COVID-19 v4

World Health Organization

Operational Support & Logistics
Disease Commodity Packages

Agent's biosafety level: (to be confirmed): BSL2, Virus culture BSL3

Epidemic potential: Under investigation

Last Update: 06 March 2020

Related links: COVID-19 [LINK]

Managing Epidemics Handbook [LINK]

SURVEILLANCE	Sample Collection	Diagnosis		
		Polymerase Chain Reaction (PCR)	Immunoassay	Culture
Laboratory confirmation of a COVID-19 case will trigger a thorough investigation. Because no PCR test is currently 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 (nasopharyngeal and sputum samples).	No commercial rRT-PCR kits are yet available; see interim COVID-19 laboratory guidance 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

PREVENTION & CONTROL	Travel & Trade	Vaccine	Triage/Screening (PPE)
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 infection prevention and control (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.	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 precautions. Airborne-related precautions are only required for aerosol-generating procedures. Personal protective equipment (PPE) for screening and for at-risk health care workers at health care facilities.

Please see WHO technical guidance on IPC for COVID-19 [LINK]

R&D Blueprint [LINK]

CASE MANAGEMENT	Treatment			Personal Protective Equipment (PPE)
	Aetiological	Supportive		
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 an outbreak-specific basis, the Monitored Emergency Use of Unregistered Interventions (MEURI) may be considered. Please refer to the 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.	Antibiotics Pain/fever relief	PPE for at-risk health care workers at health care facilities. Respiratory (standard, droplet IPC); airborne-related precautions for aerosol-generating procedures. Possibly Home Care Kits for home isolation of asymptomatic or mildly symptomatic cases (in the event of a large outbreak).

Key outbreak control activities considered for material supply

- **Supportive treatment** (oxygen, hydration, antibiotics and fever/pain relief) to reduce mortality.
- **PPE** and other materials 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, continuous development and refinement. For greater clarity, please refer to the 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 the transport of infectious substances 2019–2020.	[LINK]
		Viral transport medium	Viral transport medium with swab. Medium 1ml, 2ml or 3ml	• Comply with the CLSI standard M40-A (for the Quality Control of Microbiology Specimen Transport Devices). • Compatible with molecular and cell culture techniques	
		Sharps container boxes	Puncture-resistant container for collection and disposal of used, disposable and auto-disable syringes and needles. 5 L capacity accommodating approximately 100 syringes. Boxes to be prominently marked.	• WHO performance specification E10/IC.1 • WHO/UNICEF standard E10/IC.2 or equivalent	
	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.		Technical guidance for COVID-19 is available online.	[LINK]
PREVENTION & CONTROL	Triage/Screening PPE	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	• EU MDD Directive 93/42/EEC Category III • EU PPE Regulation 2016/425 Category III • EN 455 • EN 374 • ANSI/ISEA 105 • ASTM D6319 or equivalent set of standards.	
		Mask, surgical – health care worker	Surgical mask, good breathability, internal and external faces should be clearly identified Type II or higher.	• EU MDD Directive 93/42/EEC Category III or equivalent, • EN 14683 Type II, IR, IIR • ASTM F2100 minimum Level 1 or equivalent.	
		Mask, surgical – patient	Surgical mask, good breathability, internal and external faces should be clearly identified Type I.	• EN 14683 any type including Type I • ASTM F2100 any level or equivalent	

		Oxygen concentrator	Device concentrates oxygen from ambient air. Mobile on four antistatic swivel castors, two with brakes Flowrate: continuous and adjustable; oxygen purity: 93% ± 3%; output pressure: 0.04–0.07 MPa; noise 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/low pressure" (0.1/0.23 MPa), "power failure" and "occlusion" (no flow). Accessories and spare parts should be available to ensure at least one year of operation	WHO; Concentrator, oxygen	[LINK]
		Pulse oximeter	Compact portable device to monitor haemoglobin oxygen saturation and calculate the pulse rate of 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 80601-2-61:2011, or equivalent	WHO-UNICEF Technical Specifications and Guidance for Oxygen Therapy Devices, 2019	[LINK]
		Flow-splitter, for oxygen supply	Flow splitter for diversification of oxygen delivery. Each outlet with an independent flowmeter for independently controlled oxygen flow rates. Full scale is graduated in litres per minute (L/min). The device is connected to a single oxygen supply (e.g. concentrator). Input pressure: 50–350 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 to various medical gas sources, such as a centralized system, cylinders, concentrators or compressors; standard (absolute, non-compensated) and pressure-compensated flowmeter 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. Should be compatible with oxygen concentrator, including necessary hose connectors.		
		Nasal prongs	Oxygen cannulae (nasal prongs) are plastic tubes shaped as two prongs delivering air/oxygen mixture into the nasal cavities and connected to an oxygen administration circuit; cannulae can be designed for low-flow applications (0–15 L/min range in general) or high flow (> 15 L/min typically). Oxygen and air/oxygen mixture compatibility, as per ISO 15001; different sizes: adult, paediatric, neonatal		
		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-sterile, 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	• Tidal volume up to 1000 mL • Pressure (inspiratory) up to 80 cm H2O • Volume (inspiratory) up to 120 L/min • Respiratory rate: up to 60 breaths per minute • Synchronized intermittent mandatory ventilation (SIMV) respiratory rate: up to 40 breaths per minute. • CPAP/PEEP up to 20 cm H2O • Pressure support up to 45 cm H2O • FiO2 between 21% and 100% • Inspiratory and expiratory times up to at least 2 sec and 8 sec respectively • I:E ratio from 1:1 to 1:3 Modes of ventilation: • Volume controlled • Pressure controlled • Pressure support • SIMV with pressure support • Assist/control mode • CPAP/PEEP Alarms are required: FiO2, minute volume, pressure, PEEP, apnea, occlusion, high respiration rate, disconnection. System alarms required: power failure, gas disconnection, low battery, vent inoperative, self diagnostics. If an alarm silencing feature is incorporated, it must be temporary and clearly displayed when activated. Air and externally supplied oxygen mixture ratios fully controllable; inlet gas supply (O2) pressure range 35 psi to 65 psi; medical air compressor integral to unit, with inlet filter.	ISO 80601-2-80 and ISO 80601-2-79 or equivalent	
		Laryngoscope – adult/child	Instrument used to expose and view the larynx and surrounding areas during orotracheal and nasotracheal intubation. Consists of a large cylindrical, hollow, slightly ribbed handle with a threaded head compatible with different blade types and sizes. Each blade has fibre optics or a single bulb; bulb is at least a 2.7 V halogen light and is removable 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 Instructions for use, troubleshooting and maintenance (English, French, Spanish) Supplied with six compatible batteries in total Four extra halogen bulbs	ISO 7376:2009 or equivalent	

CASE MANAGEMENT	Supportive Treatment	Laryngoscope – neonate	Instrument used to expose and view the larynx and surrounding areas during orotracheal and nasotracheal intubation. Consists of a large cylindrical, hollow, slightly ribbed handle with a threaded head compatible with different blade types and sizes. Each blade has fibre optics or a single bulb; bulb is at least a 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 Instructions for use, troubleshooting and maintenance (English, French, Spanish) Supplied with six compatible batteries in total Four extra halogen bulbs	ISO 7376:2009 or equivalent
		Endotracheal tube, without cuff	Without cuff, sterile, single-use. Consists of a thin, flexible, transparent and single hollow cylinder, with an anatomical curvature Magill-type of 37.5°, black and legible depth markings and graduation in centimetres, with radio-opaque continuous line mark, with pilot balloon, with a standard connector at 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. Endotracheal tubes to be standard in all aspects: dimension, markings and connectors	• ISO 5361:2016; • ISO 10993-1:2018; • ISO 11135:2014 or equivalent
		Endotracheal tube, with cuff	With cuff, sterile, single-use. Consists of a thin, flexible, transparent and single hollow cylinder, with an anatomical curvature Magill-type of 37.5°, black and legible depth markings and graduation in centimetres, with radio-opaque continuous line mark, with cuff and pilot balloon, with a standard connector at 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 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 moving around in the upper airway. Also ensures that the environment below the cuff can be pressurized 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 a Luer tip connector for syringes. Endotracheal tubes to be standard in all aspects: dimension, markings and connectors	
		Endotracheal tube introducer, Bougie	Blue or yellow tube with graduated marking Curved tip with distal rounded smooth tip; sterile, single-use Diameter: 10 Fr and 15 Fr; length: 60–70 cm	• ISO 5361:2016; • ISO 10993-1:2018; • ISO 11135:2014 or equivalent
		Endotracheal tube introducer, Stylet	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. Sterile, single-use Diameter: 10 Fr and 14 Fr; length: 30–45 cm	
		Colorimetric end tidal CO2 detector	Sizes compatible with child and adult endotracheal tube; single-use	ISO 5367:2014 or equivalent
		Resuscitator, adult	Compressible self-refilling ventilation bag; capacity: 1475–2000 mL Oxygen reservoir bag complete Non-rebreathing patient valve with pressure-limiting valve, patient connector outside/inside diameter: 22/15 mm. Inlet valve with nipple for O2 tubing Masks, silicon; sizes: adult small, adult medium, adult large	ISO 10651-4:2002 or equivalent
		Resuscitator, child	Compressible self-refilling ventilation bag, child, capacity: 500–700 mL Oxygen reservoir bag complete Non-rebreathing patient valve with pressure limiting valve, patient connector outside/inside diameter: 22/15 mm Inlet valve with nipple for O2 tubing Masks, silicon, for child	
		Oropharyngeal airway, Guedel, sterile, single-use	One-piece, semi-rigid, curved plastic tube. To be inserted through the oropharynges to facilitate airway management. Guedel type. Flange surface is permanently marked with tube size/length in mm, and the manufacturer or supplier's name. Bite resistant. Proximal (or buccal) end straight and reinforced Distal end semi-rigid, curved, with atraumatic soft rounded edges Infant sizes: 00, 0, 1; adult sizes: 2, 3, 4	• EN12181 • ISO 5364; • ISO10993-1 or equivalent
		Nasopharyngeal airway	Sterile, single-use; 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 of resisting high-level disinfection procedures Aspiration pumps vary 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, 1000 mL	
		Infusion giving set	Infusion giving sets for adult and pediatric use to be considered. IV catheters and scalp vein sets 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, 500 mg, tablets	
	PPE Health Care Facilities	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	• EU MDD Directive 93/42/EEC Category III • EU PPE Regulation 2016/425 Category III • EN 455 • EN 374 • ANSI/ISEA 105, • ASTM D6319, or equivalent
		Gloves, examination or surgical, sterile	Gloves, examination or surgical, nitrile, powder-free, sterile, single-use Gloves should have long cuffs, reaching well above the wrist, ideally to mid-forearm Sizes: small, medium, large	• EU MDD Directive 93/42/EEC Category III, • EU PPE Regulation 2016/425 Category III, • EN 455, • ANSI/ISEA 105, • ASTM D6319 or equivalent
		Goggles, protective	Good seal with the skin of the face, flexible PVC frame to easily fit all face contours with even pressure, enclose eyes and the surrounding areas, accommodate 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 • EN 166 • ANSI/ISEA Z87.1 or equivalent
		Face shield	Made of clear plastic and providing 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 covers 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 • EN 166 • ANSI/ISEA Z87.1 or equivalent
		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 Good breathability with a 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 • Minimum "FFP2 according to EN 149, EU PPE • Regulation 2016/425 Category III, or equivalent
		Mask, surgical – health care worker.	Surgical mask, good breathability; internal and external faces should be clearly identified Type II or higher.	• EU MDD Directive 93/42/EEC Category III or equivalent • EN 14683 Type II, IR, IIIR • ASTM F2100 minimum level 1 or equivalent
		Mask, surgical – patient	Surgical mask, good breathability; internal and external faces should be clearly identified Type I.	• EN 14683 any type including Type I • ASTM F2100 minimum level 1 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, 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 weight: 300 g/m2 Covering size: 7090 cm (width) x 120–150 cm (height) Reusable (provided appropriate arrangements for decontamination are in place)	• EN ISO 13688 • EN 14126-B and partial protection (EN 13034 or EN 14605) • EN 343 for water and breathability or equivalent
		Gown	Single-use, length mid-calf,	• EU PPE Regulation 2016/425 and EU MDD Directive 93/42/EEC • FDA Class I or II medical device, or equivalent

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