Middle East Respiratory Syndrome Coronavirus (MERS-CoV)
LABORATORY TESTING ALGORITHM – Version 14 (based on PHE lab guidance) – February 2019

For a **POSSIBLE CASE**, patients must fulfil the conditions 1, 2 OR 3.

1 Any person with severe acute respiratory infection requiring admission to hospital with symptoms of fever (≥ 38°C) or history of fever, and cough **plus** evidence of pulmonary parenchymal disease (e.g. clinical or radiological evidence of pneumonia or Acute Respiratory Distress Syndrome (ARDS))[1]
AND AT LEAST ONE OF:

- history of travel to, or residence in an area[2] where infection with MERS-CoV could have been acquired in the 14 days before symptom onset[3]
- close contact[4] during the 14 days before onset of illness with a symptomatic confirmed case of MERS-CoV infection
- person is a healthcare worker based in ICU caring for patients with severe acute respiratory infection, regardless of history of travel or use of PPE[5]
- associated with a cluster of two or more epidemiologically linked cases requiring ICU admission within a two week period, regardless of history of travel

2 Acute influenza-like-illness symptoms (ILI), **plus** contact with camels, camel environments or consumption of camel products (e.g raw camel milk, camel urine) **OR** contact with a hospital, in an affected country[2] in the 14 days prior to onset.
ILI is defined as sudden onset of respiratory infection with measured fever of ≥38°C and cough

3 Acute respiratory illness (ARI) plus contact with a confirmed case of MERS-CoV in the 14 days prior to onset.
ARI is defined as sudden onset of respiratory infection with at least one of : shortness of breath, cough or sore throat.

Yes → **Does patient fulfil both clinical and exposure criteria?** → No → Unlikely to be MERS-CoV, treat, investigate and review as clinically indicated.

HPT ensures that initial samples are sent to the West of Scotland Specialist Virology Centre (WoSSVC) (or Royal Infirmary of Edinburgh (RIE) for Lothian/Borders/Fife patients):

- Contact the WoSSVC/RIE prior to sending samples - see lab guidance [7].
- **Initial samples** should include (at the very minimum): an upper respiratory tract sample (combined nose and throat viral swabs, or nasopharyngeal aspirate **AND** if obtainable, a lower respiratory tract sample (sputum, or an endotracheal tube aspirate if intubated)- see lab guidance [7].
- Samples should be sent by: **Category B transport** (see Appendix B of the lab guidance [7])
- Samples must be handled at **Containment Level (CL) 3**

At the WoSSVC/RIE

- Divide samples into aliquots and reserve one **untreated** aliquot at CL3
- Add lysis buffer to other aliquot(s)
- **After** lysis samples can be handled at CL2 for further testing

UpE Assay for MERS-CoV

Respiratory viral screen as routinely performed at WoSSVC/RIE and testing for Legionella if indicated

Positive UpE assay
Virus detected by screening test (but not confirmed)

Negative UpE assay
MERS-CoV not detected

- WoSSVC/RIE send residual untreated aliquot **URGENTLY** to Respiratory Virus Unit (RVU) PHE Colindale for confirmatory testing
- Contact RVU[8] (Telephone: 020 8327 6017 or 020 8200 4400 (out of hours)) prior to sending samples
- Send samples by **Category B transport** [7]

- Use local protocols to inform CPHM/ Microbiologist/ Virologist/Clinician/Health Protection Team as appropriate
- Inform HPS by phone [6].

Positive PHE Colindale confirmatory test
CONFIRMED CASE

1 - **Clinicians** should additionally be alert to the possibility of atypical presentations in patients who are immunocompromised, atypical presentations may include absence of fever.

2 - MERS-CoV area: Bahrain, Jordan, Iraq, Iran, Kingdom of Saudi Arabia, Kuwait, Oman, Qatar, United Arab Emirates and Yemen – see map and UK Risk Assessment

3 – Please consider testing for Legionnaires' disease if indicated

4 - Contact definitions (from date of illness onset in index case and throughout their symptomatic period): A) Health and social care workers: workers who provided direct clinical or personal care or examination of a symptomatic confirmed case or was within 2m of a symptomatic case or had direct contact with body fluids from a symptomatic case, for any length of time. B) Household or close contact: any person who has had prolonged face-to-face contact (>15 minutes) with a symptomatic confirmed case any time during the illness after onset in a household or other closed setting.

5 - In secondary care, for all patient contact, Personal Protective Equipment (PPE) includes correctly fitted filtering face piece respirator (FFP3), long sleeved, fluid-resistant disposable gown, gloves and eye protection. For guidance on PPE and infection control precautions, please refer to the National Infection Prevention and Control Manual and Infection control guidance for MERS-CoV.

6 –**HPT to inform HPS** by phone: 0141 300 1100 (day) or 0141 211 3600 (out of hours) and e-mail (NSS.HPSCoronavirus@nhs.net).

7 – **For more information** on lab guidance and other algorithms see: HPS algorithms for MERS-CoV

8 - Respiratory Virus Unit, Public Health England, 61 Colindale Avenue, London NW9 5EQ –
Email: respiratory@phe.gov.uk
Telephone: 020 8327 6017 or 020 8200 4400 (out of hours)