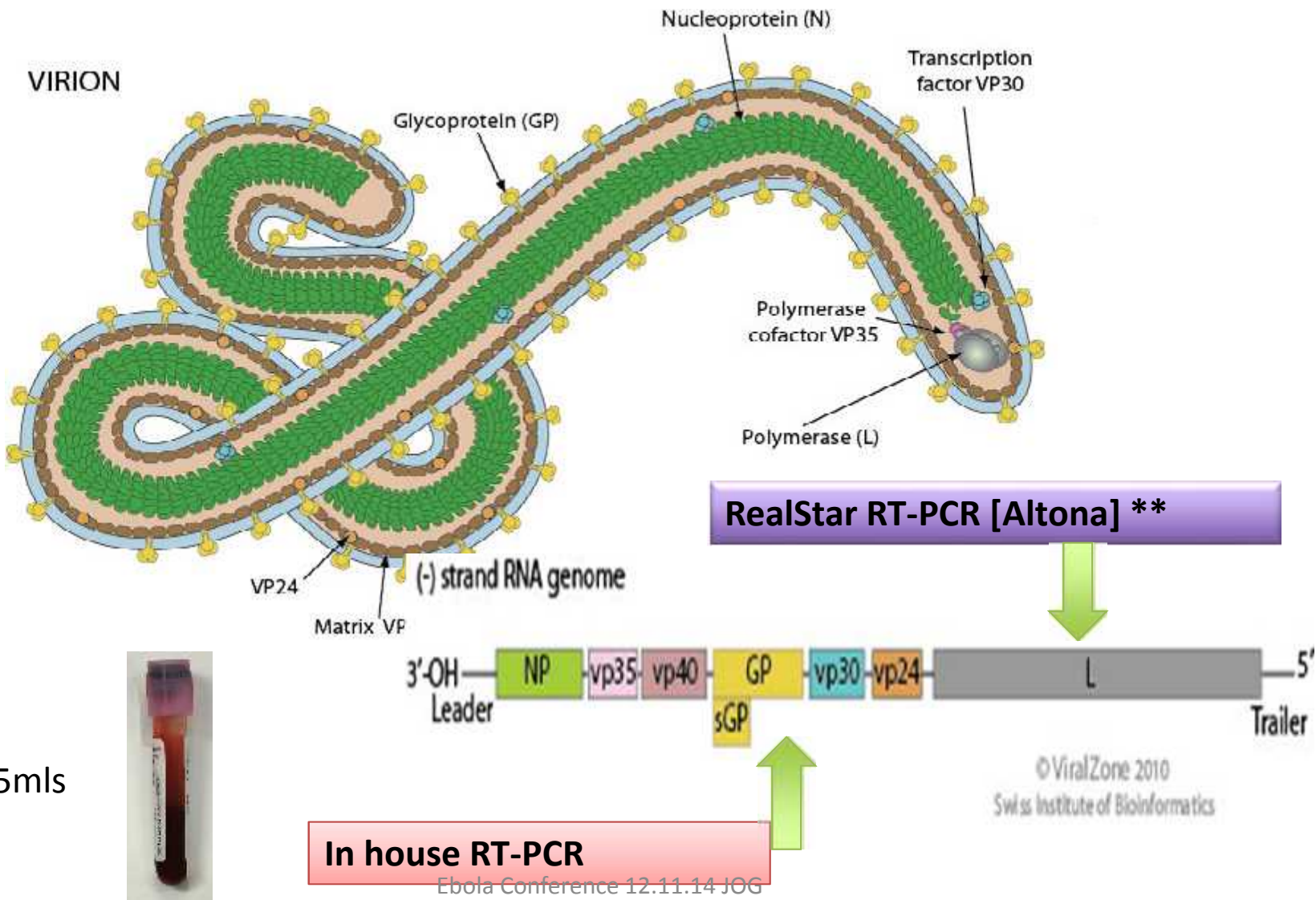
Testing Methodology



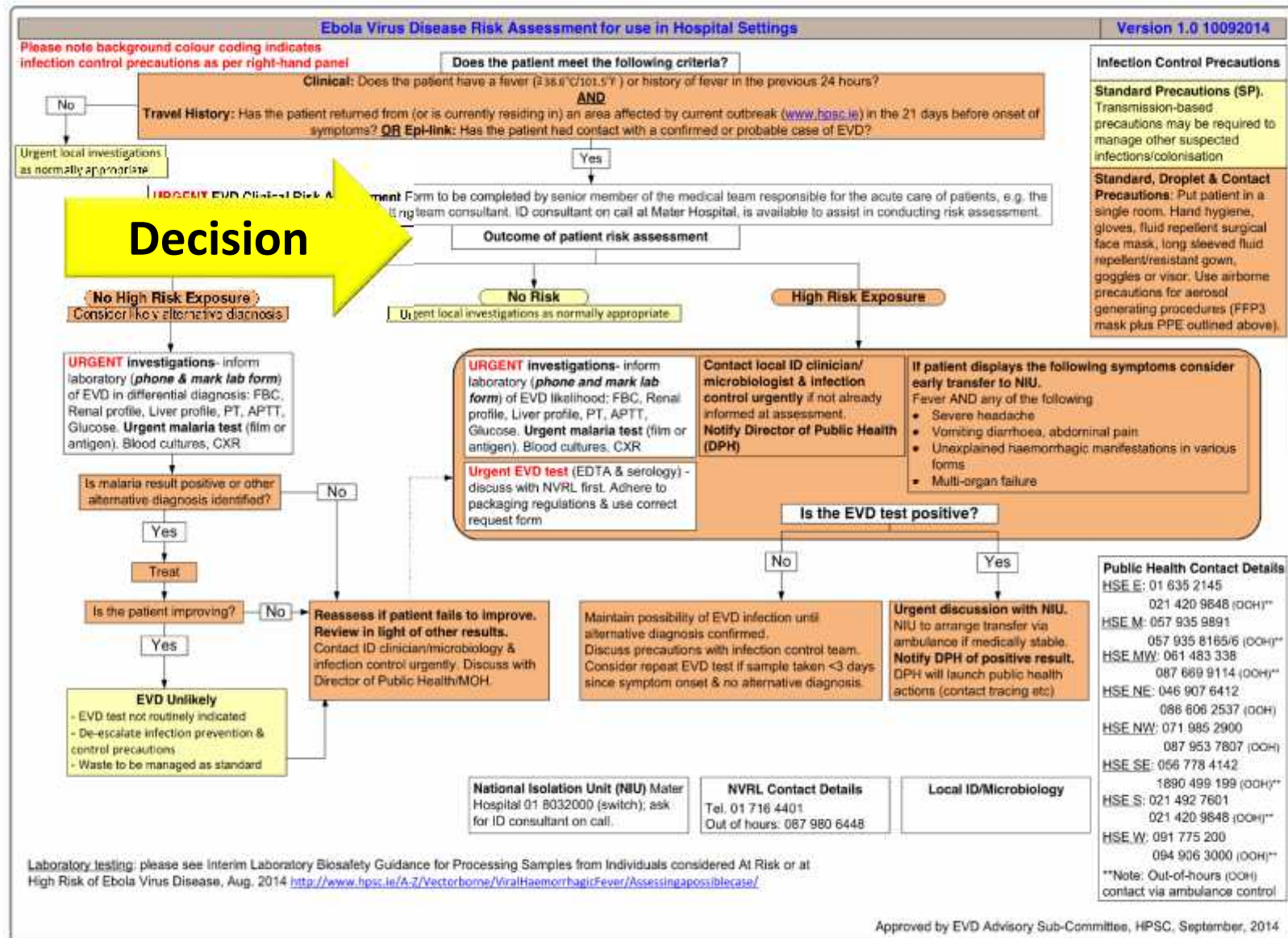
Zaire*
Sudan
Tai Forest
Bundibugy
o
Reston
Virus*

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Swiss Institute of Bioinformatics

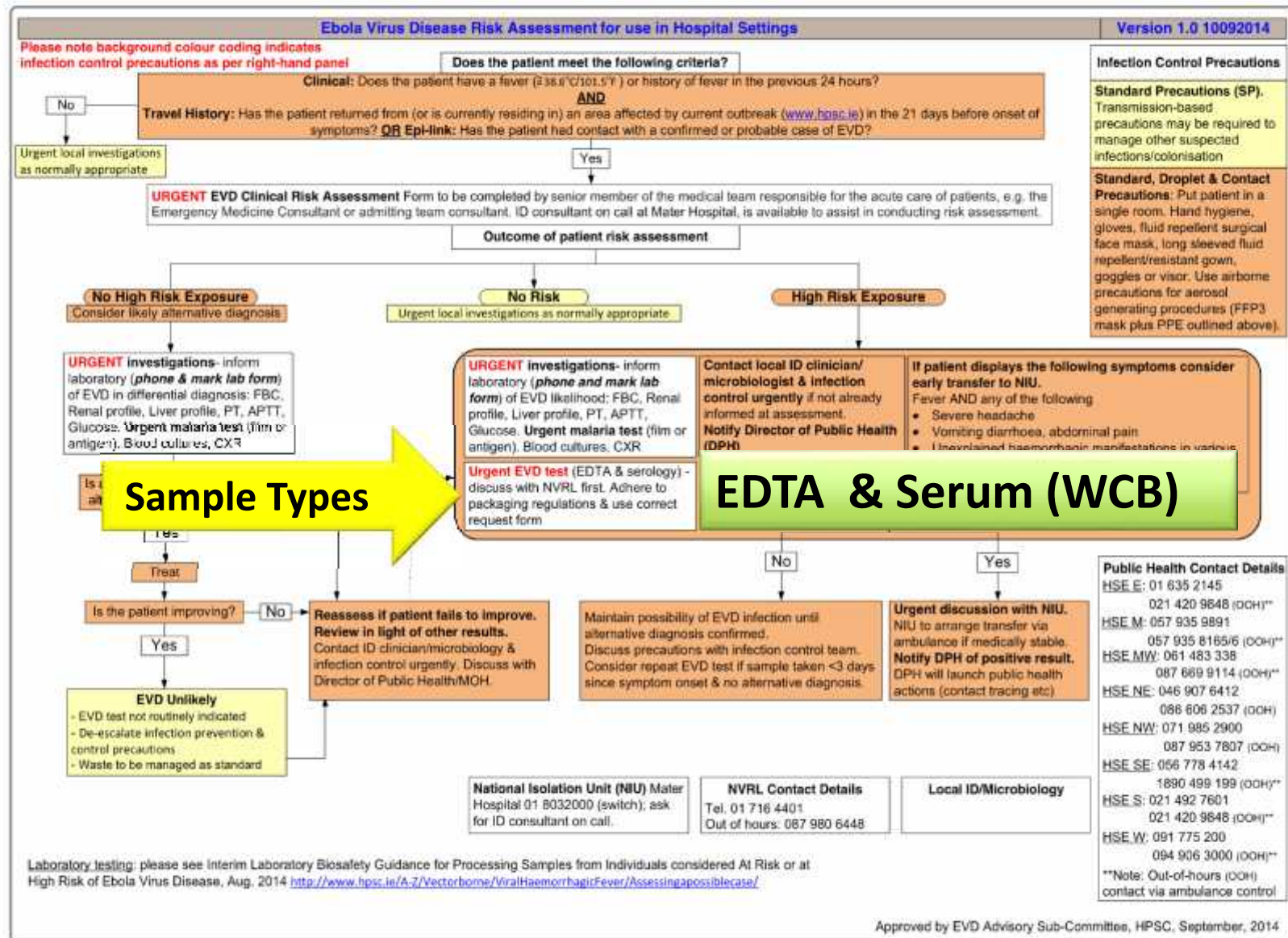
Testing Methodology



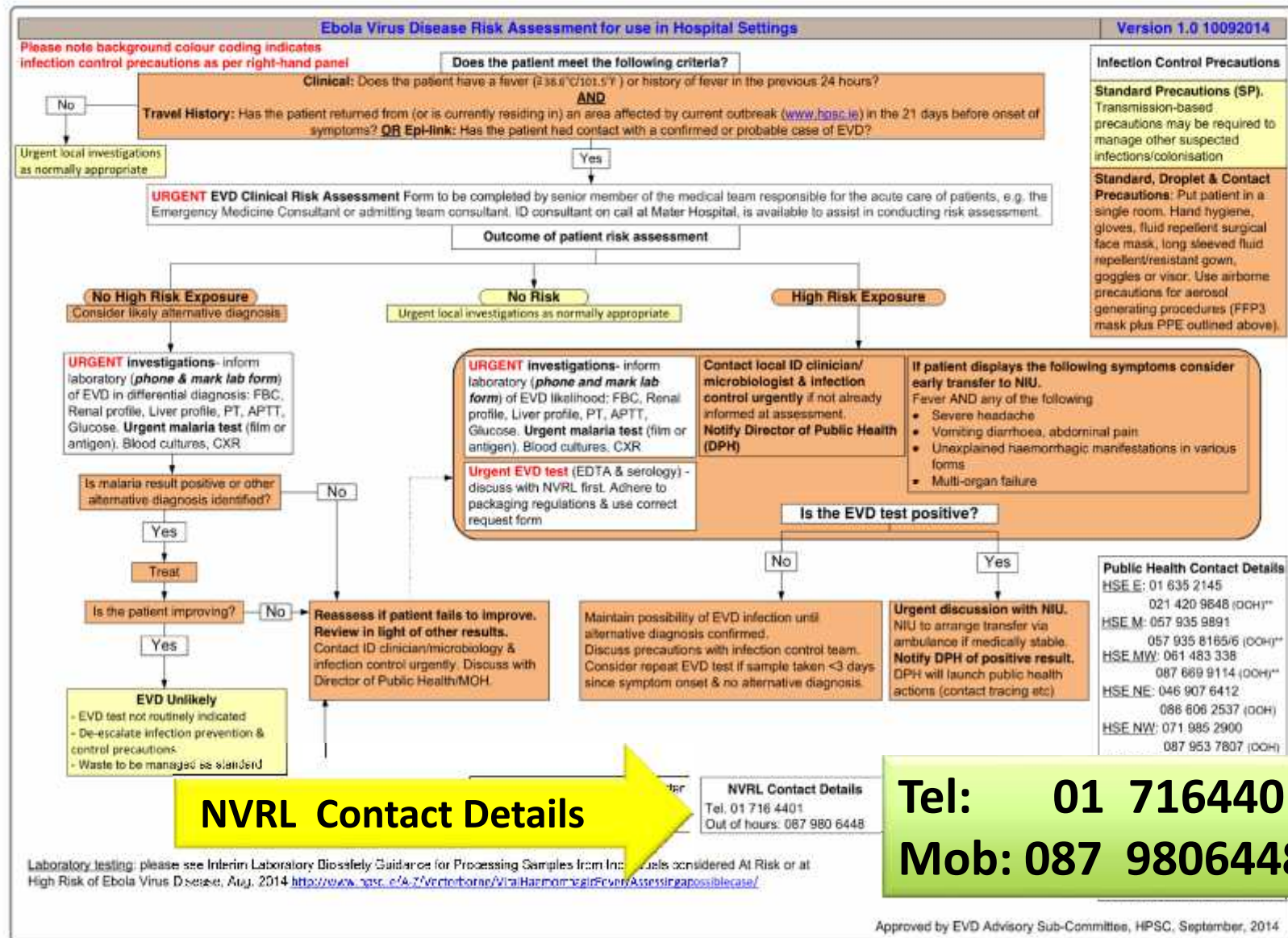
Requesting a test for EVD



Requesting a test for EVD



Requesting a test for EVD



Requesting a test for EVD



Packaging & Transport

Category A Infectious Substances

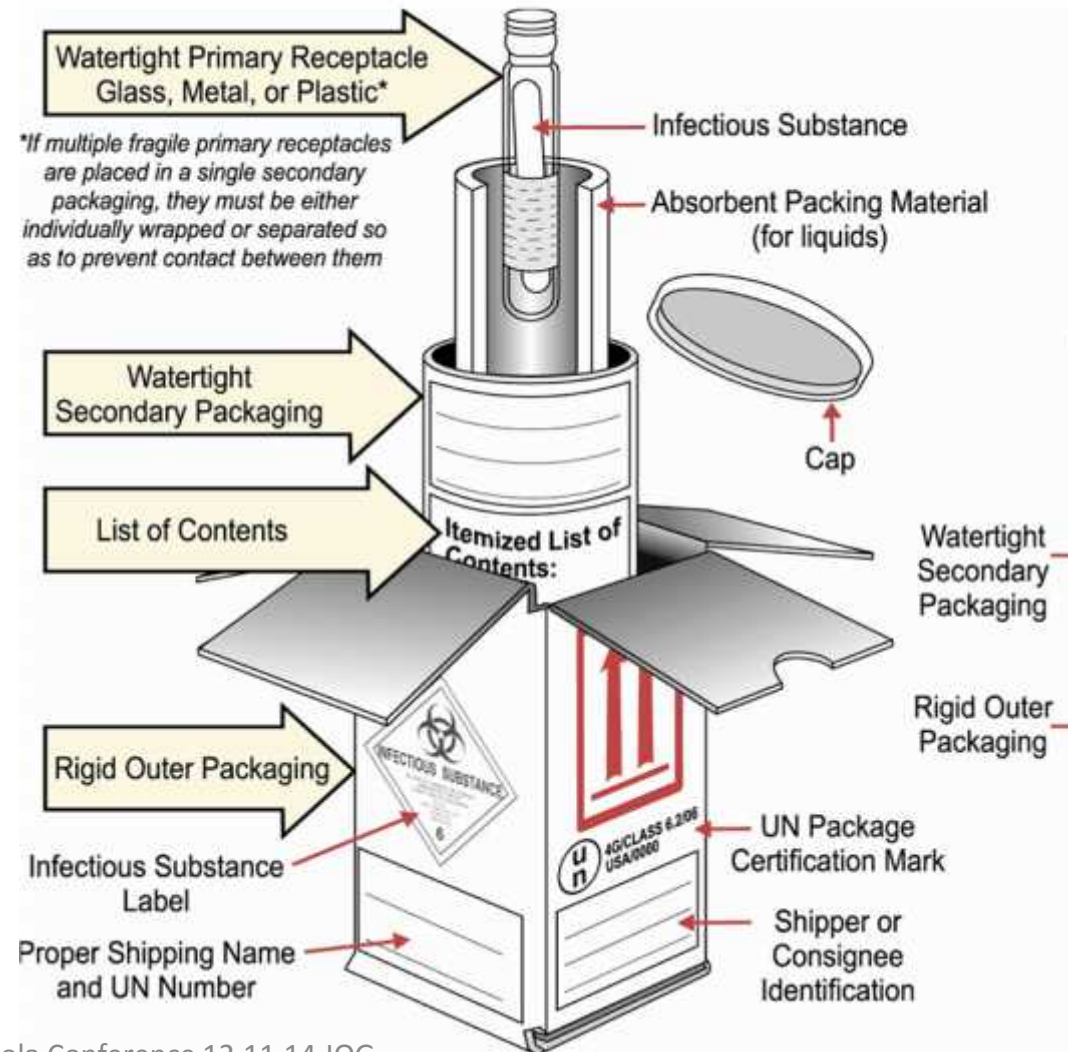
- Category A infectious substances are capable of causing permanent disability, life threatening or fatal disease to humans or animals when exposure to them occurs.
- Category A infectious substances have two shipping names:
“*Infectious substances, Affecting humans*” (UN 2814) or
“Infectious substances, affecting animals” (UN 2900)
- Designated courier

Category B Infectious Substances

- Category B infectious substances are infectious but do not meet the criteria for Category A.
- Category B infectious substances have the proper shipping name “Biological Substance, Category B” and the identification number UN 3373.

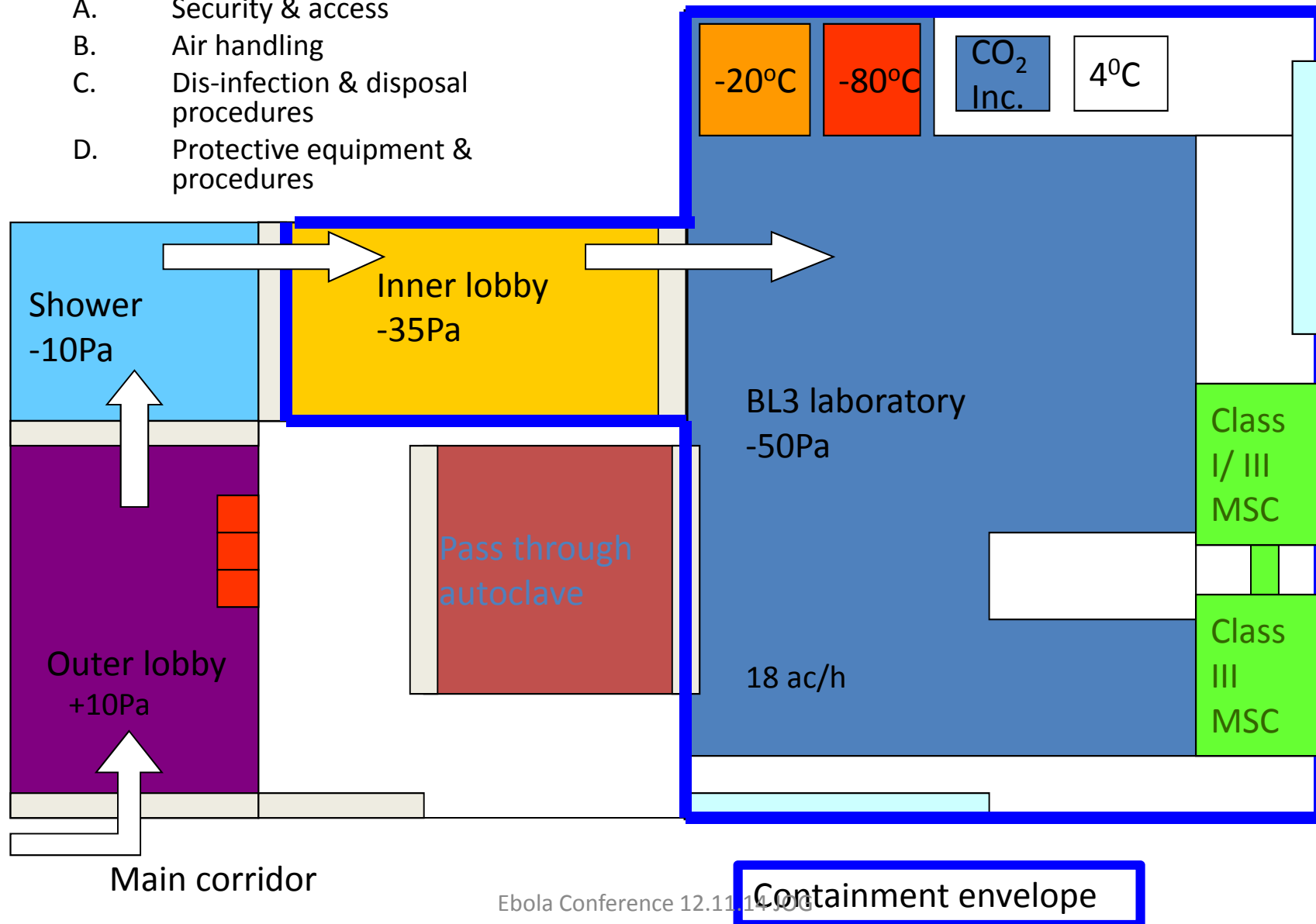
Transport of Biological Material:

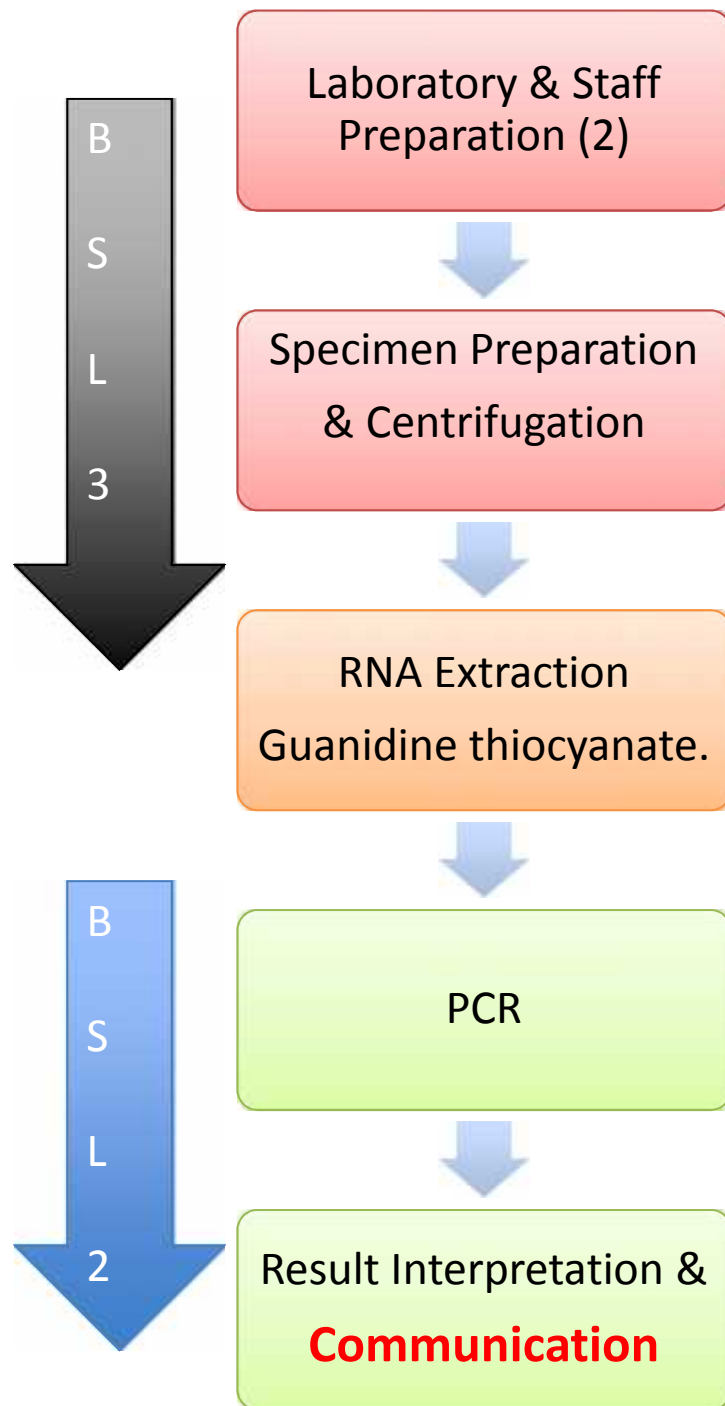
UN2814



NVRL Testing Process – BSL 3

- A. Security & access
- B. Air handling
- C. Dis-infection & disposal procedures
- D. Protective equipment & procedures





Frequently Asked Questions

1. Turn Around Time ?

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Most cases approx. **6** hours from receipt of sample in the NVRL.

Frequently Asked Questions

- 1 Turn Around Time?
- 2 **Sensitivity?**

Frequently Asked Questions

1 Turn Around Time?

2 **Sensitivity?**

- Assays
 - Performance & Proficiency Testing
- Sample
 - EDTA
 - Within 12 hours
- Patient
 - Decision to retest and timing of retesting based on exposure risk assessment and clinical features

Frequently Asked Questions

- 1 Turn Around Time ?
- 2 Sensitivity?
- 3 Specificity?**

Frequently Asked Questions

1 Turn Around Time ?

2 Sensitivity?

3 Specificity?

- Two assays with two different targets
- 15 patients tested to date – ALL NEGATIVE

Key Messages

- Refer to the Ebola Virus Disease Risk Assessment Algorithm available @hpsc.ie
- Contact the NVRL prior to sending a sample.
- Results will be communicated to the designated person as soon as they are available (approx **6** hours)

Acknowledgements

- NVRL staff
 - Margaret Duffy
 - Grainne Tuite
 - Jeff Connell
 - Suzie Coughlan
 - Ger Franzoni
 - Brian Keogan



<http://nvrl.ucd.ie>

Ebola Virus Disease Risk Assessment for use in Hospital Settings

Version 1.0 10092014

Please note background colour coding indicates infection control precautions as per right-hand panel

Does the patient meet the following criteria?

Clinical: Does the patient have a fever ($\geq 38.6^{\circ}\text{C}/101.5^{\circ}\text{F}$) or history of fever in the previous 24 hours?

AND

Travel History: Has the patient returned from (or is currently residing in) an area affected by current outbreak (www.hpsc.ie) in the 21 days before onset of symptoms? **OR Epi-link:** Has the patient had contact with a confirmed or probable case of EVD?

No

Urgent local investigations as normally appropriate

Yes

URGENT EVD Clinical Risk Assessment Form to be completed by senior member of the medical team responsible for the acute care of patients, e.g. the Emergency Medicine Consultant or admitting team consultant. ID consultant on call at Mater Hospital, is available to assist in conducting risk assessment.

Outcome of patient risk assessment

No High Risk Exposure

Consider likely alternative diagnosis

No Risk

Urgent local investigations as normally appropriate

High Risk Exposure

URGENT Investigations- inform laboratory (**phone & mark lab form**) of EVD in differential diagnosis: FBC, Renal profile, Liver profile, PT, APTT, Glucose. **Urgent malaria test** (film or antigen). Blood cultures, CXR

Is malaria result positive or other alternative diagnosis identified?

Yes

Treat

is the patient improving?

Yes

EVD Unlikely

- EVD test not routinely indicated
- De-escalate infection prevention & control precautions
- Waste to be managed as standard

No

Reassess if patient fails to improve. Review in light of other results. Contact ID clinician/microbiology & infection control urgently. Discuss with Director of Public Health/MOH.

National Isolation Unit (NIU) Mater Hospital 01 8032000 (switch); ask for ID consultant on call.

NVRL Contact Details
Tel. 01 716 4401
Out of hours: 087 980 6448

Local ID/Microbiology

URGENT investigations- inform laboratory (**phone and mark lab form**) of EVD likelihood: FBC, Renal profile, Liver profile, PT, APTT, Glucose. **Urgent malaria test** (film or antigen). Blood cultures, CXR

Urgent EVD test (EDTA & serology) - discuss with NVRL first. Adhere to packaging regulations & use correct request form

Contact local ID clinician/ microbiologist & infection control urgently if not already informed at assessment. **Notify Director of Public Health (DPH)**

Is the EVD test positive?

No

Maintain possibility of EVD infection until alternative diagnosis confirmed. Discuss precautions with infection control team. Consider repeat EVD test if sample taken <3 days since symptom onset & no alternative diagnosis.

Yes

Urgent discussion with NIU. NIU to arrange transfer via ambulance if medically stable. **Notify DPH of positive result.** DPH will launch public health actions (contact tracing etc)

Local ID/Microbiology

Infection Control Precautions

Standard Precautions (SP).

Transmission-based precautions may be required to manage other suspected infections/colonisation

Standard, Droplet & Contact

Precautions: Put patient in a single room. Hand hygiene, gloves, fluid repellent surgical face mask, long sleeved fluid repellent/resistant gown, goggles or visor. Use airborne precautions for aerosol generating procedures (FFP3 mask plus PPE outlined above).

Public Health Contact Details

HSE E: 01 635 2145

021 420 9848 (OOH)**

HSE M: 057 935 9891

057 935 8165/6 (OOH)**

HSE MW: 061 483 338

087 669 9114 (OOH)**

HSE NE: 046 907 6412

086 606 2537 (OOH)

HSE NW: 071 985 2900

087 953 7807 (OOH)

HSE SE: 056 778 4142

1890 499 199 (OOH)**

HSE S: 021 482 7601

021 420 9848 (OOH)**

HSE W: 091 775 200

094 906 3000 (OOH)**

**Note: Out-of-hours (OOH) contact via ambulance control

Laboratory testing: please see Interim Laboratory Biosafety Guidance for Processing Samples from Individuals considered At Risk or at High Risk of Ebola Virus Disease, Aug. 2014 <http://www.hpsc.ie/A-2/Vectorborne/ViralHaemorrhagicFever/Assessingapossiblecase/>