# Novel Coronavirus (COVID-19) v3

World Health Organization

Operational Support & Logistics
Disease Commodity Packages

Agent's Biosafety Level: (to be confirmed): BSL2, Virus culture BSL3

Related links: COVID-19 [LINK]

Epidemic Potential: Under investigation

*Last Update: 7 February 2020*

Managing Epidemics Handbook (MERS) [LINK]

| SURVEILLANCE | Sample Collection | Diagnosis | | |
|---|---|---|---|---|
| | | Polymerase Chain Reaction (PCR) | Immunoassay | Culture |
| Laboratory confirmation of a COVID-19 case will trigger an thorough investigation. Because there currently is not a PCR test commercially 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. | Upper and lower respiratory samples (nasophyrangeal and sputum samples) | no commercial rRT-PCR kits yet available; see interim COVID-19 laboratory guidance | Not yet available | Viral transport medium |

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

Laboraroty Testing for a novel Coronavirus is in development

| PREVENTION & CONTROL | Travel & Trade | Vaccine | Infection Protection & Control (IPC) |
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| Based on current information it is assumed that COVID-19 is a zoonotic dissease with human-to-human transmission through droplets or contact. This human-to-human tranmission may occur due to breaches in IPC practices. Thus, a central focus of any prevention/control strategy is protecting healthcare workers with appropriate IPC supplies and ensuring basic health logistics at responding facilities. | Animal source has not yet been identified | Several vaccine candidates for MERS-CoV are in development. | Standard precautions with an emphasis on hand and respiratory hygiene, plus additional precautions specifically droplet and contact. Airborne precautions for aerosolyzed generating procedures only. Personal Protective Equipment (PPE) for screening and for at-risk HCWs at health facilities |

Please see WHO COVID-19 guidance [LINK]

R&D Blueprint [LINK]

| CASE MANAGEMENT | Treatment | | | Personal Protective Equipment (PPE) |
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| | Aetiological | Supportive | | |
| There is no specific treatment or vaccines for the COVID-19, however there are ongoing R&D efforts for MERS-CoV. See WHO current guidance on case management for MERS. Guidance on case management for the nCoV from Wuhan is in development. | Several candidates under consideration for evaluation. On outbreak-specific basis, the Monitored Emergency Use of Unregistered Interventions (MEURI) may be considered. Please refer to most recent WHO guidance. | Oxygen Therapy<br>Mechanical Ventilation of severe cases (40%)<br>Use of Oximeter highly recommended<br>Intubation, ICU, ECMO requried for severe patients | Antibiotics, Pain/Fever | PPE for at-risk health facilities<br>Respiratory (standard, droplet IPC); Airborn precautions for aerosolyzed generating procedures,<br>Possibly Home Care Kits for home isolation of asymptomatic cases or mildly symptomatic (in the case of a large outbreak) |

## Key outbreak control activities considered for material supply

- **Supportive treatment** (oxygen, antibiotics, hydration & fever/pain relief) to reduce mortality
- **Personal Protective Equipment** and material for the establishment of IPC measures at health care level to reduce transmission

Note: Products for Surveillance, Prevention & Control, and Case Management are undergoing rapid and continous development and refinement. For greater clarity, please refer to most recent applicable WHO technical guidance.

| INTERVENTION | | COMMODITY | TECHNICAL DESCRIPTION | |
|---|---|---|---|---|
| SURVEILLANCE | Sample Collection | Triple packaging boxes | Triple packaging boxes for transport | Guidance on regulations for Transport of Infectious Substances 2019 - 2020 [LINK] |
| | | Viral Transport Medium | Medium for specimen to transport to laboratory | |
| | | Sharps container boxes | Puncture resistant container for collection and disposing of used, disposable and auto-disable syringes, needles. 5 L capacity accommodating approximately 100 syringes. Boxes prominently marked. | • WHO performance specification E10/IC.1<br>• WHO/UNICEF standard E10/IC.2 or equivalent |
| | | Viral Transport Medium | Viral Transport Medium with Swab., Medium 3 ml | Comply with the CLSI standard M40-A (for the Quality Control of Microbiology Specimen Transport Devices).<br>Compatible with molecular and cell culture techniques. |
| | Diagnostics | Criteria for selection of specific diagnostic tests may include historical efficacy, adherence to any existing Target Product Profiles, ease of use, necessary throughput, distribution and logistics requirements, and manufacturer production capacity. For some pathogens, consideration may need to be given to the presence of mutations in targeted gene sequences or proteins. WHO can advise on the selection of tests on a case by case basis as determined by a specific event. | | |
| Triage / Screening | PPE | Gloves, examination | Gloves, examination, nitrile, powder-free, non-sterile. (eg. minimum 230mm total length. Sizes, S, M, L | • EU MDD Directive 93/42/EEC Category III,<br>• EU PPE Regulation 2016/425 Category III,<br>• EN 455,<br>• EN 374,<br>• ANSI/ISEA 105,<br>• ASTM D6319,<br>or equivalent set of standards |
| | | Mask, medical Healthcare worker | Medical mask, good breathability, internal and external faces should be clearly identified | • EU MDD Directive 93/42/EEC Category III, or equivalenl,<br>• EN 14683 Type II, IR, IIR<br>• ASTM F2100 minimum Level 1<br>or equivalent |

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| Mask, medical patient | Medical mask, good breathability, internal and external faces should be clearly identified | • EN 14683 any type including Type I<br>• ASTM F2100 any Level<br>or equivalent; | | |
| Oxygen concentrators | Device concentrates oxygen from ambient air. On 4 antistatic swivel castors, 2 with brakes. Integrated handle allows for easy moving and positioning. Oxygen sensing device is integrated and measures concentration at flow meter entrance. Four-step filtering of air-intake, including bacterial filter. All filters replaceable, coarse filter washable/reusable. Continuous monitoring with visual and audible alerts, on low 'high output pressure, low oxygen concentration, power failure and battery test. Operating conditions: Temperature between 5 to 45 degrees Celsius, Relative humidity max. 90% without condensation. Spare parts should be required for operating at least one year. | | WHO Core: Concentrator, Oxygen [LINK]<br>Oxygen Concentrator Technical Guidelines [LINK] | |
| (Oxygen concentrator) Flow splitter | Splitter of oxygen flow provided by an oxygen concentrator. Each flow can be adjusted individually via its flow meter, range: 0.125 to 2LPM (Liter Per Minute). The output nozzle can either be fit with tubing or left blank. Input pressure: 50 to 350kPa. | | | |
| Oxygen prongs, nasal, non-sterile, single use | Nasal prongs (nasal cannula) is a device designed for easy administration of oxygen and comfort of patient. The device consists of a plastic tube which fits behind the ears, and a set of two prongs which are placed in the nostrils. Soft twin prongs nasal tips to ensure equal oxygen flow to both.Star lumen main tube to avoid accidental blockage. Adjustable, smoothly finished, nasal tips for maximum patient comfort. Soft funnel shaped connector to facilitate easy connection to oxygen source. Oxygen tube length: approximately 2m. | | | |
| Oxygen tube, extension | Tube used to deliver oxygen through the nose. Material: PVC. Automatic, open distal (patient) end, with 6 to 12 lateral eyes. Proximal end with connector enabling the tube to be connected to an oxygen supply tube of any diameter (e.g. serrated male conical tip). Sterile, for single patient use. Diameter: CH 10. Length: 40cm | | | |
| Portable ventilator | a) Tidal volume up to 1,000 mL.<br>b) Pressure (inspiratory) up to 80 cm H20<br>c) Volume (inspiratory) up to 120 L/min<br>d) Respiratory rate: up to 60 breaths per minute.<br>e) SIMV Respiratory Rate: up to 40 breaths per minute.<br>f) CPAP/PEEP up to 20 cm H2O.<br>g) Pressure support up to 45 cm H2O.<br>h) FiO2 between 21 to 100 %<br>i) Inspiratory and expiratory times up to at least 2 sec and 8 sec respectively<br>j) I:E Ratio at least from 1:1 to 1:3.<br>2 Modes of ventilation:<br>a) Volume controlled.<br>b) Pressure controlled.<br>c) Pressure support.<br>d) Synchronized intermittent mandatory ventilation (SIMV) with pressure support.<br>e) Assist / control mode<br>f) CPAP/PEEP<br>Alarms required: FiO2, minute volume, pressure, PEEP, apnoea, occlusion, high respiration rate, disconnection<br>System alarms required: power failure, gas disconnection, low battery, vent inoperative, self diagnostics<br>If alarm silencing feature is incorporated, it must be temporary and clearly displayed when activated<br>Air and externally supplied oxygen mixture ratios fully controllable<br>Inlet gas supply (O2) pressure range at least 35 to 65 psi<br>Medical air compressor integral to unit, with inlet filter | • ISO 13485:2003 Medical devices -- Quality management systems -- Requirements for regulatory purposes (Australia, Canada and EU)<br>• ISO 14971:2007 Medical devices -- Application of risk management to medical devices IEC 60601-1:2012 Medical electrical equipment - Part 1: General requirements for basic safety and essential performance<br>• IEC 60601-1-1:2000 Medical electrical equipment - Part 1-1: General requirements for safety - Collateral standard: Safety requirements for medical electrical systems<br>• IEC 60601-1-2:2007 Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests<br>• ISO 80601-2-12:2011 Medical electrical equipment -- Part 2-12: Particular requirements for basic safety and essential performance of critical care ventilators | |
| Pulse Oximeter | Compact portable device measures arterial blood oxygen saturation (SpO2), heart rate and signal strength. Measuring range: SpO2 30 to 100% (minimum graduation 1%), Heart rate 20 to 250 bpm (minimum graduation 1bpm). Line-powered, or Extra-batteries/rechargeable batteries are required at least one year. | ISO 80601-2-61:2011or equivalent | | |
| Laryngoscope | A hand-held device (i.e., non-endoscopic rigid type) intended to be used by anaesthesia/emergency service personnel to manipulate the tongue, preventing it from obstructing the oropharynx and enabling a clear view of the trachea for the insertion of an endotracheal (ET) tube prior to the delivery of inhalation anaesthesia and/or ventilation. It has a handle containing batteries to power its light (a small built-in light bulb or fibre-optic light) for airway illumination, and a curved or straight blade of various designs and lengths that can be hinged/interchanged or integral. Some types can be magnetic resonance imaging (MRI) compatible. This is a reusable device to improve respiratory status of a patient, and to help in the treatment evaluation of patients suffering from chronic respiratory disorders (e.g., asthma, emphysema).<br>• Large hollow, cylindrical, slightly ribbed handle<br>• Handle made of either chromium-plated or stainless steel<br>• Can be opened to insert two batteries (type LR14, size C, 1,5 V)<br>• Stud contact, fitting various sizes and types of depressors | ISO 7376:2009<br>Anaesthetic and respiratory equipment — Laryngoscopes for tracheal intubation | WHO [LINK] | |
| Set of stainless steel depressors | Miller type:<br>• Straight Nr 1, length approx. 100 mm<br>MacIntosh type:<br>• Curved Nr 2, length approx. 110 mm<br>• Curved Nr 3, length approx. 135 mm<br>• Curved Nr 4, length approx. 155 mm | | | |

CLINICAL MANAGEMENT

Supportive Treatment

| | | |
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| Endotracheal tube, without cuff | • Open distal end and Magill-type point with oral angle of 37.5º.<br>• Standard connector (ext. Ø 15mm) at the proximal end enabling the tube to be connected to the ventilation system.<br>• Radio opaque mark.<br>• With Murphy's eye.<br>• Graduations.<br>• Endotracheal tube without cuff.<br>• Size: Ø internal 3mm or 3.5mm<br>• Material: Polyvinyl chloride (PVC).<br>• Disposable.<br>• Sterile.<br>• Initial sterilisation method: Ethylene oxide gas or Gamma radiation. | |
| Endotracheal tube, with cuff | • Open distal end and Magill-type point with oral angle of 37.5º.<br>• Standard connector (ext. Ø 15mm) at the proximal end enabling the tube to be connected to the ventilation system.<br>• Radio opaque mark.<br>• With Murphy's eye.<br>• Graduations.<br>• Endotracheal tube without cuff.<br>• Size: Ø internal 6.5mm, 7mm, 7.5mm or 8mm<br>• Material: Polyvinyl chloride (PVC).<br>• Disposable.<br>• Sterile.<br>• Initial sterilisation method: Ethylene oxide gas or Gamma radiation. | |
| Carbon dioxide detector | • Disposable<br>• Colorimetric<br>• Sizes compatible with child and adult endotracheal tube | |
| Portable ultrasound scanner | High performance ultrasound scanner<br>System integrates scanner, 2 probes, matching trolley and video-printer<br>Compact and lightweight, easy to transport and position<br>Alphanumeric keyboard with trackball and time gain control (TCG)<br>Piezoelectric probes, electronically scanned: convex and linear<br>Imaging display modes: B, dual B, M, B and M<br>Adjustable field-of-view, 6 level zoom<br>Imaging technologies: dynamic frequency imaging, multi-stage focusing, aperture control<br>Depth range selection: convex sector image and linear image, 3 steps<br>Image orientation: lateral and vertical inversion (in B mode)<br>Freeze function with storage of approx. 25 images<br>Measurements and analysis:<br>Calibre control: trackball<br>B-mode image: distance, area and circumference by ellipse and trace method, volume, ratio, gestational age, foetal weight, angle<br>Gestational table: user programmable<br>M-mode: velocity, time interval, depth, heart rate, LV function<br>Alpha-numerics & graphics:<br>Text annotations and body markers<br>Automatic display of: date and time, focal point setting, image orientation indicator, image scrolled position, distance scale mark, M-mode time mark, grey scale for calibration<br>High resolution B/W monitor, approx. 25 cm diagonal (across), equals to 10 inch, fit with reflection filter<br>Image grey scale: 256 levels<br>Video output: 625 lines/frame<br>Two transducer ports leave 2 probes permanently available, electronic switch between probes<br>Data communication interface: RS232, BNC, IEEE, USB or equivalent<br>Power supply: 220 V / 50 Hz | |
| Portable ultrasound probes, included with scanner | Convex abdominal probe, frequency range: 2.5 / 3.5 / 5.0 MHz | |
| Resuscitator, adult | Resuscitator to ventilate adult (body weight over 30kg), with compressible self-refilling ventilation bag, capacity: 1475-2000ml<br>Resuscitator operated by hand,<br>Ventilation with ambient air,<br>Resuscitator shall be easy, to disassemble and reassemble, to clean and disinfect, and be autoclavable.<br>All parts must be manufactured from high-strength, long-life materials and require no special maintenance or storage conditions. | ISO10651-4: Lung ventilators - Part 4: Particular requirements for operator-powered resuscitators; |
| Resuscitator, child | Resuscitator to ventilate child (body weight 7-30kg),<br>With compressible self-refilling ventilation bag, child, capacity: 500-700ml and non-rebreathing valve with pressure limiting valve, patient connector<br>Resuscitator operated by hand,<br>Ventilation with ambient air,<br>Resuscitator shall be easy, to disassemble and reassemble, to clean and disinfect, and be autoclavable.<br>All parts must be manufactured from high-strength, long-life materials and require no special maintenance or storage conditions. | ISO10651-4: Lung ventilators - Part 4: Particular requirements for operator-powered resuscitators; |

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| | Airway, Guedel, sterile, single use (range of sizes) | Child sizes: 00, 0, 1; Adult sizes: 2, 3, 4<br>• Oro-pharyngeal airway, Guedel type.<br>• Semi-rigid, transparent.<br>• Proximal (or buccal) end straight and reinforced.<br>• Flange colour coded and/or marked with corresponding size number.<br>• Size: Airway Guedel, size 00, approximately 40mm; size 0, approx. 50mm; size 1, approx. 60 mm; size 2, approx. 70mm; size 3 approx. 80 mm; size 4 approx. 90mm<br>• Material: Polyethylene/vinyl acetate (EVA) - Polyvinyl chloride (PVC).<br>• Sterile, single patient use.<br>• Initial sterilisation method:<br>• Ethylene oxide gas or gamma radiation. | |
| | 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 set, with airinlet and needle, sterile, single-use | |
| | Paracetamol | Paracetamol, 500mg, tablets | |
| PPE Health Care Facilities | Gloves, examination | Gloves, examination, nitrile, powder-free, non-sterile. Cuff length preferably reaching above the wrist (eg. minimum 230mm total length. Sizes, S, M, L) | • EU MDD directive 93/42/EEC Category III,<br>• EU PPE Regulation 2016/425 Category III,<br>• EN 455,<br>• EN 374,<br>• ANSI/ISEA 105,<br>• ASTM D6319,<br>• or equivalent set of standards |
| | Gloves, surgical, length to forearm large (longer than examination gloves) | Gloves, surgical, nitrile, powder-free, single use.<br><br>Gloves should have long cuffs, reaching well above the wrist, ideally to mid-forearm. (Sizes ranging 5.0 - 9.0) | • EU MDD directive 93/42/EEC Category III,<br>• EU PPE Regulation 2016/425 Category III,<br>• EN 455,<br>• ANSI/ISEA 105,<br>• ASTM 6319<br>or equivalent set of standards |
| | Face shield | Made of clear plastic and provides good visibility to both the wearer and the patient, Adjustable band to attach firmly around the head and fit snuggly against the forehead, Fog resistant (preferable), Completely cover the sides and length of the face, May be re-usable (made of robust material which can be cleaned and disinfected) or disposable. | • EU PPE Regulation 2016/425,<br>• EN 166,<br>• ANSI/ISEA Z87.1,<br>or equivalent set of standards |
| | Fit Test Kit | To evaluate effectiveness of seal for tight fitting respiratory protection devices | OSHA 29 CFR 1910.134 Appendix A |
| | Particulate respirator, grade N95 or higher | N95 or FFP2 respirator, or higher<br>Good breathability with design that does not collapse against the mouth (e.g. duckbill, cup-shaped) | • Minimum "N95" respirator according to FDA Class II, under 21 CFR 878.4040, and CDC NIOSH, or<br>• Mnimum "FFP2" according to EN 149, EU PPE Regulation 2016/425 Category III,<br>or equivalent |
| | Mask, medical | Medical mask, good breathability, internal and external faces should be clearly identified | • EU MDD directive 93/42/EEC Category III,<br>or equivalent,<br>• EN 14683 Type II, IR, IIR<br>• ASTM F2100 minimum level 1<br>or equivalent; |
| | Mask, medical patient | Medical mask, good breathability, internal and external faces should be clearly identified | • EN 14683 any type including Type I<br>• ASTM F2100 any Level<br>or equivalent; |
| | Scrubs, tops | Tunic/tops, woven, scrubs, reusable or single use, short sleeved (tunic/tops), worn underneath the coveralls or gown. | |
| | Scrubs, pants | Trouser/pants, woven, scrubs, reusable or single use, short sleeved (tunic/tops), worn underneath the coveralls or gown | |
| | Apron, heavy duty | Straight apron with bib,<br>Fabric: 100% polyester with PVC coating, or 100% PVC, or 100% rubber, or other fluid resistant coated material,<br>Waterproof, Sewn strap for neck and back fastening<br>Minimum basis weight: 300g/m2<br>covering size: 70-90 cm (width) X 120-150cm (height)<br>Reusable (provided appropriate arrangements for decontamination are in place) | Acceptable standards<br>• EN ISO 13688<br>• EN 14126-B and partial body protection (EN 13034 or EN 14605)<br>• EN 343 for water and breathability<br>or equivalent |
| | Gown | Single use, disposable, length mid-calf. | • EU PPE Regulation 2016/425 and EU MDD directive 93/42/EEC<br>• FDA class I or II medical device,<br>or equivalent<br>• EN 13795 any performance level, or<br>• AAMI PB70 all levels acceptable,<br>or equivalent |

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| + | Goggles, protective | Good seal with the skin of the face, Flexible PVC frame to easily fil with all face contours with even pressure, Enclose eyes and the surrounding areas, Accomodate wearers with prescription glasses, Clear plastic lens with fog and scratch resistant treatments, Adjustable band to secure firmly so as not to become loose during clinical activity, Indirect venting to avoid fogging, May be re-usable (provided appropriate arrangements for decontamination are in place) or disposable. | • EU PPE Regulation 2016/425,<br>• EN 166,<br>• ANSI/ISEA Z87.1,<br>or equivalent |
| | Alcohol-based hand rub | Bottle of 100ml & 500ml | |
| + | Bio-hazardous 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, 5l, cardboard for incineration, box-25 | Biohazard Label as per WHO PQS E010/011 |
| | Soap | Liquid (prefered), powder and bar | |
| | Gloves, Cleaning | Outer glove should have long cuffs, reaching well above the wrist, ideally to mid-forearm. Cuff length preferably reach mid-forearm (eg. minimum 280mm total length. Sizes, S, M, L).Reusable | Pouncture resistant, FDA compliant |
| | Hand drying tissue | 50 to 100m roll | |
| | Chlorine | NaDCC, granules, 1kg, 65 to 70% + dossage spon | |