**CASE MANAGEMENT**

There is no specific treatment or vaccine for COVID-19; however, R&D efforts for MERS-CoV are ongoing. See current WHO guidance on case management for MERS-CoV. WHO guidance on COVID-19 case management is in development.

### SURVEILLANCE

Laboratory confirmation of a COVID-19 case will trigger an thorough investigation. Because there currently is not a PCR test available testing may take several days or longer. WHO's recommended strategy is to begin an investigation immediately, thus requiring immediate operational support and supplies.

<table>
<thead>
<tr>
<th>Sample Collection</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper and lower respiratory samples (nasopharyngeal and sputum samples)</td>
<td>Polymerase Chain Reaction (PCR)</td>
</tr>
<tr>
<td></td>
<td>Immunassay</td>
</tr>
<tr>
<td></td>
<td>Culture</td>
</tr>
</tbody>
</table>

### SUPPORTIVE TREATMENT

Animal source has not yet been identified

<table>
<thead>
<tr>
<th>TRAJECTORY</th>
<th>VACCINE</th>
<th>TRIAGE / SCREENING (PPE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel &amp; Trade</td>
<td>Several vaccine candidates for MERS-CoV are in development.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard precautions with an emphasis on hand and respiratory hygiene, plus additional precautions - specifically droplet and contact precautions. Airborne-related precautions are only required for aerosol-generating procedures. Personal protective equipment (PPE) for screening and for at-risk healthcare workers at healthcare facilities.</td>
<td></td>
</tr>
</tbody>
</table>

**PREVENTION & CONTROL**

Based on current information it is assumed that COVID-19 is a zoonotic disease with human-to-human transmission occurring through droplets or contact. This human-to-human transmission may occur due to breaches in IPC practices. Thus, a central focus of any prevention/control strategy is protecting health care workers with appropriate IPC supplies and ensuring basic health logistics at responding facilities.

#### INFECTION CONTROL PREPARATION

- Personal protective equipment (PPE): Non-surgical masks, surgical masks, nitrile gloves, gowns, and goggles with splash protection.

#### INFECTION CONTROL LEVELS

- Level 1: Standard precautions with all patients (e.g., hand hygiene).
- Level 2: Respiratory and droplet precautions (e.g., respiratory mask) for patients with respiratory symptoms.
- Level 3: Protective equipment with higher level respiratory protection (e.g., N95 respirator) for patients with confirmed or suspected COVID-19.

#### R&D BLUEPRINT

- EN 14683 any type including Type I
- ASTM F2100 minimum Level 1
- EN 14683 Type II, IR, IIR
- ANSI/ISEA 105, or equivalent set of standards
- EN 374
- EN 455
- EU PPE Regulation 2016/425 Category III
- EU MDD Directive 93/42/EEC Category III
- WHO/UNICEF standard E10/IC.2 or equivalent
- WHO performance specification E10/IC.1

### SURVEILLANCE

#### Sample Collection

- Triple packaging boxes for transport
- Viral transport medium
- Sharp container boxes

### DIAGNOSTICS

- Gloves, examination, non-sterile
- Gloves, examination, nitrile, powder-free, non-sterile, single-use
- Gloves should have long cuffs, reaching well above the wrist, ideally to mid-forearm.
- Sizes: small, medium, large.

- Polymeric Chain Reaction (PCR)
- No commercial RRT-PCR kits yet available; See interim guidelines below
- Not yet available
- Viral transport medium

**Key outbreak control activities considered for material supply**

- Supportive treatment (oxygen, hydration, antibiotics & fever/pain relief) to reduce mortality.
- PPE and other materials for the establishment of IPC measures at health care level to reduce transmission.

**WHO technical guidance on IPC for COVID-19**

**Operational Support & Logistics**

**Disease Commodity Packages**

- Polymeric Chain Reaction (PCR)
- No commercial RRT-PCR kits yet available; See interim guidelines below
- Not yet available
- Viral transport medium

Note: Many diagnostics supplies are also used for Case Management purposes, but have been included only in Surveillance.

Laboratory testing for COVID-19 is in development.

Please see WHO technical guidance on IPC for COVID-19

**Case Management**

There is no specific treatment or vaccine for COVID-19; however, R&D efforts for MERS-CoV are ongoing. See current WHO guidance on case management for MERS-CoV. WHO guidance on COVID-19 case management is in development.

- Several candidates are under consideration for evaluation. On outbreak-specific basis, the Monitored Emergency Use of Unregistered Interventions (MEUРИ) may be considered. Please refer to most recent WHO guidance.

- Oxygen Therapy with use of pulse oximeter highly recommended.
- Mechanical ventilation of severe cases (40%). Invasive ventilation and intensive care of critical cases.

- Antimicrobials, Pain/fever relief
- PPE for at-risk healthcare workers at healthcare facilities.
- Respiratory (standard, droplet, PCP) airborne-related precautions for aerosol-generating procedures.
- Possibly Home Care Kits for home isolation of asymptomatic or mildly symptomatic cases (in the case of a large outbreak).

**UNREGISTERED INTERVENTIONS**

**Technical guidance for COVID19 is available online**
### Oxygen Concentrator

- Device concentrates oxygen from ambient air. Mobile on four articulated swivel casters, with two brakes. Flow rates, continuous and adjustable. Oxygen level < 55 dB.
- Integrated oxygen concentration and pressure sensors.
- Four-step filtering of air-intake, including bacterial filter. All filters replaceable, coarse filter is washable/reusable.
- Display panel with audio/visual alarms for: “low oxygen concentration” (>82 %), “high flow pressure” (0.10-23 MPa), “power failure”, “occlusion” (no flow).
- Accessories and spares parts should be available to ensure at least one year of operation.

### Pulse Oximeter

- Compact portable device to monitor the haemoglobin oxygen saturation and to calculate the pulse rate for a patient. Finger tip or tabletop; battery powered or line powered.
- SpO2 detection to include the range: 70–100%.
- SpO2 resolution: 1% or less.
- Pulse rate detection to include the range: 30–240 bpm.
- Pulse rate resolution: 1 bpm or less.
- Complies with ISO 80601-2-41:2011, or equivalent.

### Flow-Splitter, for Oxygen Supply

- Flow splitter for diversification of the oxygen delivery. Each outlet with an independent flowmeter for independently controlled oxygen flow rates. Full scale is graduated in litres per minute. The device is connected to a single oxygen supply (e.g., concentrator). Input pressure: Input pressure: 50 to 350 kPa.

### Flowmeter, Thorpe Tube

- The Thorpe tube flowmeter is composed of inlet and outlet ports, a regulator, a valve and a clear tapered measuring tube.
- It is suitable for connection with various medical gas sources, such as centralized system, cylinders, concentrators or compressors. Standard (absolute, non-compensated) and pressure-compensated flowmeters versions, suitable for specific flow ranges.

### Humidifier, Non-Heated

- The humidifier is inserted in the inspiratory line of a breathing circuit to add moisture to the breathing gases for administration to a patient. The bubbling bottle humidifier is a sealed container filled with water and connected (inline into the breathing circuit). The medical gas mixture flows through the water inside the bottle and is enriched in humidity. This type of humidifier does not heat the gas. To be compatible with oxygen concentrator, including necessary hose connectors.

### Nasal Prongs

- Oxygen cannulae are plastic tubes shaped as two prongs delivering air/oxygen mixture into the nasal cavities and connected with an oxygen administration circuit. Oxygen purity: 93 % ± 3 %.
- Output pressure: 0.04 - 0.07 MPa. Noise level < 55 dB.

### Catheter

- Flexible nasal catheter with multiple holes (6 to 12 lateral eyes) at distal end. Oxygen and air/oxygen mixture compatibility.
- As per ISO 15001. Proximal end with connector. Sterile, single use. Diameter: 8 Fr. Length: 40 cm with lateral eyes, sterile, single-use

### Oxygen Mask

- Connection tube, reservoir bag and valve, high concentration, non-stereile, single use. Different sizes: Adult, paediatric.

### Venturi Mask

- Venturi mask, w/percent O2 Lock+ 2.1 m tubing, non-sterile, single use. Different sizes: Adult, paediatric.

### Patient Ventilator, for Critical Care

- Modes of ventilation: Volume controlled, Pressure controlled, Pressure support.
- Synchronized intermittent mandatory ventilation (SIMV) with pressure support.
- Assist / control mode.
- CPAP/PEEP up to 20 cm H2O.
- Pressure support up to 45 cm H2O.
- FiO2 between 21 to 100 %.
- Inspiratory and expiratory times up to at least 2 sec and 8 sec respectively.
- I:E Ratio at least from 1:1 to 1:3.

### Laryngoscope, Adult/Child

- Instrument used to expose and view the larynx and surrounding areas during orotracheal and nasotracheal intubation.
- It consists in a large cylindrical, hollow, slightly ribbed handle with a threaded head consistent of different types and sizes of blades.
- Each blade has fibre optics or a single bulb. The bulb is of at least 2.7 V Halogen light and is reusable for cleaning.
- Handle is 28 mm diameter and battery powered with two standard alkaline dry cell batteries (1.5 V, type C (LR14)).
- Blades, Macintosh type (curved):
  - No. 2, length 90 - 110 mm, for child.
  - No. 3, length 110 - 135 mm, for small adult.
  - No. 4, length 135 - 155 mm, for adult.
- Blades, Miller type (straight):
  - No. 1, length 100 mm.
  - Heavy-walled plastic or metal case.
- Instruction of use, troubleshooting and maintenance (English, French, Spanish).
- Supplied with six compatible batteries in total.
- Four extra halogen bulbs.
## Supportive Treatment

### Laryngoscope, neonate
Instrument used to expose and view the larynx and surrounding areas during orotracheal and nasotracheal intubation. It consists in a large cylindrical, hollow, slightly ribbed handle with a threaded head consistent of different types and sizes of blades. Each blade has fibre optics or a single bulb. The bulb is of at least 2.7 V Halogen light and is removable for cleaning. Handle is 19 mm diameter and battery powered with two standard alkaline dry cell batteries (1.5 V, type AA (LR6)).
- Blades, Macintosh type (curved):
  - No. 0, length 55 mm, for newborn.
  - No. 1, length 70 mm, for infant.
  - No. 2, length 90 mm, for child.
- Heavy-walled plastic or metal case.
- Instruction of use, troubleshooting and maintenance (English, French, Spanish).
- Supplied with six compatible batteries in total.
- Four extra halogen bulbs.

### Endotracheal tube
Without cuff, sterile, single-use. It consists in a thin, flexible, transparent and single hollow cylinder, with an anatomical curvature Magill type of 37.5°, black and legibly depth markings and graduation in centimetres, with radio-opaque continuous line mark, with cuff and pilot balloon, with a standard connector in the proximal end.
- The proximal end of the tube safely fits the connector from which size is selected according to the tube size. The connector is straight and double-ended, with the proximal end being an outer, standard 15 mm internal diameter, conical tip that allows the tube to be connected to the ventilation system (breathing circuit or manual resuscitator).
- The distal end of the tube is open and bevelled (obliquely cut), atraumatic, with Murphy’s eye.
- The endotracheal tubes are standard in all aspects: dimension, markings and connectors.

### Endotracheal tube introducer, Bougie
Flexible and malleable guide (stylet). Soft and round end-tip. Shaped as needed. Graduated marking. Manufacturer name and tube size are indicated on the tube.
- The proximal end of the tube safely fits the connector from which size is selected according to the tube size. The connector is straight and double-ended, with the proximal end being an outer, standard 15 mm internal diameter, conical tip that allows the tube to be connected to the ventilation system (breathing circuit or manual resuscitator).
- The distal end of the tube is open and bevelled (obliquely cut), atraumatic, with Murphy’s eye.
- The cuff, situated at the distal end of the tube, provides an airtight seal between the tube and the tracheal wall. It seals the lungs against the liquid secretions sloshing around in the upper airway. And, it ensures that the environment below the cuff can be pressurised and ventilated with a carefully controlled gas mixture.
- The cuff has a low pressure in order to avoid inadequate pressure on the tracheal mucous membrane to prevent damage or even necrosis. It typically has a capacity of 10 mL.
- The cuff is inflated via a small-bore inflation tube welded to the outside of the tracheal tube or built into its wall.
- The pilot balloon indicates the cuff distension. One end is connected to the cuff through a thin inflation tube located close to the proximal end. The other end has a spring-loaded, one-way valve that maintains a pre-set pressure in the circuit, and has Luer-tip connector for syringes.
- The endotracheal tubes are standard in all aspects: dimension, markings and connectors.

### Colorimetric end tidal CO2 detector
Sizes compatible with child and adult endotracheal tube. Single use.

### Resuscitator, adult
- Compressible self-inflating ventilation bag, capacity: 1475-2000mL.
- Oxygen reservoir bag complete.
- Non-rebreathing patient valve with pressure limiting valve, patient connector outside/inside diameter: 22/15 mm.
- Intake valve with nipple for O2 tubing.
- Masks, silicon, in 3 sizes (adult small, adult medium and adult large).

### Resuscitator, child
- Compressible self-inflating ventilation bag, child, capacity: 500-700mL.
- Oxygen reservoir bag complete.
- Non-rebreathing patient valve with pressure limiting valve, patient connector outside/inside diameter: 22/15 mm.
- Intake valve with nipple for O2 tubing.
- Masks, silicon, for infants.

### Nasopharyngeal airway
Sterile, single-use. A Nasopharyngeal Airway is recommended for use as an airway adjunct in the semi-conscious or unconscious patient with an intact gag reflex. Individually packaged sterile with a conveniently attached surgical lubricant for quick access to facilitate ease of insertion.
- Flexible and soft material for maximum patient comfort.
- Rounded tip allows for gentle insertion.
- Trumpet design for secure placement.
- Diameter and size labelled according to standards.
- Range of sizes from 20 Fr to 36 Fr.
### Suction devices
Portable suction devices / aspiration pumps used to evacuate secretions and liquids from the nasal cavity or from high airways. Devices capable to resist high level disinfection procedures. Aspiration pumps are varied in vacuum level and flow capacity. Anti-bacterial filter and containers should be available, if applicable.

### Compound sodium lactate solution
Compound solution of sodium lactate (Ringer's lactate), injection solution, w/o IV set and needle, 1000ml

### Infusion giving set
Infusion giving sets for adult and pediatric use to be considered. IV catheters and scalpels veins covering all range of sizes to be considered. Stopper/closing cones, 3-way stopcock and other devices needed to complete the infusion line to be considered.

### Paracetamol
Paracetamol, 500mg, tablets

### Trouser/pants, woven, scrubs, reusable or single use, worn underneath the coveralls or gown

### NaDCC, granules, 1kg, 65 to 70% + measurement spoon

### Biohazard label as per WHO PQS E010/011

### Disposal bag for bio-hazardous waste, 30x50cm, with “Bio Hazard” print, autoclavable polypropylene.

### MERS-CoV
Single-use, length mid-calf.

### Tunic/tops, woven, scrubs, reusable or single use, short sleeved (tunic/tops), worn underneath the coveralls or gown.

### Apron, heavy duty
Straight apron with bib. Fabric: 100% polyester with PVC coating, or 100% PVC, or 100% rubber, or other fluid resistant coated material. Waterproof, sewn strap for neck and back fastening. Minimum basis weight: 300 g/m², Covering size: 70 - 90 cm (width) x 120 - 150 cm (height). Reusable (provided appropriate arrangements for decontamination are in place).

### Gown
Single-use, length mid-calf.

### Alcohol-based hand rub
Bottle of 100 ml and 500 ml

### Bio-hazard bag
Disposal bag for bio-hazardous waste, 30x50cm, with "Bio Hazard" print, autoclavable polypropylene. 50 or 70 micron thickness

### Safety box
SAFETY BOX, needles/syringes, 5 L capacity, cardboard for incineration, box-25 Biohazard label as per WHO PQS E010/011

### Soap
Liquid (preferred), powder and bar

### Gloves, cleaning
Outer glove should have long cuffs, reaching well above the wrist, ideally to mid-forearm. Minimum 280 mm total length. Sizes: S, M, L Reusable

### Hand drying tissue
50 to 100 m roll

### Chlorine
NaDCC, granules, 1kg, 65 to 70% + measurement spoon