SARS

Operational Support & Logistics
Disease Commodity Packages

Agent's Biosafety Level: BSL2, virus culture BSL3

Epidemic Potential: High

Severe Acute Respiratory Syndrome (SARS) [LINK]

Last Update: January 2020

SURVEILLANCE	Sample Collection	Diagnosis		
		Polymerase Chain Reaction (PCR)	Immunoassay	Culture
Even in inter-epidemic periods, SARS outbreak remains a distinct possibility. Whether transmission is through animal-to-human contact or human-to-human contact, immediate sample collection and diagnosis is critical to responding to any SARS outbreak.	Upper and lower respiratory samples (nasophyrangeal and sputum samples), blood	1 RT-PCR Non-prequalified (NPQ)	Several ELISA Non-prequalified (NPQ) Confirmation via microneutralization	viral transport medium required several in-house ELISA/IF tests

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

PREVENTION & CONTROL	Travel & Trade	Vaccine	Infection Protection & Control (IPC)
There are numerous potential hosts of SARS. Due to the uncertainty and difficulty in diagnosing SARS accurately and timely, it is recommended that proper IPC precautions, similar to Influenza and MERS-CoV, be undertaken.	Temperature screening at airports/entry points of affected countries	Several candidates in development. Please refer to the most recent guidance in the R&D Blueprint	Personal Protective Equipment (PPE) for screening Use of PPE at at-risk health facilities PPE Guidelines [LINK]

Please see WHO guidance on SARS R&D Blueprint [LINK]

CASE MANAGEMENT	Treatment			Personal Protection Equipment (PPE)
	Aetiological	Supportive		
There is no proven specific treatment or vaccine, however there are ongoing R&D efforts. PPE is required to protect those in contact with infected and potentially infected patients.	Several candidates in development.	Oxygen Therapy Mechanical Ventilation of severe cases (40%) Use of Oximeter highly recommended Intubation, ICU, ECMO required for severe patients	Antibiotics, Pain/Fever	Respiratory (standard, droplet IPC); Airborne precautions for aerosol generating procedures, 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 2017 - 2018 [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 • WHO/UNICEF standard E10/IC.2 or equivalent
		Sputum Collection	Sputum collection container, 30ml, 5.7x3.5cm, with screw cap, autoclavable, polypropylene.	
	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.		
& CONTROL	Travel & Trade	Thermometer, Infrared	Handheld battery-powered electronic instrument designed to estimate body temperature od a site on skin (e.g. forehead) non-invasively, quickly without touching. A sensor can be cleaned easily by each use with wiping by disinfectant or sterilisable cover.	• ISO 80601-2-56:2009 • ISO 80601-2-59 Ed. 1.0:2008 • ASTM E1104-98(2003) • ASTM E1965-98(2009) • ASTM E1112-00(2011) • JIS T 4207:2005 • or equivalent WHO Core - Thermometers, electronic, infrared [LINK]
		Gloves, examination	Gloves, examination, nitrile, powder-free, non-sterile. Cuff length preferably reach mid-forearm (eg. minimum 280mm total length. Sizes, S, M, L Gloves should have long cuffs, reaching well above the wrist, ideally to mid-forearm.	• EU standard directive 93/42/EEC Class I, EN 455, • EU standard directive 89/686/EEC Category III, EN 374, • ANSI/ISEA 105-2011, • ASTM D6319-10 • or equivalent

PREVENTION	IPC PPE - Screening	Mask, surgical	Medical/surgical mask, high fluid resistance, good breathability, internal and external faces should be clearly identified, structured design that does not collapse against the mouth (e.g. duckbill, cup-shaped)	EN 14683 Type IIR performance ASTM F2100 level 2 or level 3 or equivalent; • Fluid resistance at minimum 120 mmHg pressure based on ASTM F1862-07, ISO 22609, or equivalent • Breathability: MIL–M-36945C, EN 14683 annex C, or equivalent • Filtration efficiency: ASTM F2101, EN14683 annex B, or equivalent
		Gown	Single use, fluid resistant, disposable, length mid-calf to cover the top of the boots, light colours preferable to better detect possible contamination, thumb/finger loops or elastic cuff to anchor sleeves in place.	• Option 1: fluid penetration resistant: EN 13795 high performance, or AAMI PB70 level 3 performance or above, or equivalent • Option 2: blood borne pathogens penetration resistant: AAMI PB70 level 4 performance, or (EN 14126-B) and partial body protection (EN 13034 or EN 14605), or equivalent
	Supportive Treatment	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] 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.	
		Portable ventilator	a) Tidal volume up to 1,000 mL. b) Pressure (inspiratory) up to 80 cm H20 c) Volume (inspiratory) up to 120 L/min d) Respiratory rate: up to 60 breaths per minute. e) SIMV Respiratory Rate: up to 40 breaths per minute. f) CPAP/PEEP up to 20 cm H2O. g) Pressure support up to 45 cm H2O. h) FiO2 between 21 to 100 % i) Inspiratory and expiratory times up to at least 2 sec and 8 sec respectively j) I:E Ratio at least from 1:1 to 1:3. 2 Modes of ventilation: a) Volume controlled. b) Pressure controlled. c) Pressure support. d) Synchronized intermittent mandatory ventilation (SIMV) with pressure support. e) Assist / control mode f) CPAP/PEEP Alarms required: FiO2, minute volume, pressure, PEEP, apnoea, occlusion, high respiration rate, disconnection System alarms required: power failure, gas disconnection, low battery, vent inoperative, self diagnostics If 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 at least 35 to 65 psi 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) • 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 • IEC 60601-1-1:2000 Medical electrical equipment - Part 1-1: General requirements for safety - Collateral standard: Safety requirements for medical electrical systems • 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 • 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
		Antibiotics	According to national guidelines and clinical presentation	
		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	

CASE MANAGEMENT

PPE Health Care Facilities

Gloves, examination	Gloves, examination, nitrile, powder-free, non-sterile. Cuff length preferably reach mid-forearm (eg. minimum 280mm total length. Sizes, S, M, L Gloves should have long cuffs, reaching well above the wrist, ideally to mid-forearm.	• EU standard directive 93/42/EEC Class I, EN 455, • EU standard directive 89/686/EEC Category III, EN 374, • ANSI/ISEA 105-2011, • ASTM D6319-10 • or equivalent
Gloves, surgical, length to forearm large (longer than examination gloves)	Gloves, surgical, nitrile, powder-free, single use. Gloves should have long cuffs, reaching well above the wrist, ideally to mid-forearm. Sizes 5 to 8.5	• EU standard directive 93/42/EEC Class I, EN 455, • ANSI/ISEA 105-2011, • ASTM 6319-10 • or equivalent
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 standard directive 86/686/EEC, EN 166/2002, • ANSI/ISEA Z87.1-2010, or equivalent
Fit Test Kit	To evaluate effectiveness of seal for tight fitting respiratory protection devices	OSHA 29 CFR 1910.134 Appendix A
Coverall	Single use, light colours preferable to better detect possible contamination, thumb/finger loops to anchor sleeves in place, good freedom of movement. Sizes: M, L, XL	• Option 1: blood and body fluid penetration resistant: meets or exceeds ISO 16603 class 3 or above exposure pressure, or equivalent • Option 2: blood-borne pathogens penetration resistant:meets or exceeds ISO 16604 class 2 or above exposure pressure, or equivalent
Face mask, particulate respirator, grade N95 or higher	Fluid resistant particulate respirator. Surgical N95 respirator or higher High fluid resistance, Good breathability, Internal and external faces should be clearly identified, Structured design that does not collapse against the mouth (e.g. duckbill, cup-shaped)	"Surgical N95 respirator" cleared by the US FDA and NIOSH, or equivalent • Fluid resistant surgical N95 respirator with minimum 80 mm Hg pressure based on ASTM F1862, ISO 22609 , or equivalent
Mask, surgical	Medical/surgical mask, high fluid resistance, good breathability, internal and external faces should be clearly identified, structured design that does not collapse against the mouth (e.g. duckbill, cup-shaped)	EN 14683 Type IIR performance ASTM F2100 level 2 or level 3 or equivalent; • Fluid resistance at minimum 120 mmHg pressure based on ASTM F1862-07, ISO 22609, or equivalent • Breathability: MIL–M-36945C, EN 14683 annex C, or equivalent • Filtration efficiency: ASTM F2101, EN14683 annex B, 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	
Gown	Single use, fluid resistant, disposable, length mid-calf to cover the top of the boots, light colours preferable to better detect possible contamination, thumb/finger loops or elastic cuff to anchor sleeves in place.	• Option 1: fluid penetration resistant: EN 13795 high performance, or AAMI PB70 level 3 performance or above, or equivalent • Option 2: blood borne pathogens penetration resistant: AAMI PB70 level 4 performance, or (EN 14126-B) and partial body protection (EN 13034 or EN 14605), or equivalent
Goggles, protective	Good seal with the skin of the face, Flexible PVC frame to easily fit 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 standard directive 86/686/EEC, EN 166/2002, • ANSI/ISEA Z87.1-2010, or equivalent
Apron	Apron, disposable or single use, made of polyester with PVC-coated, or other waterproof material, Straight apron with bib, minimum basis weight: 250g/m2, waterproof, Covering size: 70-90 cm (width) X 120-150cm (height), or standard adult size	
Alcohol-based hand rub	Bottle of 100ml	
Bio-hazardous bag	Disposal bag for bio-hazardous waste, 30x50cm, with "Bio Hazard" print, autoclavable polypropylene. 50 or 70 micron thickness	

	Body bag	Made of linear enforced, U-shape zipper and 2 zipper pulls with tie ribs. adult size 250x120cm Protector Body Bag specifications: • 6 handles • Impermeable, linear reinforced LLDPE, LDPE, EVA, PEVA, (avoid PVC), minimum thickness 400 microns; • Should be able to hold 100-125 kilos (200-250 lbs), • Should contain no chlorides: burning of chlorides pollute the environment and can cause damage to retort chambers. Body bags should be non carcinogenic to health of funeral workers when used for cremations. • At least 6 handles included in the body bag to allow burial team to hand carry it safely • Heat-sealed: insure superior strength and safety, • Provide full containment of blood borne pathogens • Cracking point of 25 - 32 degrees below zero • Shelf life: minimum 10 years • Bag and hands should be white color
	Chlorine	NaDCC, granules, 1kg, 65 to 70% + dossage spon