

COVID-19 Scientific and Public Health Policy Update – (March 10, 2020)

In addition to our weekly brief on the spread of COVID-19 and the actions that Africa CDC is taking to help member states, Africa CDC has begun to share a weekly brief detailing the latest changes in scientific knowledge and public health policy changes, as well as updates to the latest guidance from WHO and others. Contents of this document are not intended to serve as recommendations from the Africa CDC; rather, it is a summary of the factbase to help inform member states. It is important to note that the outbreak is evolving rapidly and that the nature of this information will continue to change. So we will continue to provide regular updates to ensure member states are informed of the most critical developments in these areas.

A. EXECUTIVE SUMMARY

- A highly preliminary population genetic analyses of 103 SARS-CoV-2 genomes indicates that the viruses could have evolved into two major types (designated L and S) and that the L type (newer and more aggressive) initially was more prevalent, but its frequency decreased after the end of January as more severe selective pressure was placed on it. However, studies on larger data sets are needed to validate and further understand the difference between the two strains.
- A report suggests SARS-CoV-2 often causes cluster transmission, especially within family clusters – in some cities, cluster transmissions accounted for 50-80% of all confirmed cases.
- An analysis of 365 patients in the Shenzhen, imply that children's risk of becoming infected could substantially rise with more exposure to the virus as cases of children went up from 2 to 13% of total cases in a matter of weeks. Transmission of the virus within families was also a major factor. However, analysis on a larger sample would be needed to gain more confidence in this level of transmission frequency among children.
- Many diagnostic tests e.g., Genmark's ePlex test continue to be in development and testing, including rapid and field based tests. Similarly, the work to develop a potential vaccine continues as companies e.g., Inovio join China in launching clinical trials
- Clinical trials in China are struggling with recruitment due to the strict enrollment criteria and the location of most study centers being in Wuhan.
- As imported cases in Africa continue to rise, multiple African countries have extended travel restrictions to countries beyond China e.g., Iran, Italy, South Korea, France, Germany; while heavily affected countries increasingly impose tighter restrictions e.g., Italy extends quarantine measures to the whole country, South Korea limits mask buying and secures emergency approval for rapid diagnostic kits, Iran deploys 300K+ health workers, Japan limits domestic travel
- Air Algerie suspends flights to Milan, while Royal Air Maroc suspends flights to both Venice and Milan.

B. NEW GUIDELINES AND RESOURCES

- Since March 2, WHO has released new or updated guidelines and resources on country preparedness ([operational planning guidelines for countries](#), [summary of preparedness, readiness and response actions](#)), [laboratory testing](#), [shipping of specimens](#), risk communication ([communication package for healthcare facilities](#)) and a [Q&A on COVID-19 vs. Influenza](#).
- Similarly, US CDC has updated its guidelines on [Evaluating and Reporting Persons Under Investigation \(PUIs\)](#), [Collecting, Handling, and Testing Clinical Specimens from PUIs](#), [Clinical Management of COVID-19 patients](#)
- US CDC has also released new resources for risk communication and community engagement including resources for [high risk persons](#), [community and faith-based leaders](#), [homeless shelters](#), [institutes of higher education](#), [election polling](#) and [law enforcement](#). It has released specific guidelines on [environmental cleaning and disinfection](#) and has published a [Check and Record Everyday \(CARE\) Booklet](#), a guide for monitoring symptoms for travelers returning from China and other outbreak areas.
- The PHE has published a [simple infographic on clinical management for COVID-19 patients](#).
- The full list of latest guidance and resources from WHO and other public health institutions are listed at the end of this update in **section F**.

C. SCIENTIFIC UPDATES

Basic science (virology, immunology, pathogenesis)

- A review of 11 studies on COVID-19 patients' laboratory test results suggests that [the most frequent abnormalities](#) were lymphopenia or having abnormally low levels of lymphocytes, increased values of CRP (c-reactive protein), LDH (tissue damage), ESR (red blood cells sedimentation) and D-dimer (harmful blood clots), as well as low concentrations of serum albumin and hemoglobin. Many of these laboratory abnormalities were predictive of an adverse outcome.
- A metatranscriptome sequencing for the bronchoalveolar lavage fluid of 8 SARS-CoV-2 patients, 25 community-acquired pneumonia (CAP) patients, and 20 healthy controls suggests that [SARS-CoV-2 evolves in vivo after infection](#), which may affect its virulence, infectivity, and transmissibility. Although how the intra-host variant spreads in the population is yet to be understood, and clinical utility may be limited.
- Population genetic analyses of 103 SARS-CoV-2 genomes indicates that these viruses [evolved into two major types \(designated L and S\)](#). Whereas the L type was more prevalent in the early stages of the outbreak in Wuhan, the frequency of the L type (the more aggressive and transmissible type) decreased after early January 2020 as a result of human intervention placing more severe selective pressure on the L type. On the other hand, the S type, which is evolutionarily older and less aggressive, might have increased in relative frequency due to relatively weaker selective pressure. However, follow up studies on larger data sets on the evolution of the virus are needed to verify this.

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- In addition, another meta-analysis of existing COVID-19 literature suggests that [serial procalcitonin measurement may play a role for predicting evolution towards a more severe form](#) of disease. However, additional studies are needed to verify this.

Epidemiology

- An analysis of 28 COVID-19 cases suggests a [serial interval of 4-4.6 days](#), suggesting that a substantial proportion of secondary transmission may occur prior to illness onset. However, analysis on a larger data set would be needed to verify this.
- An analysis of 365 patients in the Shenzhen, imply that [children's risk of becoming infected could substantially rise with more exposure to the virus](#) as cases of children went up from 2 to 13% of total cases in a matter of weeks. Transmission of the virus within families was also a major factor. However, this could be driven by lower testing rates of children in the early days of the outbreak, and analysis on a larger sample would be needed to gain more confidence in this level of transmission frequency among children.
- A report on 24 asymptomatic cases identified through contact tracing shows that [~70% were prone to be mildly ill during hospitalization, while the younger cases \(30%\) with a median age of 14 years showed normal CT image and developed no symptoms](#). The communicable period, however, could be up to 3 weeks and communicated patients could develop severe illnesses. These results highlighted the importance of close contact tracing.
- A report suggests SARS-CoV-2 [often causes cluster transmission, especially within family clusters](#) – in some cities, cluster transmissions accounted for 50-80% of all confirmed cases.
- A simulation of the spread dynamics of COVID-19 in China using the SEIR model suggests that [more rigorous government control policies were associated with slower increase of the infected population](#). Isolation and protective procedures would be less effective as more cases accrue, so the optimization of treatment plan and the development of specific drugs would be of more importance.
- A report projecting the impact of travel limitations on the spread of the COVID-19 disease using a global metapopulation disease transmission model suggests that the [travel quarantine of Wuhan delayed the overall epidemic progression by only 3 to 5 days in Mainland China but has reduced nearly 80% of imported cases until mid-February internationally](#). Modeling results also indicate that sustained 90% travel restrictions to and from Mainland China only modestly affect the epidemic trajectory unless combined with a 50% or higher reduction of transmission in the community.

Diagnostics

- Based on tests done on 14 COVID-19 patients, report found that compared to pharyngeal swab specimens, [nucleic acid detection of COVID-19 in fecal specimens was equally accurate](#), suggesting an alternative method of testing to explore.
- A report recommend to [test patients for COVID-19 even if they tested positive for dengue](#), especially if they have epidemiological links, after 2 patients in Singapore with false-positive results from rapid serological testing for dengue were later confirmed to have COVID-19.
- An analytical evaluation of a laboratory-developed test for the detection of SARS-CoV-2 using the open channel (utility channel) of the Cobas 6800 system suggests that [high-throughput molecular testing could be useful in the ongoing outbreak situation](#). However, the

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report still recommends cross checking results with an independent PCR and clinical diagnosis.

- A comparison of the performance of COVID-19-RdRp/He assay and RdRp-P2 assays suggests that [COVID-19-RdRp/He assays are more sensitive and specific](#).
- [Multiple diagnostic products are being developed and marketed](#): GenMark is shipping its ePlex COVID-19 test, planning to request Emergency Use Authorization under a new FDA policy issued last week ; Integrated DNA Technologies had earned FDA authorization to provide reagents for coronavirus tests; Sherlock Biosciences announced a new collaboration to develop tests; BATM unveiled a diagnostic that detects Covid-19 from saliva in under 30 minutes according to its CEO. The number and nature of diagnostic products in development are growing rapidly, and we will continue to update individuals on the latest developments.

Care and Treatment

- The 6th edition of China's COVID-19 protocols suggests at least 4 COVID-19 treatments that could be effective: [lopinavir and ritonavir, chloroquine and arbidol](#), but this must be evaluated through results from formal clinical trials.
- Given recent observations that the ACE2 is likely the binding site of SARS-CoV-2, an article suggests the use available [angiotensin receptor 1 \(AT1R\) blockers, such as losartan, as potential treatment., but formal testing will need to be done to measure efficacy of treatments utilizing this pathway.](#)
- Based on a series of drug repurposing screening campaigns, another article suggests the potential use of [niclosamide, an FDA-approved anthelmintic drug](#) for treatment of COVID-19, but again formal testing is required.
- Takeda, a Japanese company, announced plans to [develop drug derived from the blood of patients who have antibodies to the virus.](#)
- [Clinical trials in China are struggling with recruitment](#) due 1.) to strict enrollment criteria (mild / moderate trials requiring patients to have <8 days since disease onset, severe trials requiring <12 days), 2.) requirement that patient can't be on any antiviral medication before enrollment and 3.) location of most study centers being in Wuhan.
- The author of a Lancet article on [clinical management for neonates](#) with COVID-19 has recently updated his article, suggesting a more judicious approach in neonatal testing, neonatal treatment using antivirals and confinement to the NICU.

Vaccines

- [The race to develop a COVID-19 vaccine continues](#): Inovio's CEO announced accelerated clinical trials of an investigational DNA-based vaccine, partly funded by the CEPI. Dynavax announced that it will provide its toll-like receptor 9 agonist adjuvant for use with the University of Queensland's molecular clamp vaccine platform. Generex announced last week a contract with a Chinese consortium to develop a coronavirus vaccine using its CD-4 T-cell activation platform. The estimated timeline for a vaccine coming to market remains likely to be at least 1 year.

Infection prevention and control

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- A report describes the [IPC procedures implemented in Hong Kong that have led to limited to none nosocomial transmissions](#), which include a bundle approach of active and enhanced laboratory surveillance, early airborne infection isolation, rapid molecular diagnostic testing, and contact tracing for healthcare workers (HCWs) with unprotected exposure in the hospitals.

Psychological health

- A one-month cross-sectional observational study of 180 medical staff who treated patients with COVID-19 infection in China suggests that they had [levels of anxiety, stress, and self-efficacy that were dependent on sleep quality and social support](#), suggesting that governments should be wary of these 2 factors to ensure wellbeing of health workers

D. RELATED PUBLIC HEALTH POLICY

Contents of this section include only publicly announced public health policies.

Africa

- As imported cases in Africa continue to rise, multiple African countries have [extended travel restrictions to countries beyond China](#) e.g., Iran, Italy, South Korea, France, Germany (not exhaustive)
 - **Entry restrictions** for foreign travellers: Madagascar, Seychelles, Angola, Liberia, Chad, Congo, Zimbabwe
 - **Mandatory quarantine** for all travellers: Uganda, Mauritania, Egypt, DRC, Eritrea, Burundi, Mauritius
 - For the full list of travel restrictions imposed by African countries, refer to **Section E**.
- [Algeria](#) has announced that all cases within their borders were quarantined
- [Angola](#) has lifted entry restrictions for citizens of Nigeria, Egypt and Algeria after the government's initial announcement last week, according to local newspaper ANGOP.
- Egypt has [quarantined passengers of a Nile river cruise](#) after multiple passengers tested positive in the ship. Egyptian authorities reported moving 45 suspected cases - 33 passengers and 12 crew - into isolation on land, without specifying what happened to the others aboard the "A-Sara".
- [Kenya](#)¹ has identified Nairobi, Mombasa and Kilifi as the most at-risk regions for a COVID-19 outbreak. The government has banned international meetings and events for 30 days and has imposed a \$50,000 fine or imprisonment for 2 years for persons publishing fake news about the outbreak. The country has also set up 100+ hospital beds, deployed more than 1,000 health workers to the Jomo Kenyatta International Airport, according to its health minister. The MoH has also said that it will be sharing updates on the outbreak via text messages to its citizens.
- [Nigeria](#) has announced the launch of a coronavirus task force, while Nigerian lawmakers vote to close Parliament for two weeks.

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- [Rwanda](#) has announced tweaks to their existing tourist protocols including removal of notice periods for cancellations during to COVID-19
- [South Africa](#) prepares a specially-equipped military plane that will collect 184 of its nationals stranded in Wuhan.
- [Tunisia](#) suspends passenger ferry services to northern Italy and designates a separate terminal at the Tunis airport to receive flights from Northern Italy.
- [Zimbabwe](#) bans civil servants from foreign travel. It has also advised travellers coming from countries with local transmission to [self-quarantine for 21 days](#).
- Meanwhile, [multiple events in the continent](#) such as the UN-ECA ministerial conference, Next Einstein Forum, Africa CEO forum and Africa Basketball League are either cancelled or postponed due to the outbreak. The [Moroccan Football Federation](#) announced that all football matches will be played behind closed doors due to the outbreak.
- [Air Algerie](#) suspends flights to Milan starting March 10, while [Royal Air Maroc](#) has suspended flights to both Venice and Milan.

Rest of World

- As COVID-19 cases outside China accelerate rapidly, heavily affected countries have continued to **impose public health policies to contain the outbreak**
 - [Italy](#) has declared the whole country as 'red zone' meaning people should stay at home except for work and emergencies and applying the quarantine measures in place in Lombardy to the whole country. The country will [close all schools and universities](#) across the country until the mid-March. [Public gatherings will be banned](#).
 - [South Korea](#) plans to use a GPS-based app to monitor people quarantined at home and has adopted a [new distribution system for face masks](#), rationing the number each person can buy each week. People can now buy masks only on the weekday corresponding to the last digit of their birth year. It has also released [emergency approval for newly developed test kits that show results in six hours](#), while test kits that show results in under 20 minutes are under review by the country's FDA. The country has also rolled out '[drive through](#)' testing facilities to expedite diagnosis.
 - [Iran](#) will temporarily release 54,000 people from prison and deploy 300,000+ health workers to contain the outbreak.
 - [Japan](#)'s national airlines, Japan Airlines and Nippon Airlines, will reduce domestic flights in Japan. The Rugby Sevens Tokyo 2020 test event cancelled due to coronavirus outbreak.
- As cases across multiple countries across all continent grow, countries have increasingly **imposed restrictive travel and public health policies** (not exhaustive)
 - **Entry restrictions**: Multiple countries globally e.g., Saudi Arabia, Qatar, [Israel](#) have extended entry restrictions to countries in Europe (e.g., Italy, France), Middle East (e.g., Iran, Pakistan), Africa (e.g., Egypt) and South East Asia (e.g., Philippines, Thailand)

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- **Mandatory quarantine:** [Israel](#) will require all citizens who return from abroad to self-quarantine for 14 days; [Russia](#) threatens prison for up to 5 years for people failing to self-isolate for 14 days following arrival from outbreak areas
- **Shutdown of schools:** [Madrid](#) (Spain), [Qatar](#)
- **Visa limitations:** [Vietnam](#) suspends visa-free travel for 8 European countries
- **Limiting of public gatherings:** [Sporting events in Spain](#) will be played without audience, Dublin to cancel [St. Patrick's Day Parade](#), [India](#) skips major Hindu festival
- **Fines for misinformation:** [Saudi Arabia](#) will impose a fine of up to 500,000 riyals (\$133,000) on people who do not disclose their health-related information and travel details at entry points
- **Restrictions on PPE and medicine distribution:** the government of [France](#) is taking control of the stocks and production of surgical masks in the country, [Czech Republic](#) has banned the sale of FFP3 medical face masks to anyone but healthcare or emergency workers, [India](#) has restricted the export of 26 pharmaceutical ingredients and the medicines made from them, including Paracetamol
- As cases decline in Hubei, China, the province has begun [issuing digital 'clean bills of health' for people to get back to work](#). Meanwhile, Beijing's public transport network plans to experiment with ["subway by appointment"](#), to reduce crowding in station.

E. LIST OF TRAVEL RESTRICTIONS IMPOSED BY AFRICAN COUNTRIES

Contents of this section include only publicly announced public health policies. Source of this section is the [IATA website](#) (unless otherwise stated)

Angola	Passengers who arrive from or have been in China, Iran, Italy and Korea (Rep.) are not allowed to enter Angola. This does not apply to nationals of Angola.
Burundi	All travellers from China, France, Germany, Iran, Italy, Japan, South Korea and Spain will be quarantined for 14 days.
Chad	Travellers who have been to China, Italy or South Korea will be quarantined for 14 days at a local health facility
Comoros	Passengers who have been in China or in any other country with confirmed cases of COVID-19 in the past 14 days must spend a period of 14 days in quarantine in a country that is free from COVID-19.
Congo	All travellers from China, Italy, South Korea, Iran and France will be quarantined for 14 days.
DRC	The Democratic Republic of Congo will quarantine travelers arriving from Italy, France, China and Germany.
Egypt	<p>Passengers who have been in China (People's Rep.), Chinese Taipei, Hong Kong (SAR China), Iran, Italy, Japan, Korea (Rep.), Macao (SAR China), Malaysia, Singapore, Thailand or Vietnam must fill in a health card with their full name, detailed address, nationality, flight number, full route, date of arrival, and telephone number. They will be monitored by the General Quarantine Administration for the following 14 days.</p> <p>1. Nationals of Qatar are not allowed to enter Egypt.</p> <p>2. Passengers who have been in Bahrain, China (People's Rep.), Chinese Taipei, France, Germany, Hong Kong (SAR China), Iran, Iraq, Italy, Japan, Korea (Rep.), Kuwait, Macao (SAR China), Malaysia, Singapore, Switzerland, Spain Thailand or Vietnam will be screened upon arrival, and must present a completed "Health Observation Card, upon arrival, and-will be followed up for a period of 14 days.</p>
Equatorial Guinea	Travellers who have been to China will be quarantined for 14 days.
Eritrea	Travellers coming from China, South Korea, Italy and Germany will be subject to quarantine regardless of symptoms.
Gabon	<p>Travellers who have been to China will be denied entry until further notice.</p> <p>The authorities have also announced the temporary closure of its borders with Cameroon and Equatorial Guinea to restrict the movements of people from these countries.</p>
Kenya	Travellers from China are required to self-isolate for 14 days.
Lesotho	Travellers from China and other COVID-19 affected areas are requested to self-quarantine for 14 days.

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Liberia	<p>All travellers who, within 14 days prior to arrival to Liberia, have visited countries with 200 or more confirmed cases of COVID19 are to be placed under precautionary observation.</p> <p>Those who have visited countries with between 50-200 confirmed cases will be evaluated based on the specific locations they visited. Those who have visited countries with 15-50 confirmed cases will be asked to self-monitor and report any COVID-19 symptoms to the authorities.</p> <p>The government has suspended issuance of 'laissez-passer' to prevent people leaving China from using intermediary countries as a means of avoiding the travel advisory.</p>
Madagascar	<p>Passengers who have been in China in the past 14 days are not allowed to enter Madagascar.</p> <p>This does not apply to nationals of Madagascar or to passengers who reside in Madagascar. Travellers who have been to Iran, Italy or South Korea in the past 14 days will be denied entry.</p> <p>All travelers from China will be subject to a 14-day quarantine.</p>
Malawi	<p>Incoming travellers with symptoms will be quarantined. Travellers from China and other affected countries or regions will be required to self-quarantine for 14 days.</p>
Mauritania	<p>All travellers from China, South Korea, Iran and Italy will be quarantined for 14 days.</p>
Mauritius	<p>1.Passengers who reside or have been in China (People's Rep.), Chinese Taipei, Hong Kong (SAR China), Iran, Italy, Korea (Rep.) or Macao (SAR China) in the past 14 days are not allowed to transit or enter Mauritius</p> <p>2.Nationals of Mauritius and residents of Mauritius who have been in China (People's Rep.), Chinese Taipei, Hong Kong (SAR), Iran, Italy, Korea (Rep.) or Macao (SAR China) in the past 14 days will be placed in quarantine.</p> <p>All travellers who have transited in China, including Hong Kong and Macao, in the 15 days prior to arrival will be quarantined. Citizens and their immediate family members will be granted entry, but will be required to undergo quarantine.</p>
Mozambique	<p>All visas have been indefinitely suspended for travellers holding People's Republic of China passports.</p>
Namibia	<p>Travellers who either show symptoms of COVID-19 or have been in a country that is exposed to the COVID-19 virus may be taken into quarantine</p>
Nigeria	<p>Passengers coming from China will be subjected to a 14-day quarantine.</p>
Seychelles	<p>Passengers who have been in China, Hong Kong (SAR China) or Macao (SAR China) in the past 14 days are not allowed to transit or enter Seychelles. This does not apply to nationals or residents of Seychelles. Passengers residing in China, Hong Kong (SAR China) or Macao (SAR China) are not</p>

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	<p>allowed to transit or enter Seychelles. This does not apply to nationals of Seychelles.</p> <p>All foreign travellers who have been in China, including Hong Kong and Macao, Iran, Italy and South Korea in the 14 days prior to arrival are not allowed to enter or transit through the country. This does not apply to Seychelles citizens and permanent residents</p>
Sierra Leone	All passengers arriving at the POE in any part of Sierra Leone, who had visited China in the last 14 days, would be subjected to quarantine with a regular follow ups by trained health workers to monitor their health for the duration of the incubation period of the virus which is 14 days.
Somalia	<p>1. Passengers who have been in China (People's Rep.) in the past 14 days are not allowed to enter Somalia. Somali nationals will be quarantined.</p> <p>2. Residents of Somalia who have been in China (People's Rep) are subject to immediate quarantine for a maximum of 14 days.</p>
South Sudan	Travellers who have visited China in the 14 days prior to arrival will have to undergo home-based self-monitoring with daily calls with public health officials.
Uganda	Passengers arriving from China (People's Rep.), Italy, Iran, Korea (Rep.), France, Germany and Spain will be required to self-quarantine for a period of 14 days. Travellers who have been in China in the 14 days before arrival will be required to self-quarantine for 14 days. Health officials will call the traveller daily to obtain updates.
Zimbabwe	People visiting Zimbabwe from countries affected by COVID-19 without valid medical certificates showing they are negative, will be sent back at the port of entry as the country strengthens its fight against the spread of the virus. The medical clearance certificates should show that the visitors were examined for symptoms and tested for COVID-19 at a Government-designated institution in their home country.

E. GUIDANCE AND RESOURCES (FULL LIST)

WHO guidelines and resources

Organization	Date published	Guidance or resource name
Country readiness		
WHO	9-Jan-2020	National capacities review tool for a novel coronavirus
WHO	8-Mar-2020	Critical preparedness, readiness and response actions for COVID-19

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WHO	4-Mar-2020	Operational Planning Guidelines and COVID-19 Partners Platform to support country preparedness and response
Surveillance and case definitions		
WHO	27-Feb-2020	Global Surveillance for human infection with coronavirus disease (COVID-19)
WHO	27-Feb-2020	Revised case reporting form for COVID-19 for confirmed cases and their outcome
WHO	n/a	Emerging respiratory viruses, including 2019-nCoV: methods for detection, prevention, response and control
WHO	n/a	Global COVID-19 Clinical Characterization Case Record Form and new data platform for anonymized COVID-19 clinical data
WHO	n/a	Case Reporting Form for COVID-19
Laboratory guidance		
WHO	2-Mar-2020	Laboratory testing for 2019 novel coronavirus (2019-nCoV) in suspected human cases
WHO	1-Mar-2020	Guidance for laboratories shipping specimens to WHO reference laboratories that provide confirmatory testing for COVID-19 virus
Patient management		
WHO	28-Jan-2020	Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected
WHO	20-Jan-2020	Home care for patients with suspected novel coronavirus (nCoV) infection presenting with mild symptoms and management of contacts
WHO	n/a	WHO Critical Care Severe Acute Respiratory Infection Training Short Course
WHO	18-Feb-2020	The Rights, Roles and Responsibilities Of Health Workers, Including Key Considerations For Occupational Safety And Health
Infection prevention and control		
WHO	25-Jan-2020	Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected
WHO	29-Jan-2020	Advice on the use of masks in the community, during home care and in health care settings in the context of the novel coronavirus (2019-nCoV) outbreak
WHO	10-Feb-2020	Q&A on infection prevention and control for health care workers caring for patients with suspected or confirmed 2019-nCoV
WHO	11-Feb-2020	Key considerations for repatriation and quarantine of travellers in relation to the outbreak of novel coronavirus 2019-nCoV
WHO	16-Feb-2020	Management of ill travellers at Points of Entry – international airports, seaports and ground crossings – in the context of COVID-19 outbreak

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WHO	18-Feb-2020	Surface sampling of coronavirus disease (COVID-19): A practical “how to” protocol for health care and public health professionals
WHO	14-Feb-2020	Key planning recommendations for Mass Gatherings in the context of the current COVID-19 outbreak
WHO	n/a	Online course for public health preparedness for mass gathering events
WHO	n/a	Infection Prevention and Control (IPC) for Novel Coronavirus (COVID-19)
WHO	27-Feb-2020	Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19)
WHO	1-Mar-2016	Handbook for the Management of Public Health Events in Air Transport
WHO	1-Jan-2016	Handbook for management of public health events on board ships
WHO	24-Jan-2011	Handbook for inspection of ships and issuance of ship sanitation certificates
Early investigations		
WHO	25-Jan-2020	Protocol for assessment of potential risk factors for 2019-novel coronavirus (2019-nCoV) infection among health care workers in a health care setting
WHO	25-Jan-2020	Household transmission investigation protocol for 2019-novel coronavirus (2019-nCoV) infection
WHO	29-Jan-2020	The First Few X (FFX) Cases and contact investigation protocol for 2019-novel coronavirus (2019-nCoV) infection
WHO	25-Jan-2020	Global 2019-nCoV Clinical Characterization Case Record Form
WHO	16-Feb-2020	Coronavirus disease (COVID-19) technical guidance: Early investigations
Risk communication & community engagement		
WHO	26-Jan-2020	Risk communication and community engagement (RCCE) readiness and response to the 2019 novel coronavirus (2019-nCoV)
WHO	5-Mar-2020	The COVID-19 Risk Communication Package For Healthcare Facilities
Disease commodity package		
WHO	10-Jan-2020	Disease commodity package - Novel Coronavirus (nCoV)
Reduction of transmission of animals to humans		
WHO	n/a	WHO recommendations to reduce risk of transmission of emerging pathogens from animals to humans in live animal markets

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Travel advice		
WHO	29-Feb-2020	Updated WHO recommendations for international traffic in relation to COVID-19 outbreak
Others		
WHO	3-Feb-2020	2019-nCoV Strategic Preparedness and Response Plan
IATA (in partnership with WHO)	n/a	Emergency Response Plan and Action Checklist (for air carriers)
IATA (in partnership with WHO)	n/a	Air Transport & Communicable Diseases Guidelines
WHO	12-Feb-2020	2019 Novel Coronavirus: Global Research and Innovation Forum: Towards a Research Roadmap/report
WHO	11-Feb-2020	2019 Novel Coronavirus: Global Research and Innovation Forum: Towards a Research Roadmap/report - presentation
WHO	18-Feb-2020	COVID-19 Phase IIb/III Vaccine Trial Synopsis
WHO	19-Feb-2020	Emerging respiratory viruses, including nCoV: methods for detection, prevention, response and control
WHO	19-Feb-2020	ePROTECT Respiratory Infections (EN)
WHO	24-Feb-2020	Operational considerations for managing COVID-19 cases/outbreak on board ships
WHO	6-Mar-2020	Q&A on COVID-19 vs. Influenza

Other public health institutions guidance and resources

Organization	Date published	Guidance or resource name
Surveillance and case definitions		
US CDC	2-Feb-2020	Interim Guidance for Healthcare Professionals
US CDC	2-Feb-2020	Flowchart to Identify and Assess 2019 Novel Coronavirus
US CDC	n/a	Check and Record Everyday Booklet – China
ECDC	n/a	Case definition and European surveillance for human infection with novel coronavirus (2019-nCoV)
Laboratory guidance		
US CDC	28-Jan-2020	US CDC panel primer and probes– U.S. CDC, USAV – U.S. CDC, USA
US CDC	n/a	Information for Laboratories 2019-nCoV Requests for Diagnostic Panels and Virus

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US CDC	n/a	Real-Time RT-PCR Panel for Detection 2019-Novel Coronavirus
US CDC	n/a	2019-Novel Coronavirus (2019-nCoV) Real-time rRT-PCR Panel Primers and Probes
US CDC	10-Feb-2020	Interim Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with Coronavirus Disease 2019 (COVID-19)
US CDC	9-Mar-2020	Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Persons Under Investigation (PUIs) for Coronavirus Disease 2019 (COVID-19)
US CDC	19-Feb-2020	Interim Guidance for Collection and Submission of Postmortem Specimens from Deceased Persons Under Investigation (PUI) for COVID-19, February 2020
ECDC	13-Jan-2020	Diagnostic detection of Wuhan coronavirus 2019 by real-time RTPCR
China CDC	24-Jan-2020	China CDC Primers and probes for detection 2019-nCoV
Patient management		
US CDC	n/a	Healthcare Professional Preparedness Checklist For Transport and Arrival of Patients Potentially Infected with 2019-nCoV
US CDC	n/a	Hospital Preparedness Checklist for Suspected or Confirmed 2019-nCoV Patients
US CDC	7-Mar-2020	Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease (COVID-19)
US CDC	31-Jan-2020	Interim Guidance for Implementing Home Care of People Not Requiring Hospitalization for 2019 Novel Coronavirus (2019-nCoV)
US CDC	12-Feb-2020	Interim Guidance for Implementing Home Care of People Not Requiring Hospitalization for 2019 Novel Coronavirus (2019-nCoV)
US CDC	n/a	Interim Guidance on Breastfeeding for a Mother Confirmed or Under Investigation For COVID-19
US CDC	n/a	Frequently Asked Questions and Answers: Coronavirus Disease-2019 (COVID-19) and Children
US CDC	n/a	Frequently Asked Questions and Answers: Coronavirus Disease 2019 (COVID-19) and Pregnancy
US CDC	n/a	What Healthcare Personnel Should Know about Caring for Patients with Confirmed or Possible COVID-19 Infection
US CDC	n/a	Interim Guidance for Public Health Professionals Managing People With COVID-19 in Home Care and Isolation Who Have Pets or Other Animals

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ECDC	30-Jan-2020	Advice to healthcare workers: management of patients with 2019-nCoV infection
ECDC	10-Feb-2020	Guidelines for the use of non-pharmaceutical measures to delay and mitigate the impact of 2019-nCoV
PHE	5-Mar-2020	Infographic on COVID-19 primary care in the UK
Infection prevention and control		
US CDC	21-Feb-2020	Interim Infection Prevention and Control Recommendations for Patients with Confirmed Coronavirus Disease 2019 (COVID-19) or Persons Under Investigation for COVID-19 in Healthcare Settings
US CDC	n/a	Healthcare Supply of Personal Protective Equipment
US CDC	8-Feb-2020	Interim US Guidance for Risk Assessment and Public Health Management of Persons with Potential 2019 Novel Coronavirus (2019-nCoV) Exposure in Travel-associated or Community Settings
US CDC	n/a	Interim Considerations for Infection Prevention and Control of Coronavirus Disease 2019 (COVID-19) in Inpatient Obstetric Healthcare Settings
US CDC	11-Feb-2020	Interim Guidance for Discontinuation of In-Home Isolation for Patients with COVID-19
US CDC	11-Feb-2020	Interim Guidance for Discontinuation of Transmission-Based Precautions and Disposition of Hospitalized Patients with COVID-19
US CDC	25-Feb-2020	Interim Guidance for Preventing the Spread of Coronavirus Disease 2019 (COVID-19) in Homes and Residential Communities
US CDC	n/a	Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with 2019 Novel Coronavirus (2019-nCoV)
US CDC	n/a	Interim Guidance for Public Health Personnel Evaluating Persons Under Investigation (PUIs) and Asymptomatic Close Contacts of Confirmed Cases at Their Home or Non-Home Residential Setting
US CDC	n/a	Healthcare Infection Prevention and Control FAQs for COVID-19
US CDC	n/a	Strategies for Optimizing the Supply of N95 Respirators
US CDC	28-Feb-2020	Checklist for Healthcare Facilities: Strategies for Optimizing the Supply of N95 Respirators during the COVID-19 Response
US CDC	28-Feb-2020	Release of Stockpiled N95 Filtering Facepiece Respirators Beyond the Manufacturer-Designated Shelf Life: Considerations for the COVID-19 Response

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ECDC	29-Jan-2020	Public health management of persons having had contact with novel coronavirus cases in the European Union
ECDC	2-Feb-2020	Infection prevention and control for the care of patients with 2019-nCoV in healthcare settings
ECDC	7-Feb-2020	Personal protective equipment (PPE) needs in healthcare settings for the care of patients with suspected or confirmed novel coronavirus (2019-nCoV)
ECDC	18-Feb-2020	Interim guidance for environmental cleaning in non-healthcare facilities exposed to SARS-CoV-2
ECDC	2-Mar-2020	Resource estimation for contact tracing, quarantine and monitoring activities for COVID-19 cases in the EU/EEA
ECDC	28-Feb-2020	Guidance for wearing and removing personal protective equipment in healthcare settings for the care of patients with suspected or confirmed COVID-19
ECDC	25-Feb-2020	Public health management of persons, including health care workers, having had contact with COVID-19 cases in the European Union
ECDC	26-Feb-2020	Checklist for hospitals preparing for the reception and care of coronavirus 2019 (COVID-19) patients
Early investigations		
US CDC	28-Feb-2020	Recommendations for Reporting, Testing, and Specimen Collection
US CDC	3-Feb-2020	Patient Under Investigation form
US CDC	4-Mar-2020	Evaluating and Reporting Patients Under Investigation (PUI)
US CDC	2-Feb-2020	Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Patients Under Investigation (PUIs) for 2019 Novel Coronavirus (2019-nCoV)
US CDC	n/a	Information for Health Departments on Reporting a Patient Under Investigation (PUI) for 2019-nCoV
US CDC	n/a	Case Report Form for 2019 Novel Coronavirus
ECDC	30-Jan-2020	Algorithm for management of contacts of probable or confirmed 2019-nCoV cases
Risk communication & community engagement		
US CDC	24-Feb-2020	CDC in Action: Preparing Communities for Potential Spread of COVID-19
US CDC	n/a	Interim Guidance: Get Your Household Ready for Coronavirus Disease 2019 (COVID-19)
US CDC	n/a	Interim Guidance for Administrators of US Childcare Programs and K-12 Schools to Plan, Prepare, and Respond to Coronavirus Disease 2019 (COVID-19)
US CDC	8-Mar-2020	Resources for Institutes of Higher Education

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US CDC	8-Mar-2020	COVID-19 and Cruise Ship Travel
US CDC	8-Mar-2020	Environmental Cleaning and Disinfection Recommendations
US CDC	8-Mar-2020	People at Risk for Serious Illness from COVID-19
US CDC	8-Mar-2020	What law enforcement personnel need to know about coronavirus disease 2019 (COVID-19)
US CDC	n/a	Resources for Community- and Faith-Based Leaders
US CDC	n/a	Resources for Homeless Shelters
ECDC	13-Feb-2020	Guidance on community engagement for public health events caused by communicable disease threats in the EU/EEA
Disease commodity package		
US CDC	2-Feb-2020	Interim Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with 2019 Novel Coronavirus (2019-nCoV)
Travel advice		
US CDC	n/a	Travelers from China Arriving in the United States
US CDC	n/a	Communication Resources for Travelers
US CDC	24-Feb-2020	Coronavirus Disease 2019 Information for Travel
ECDC	30-Jan-2020	Advice for travellers: outbreak of a novel coronavirus 2019-nCoV
Others		
US CDC	13-Feb-2020	Interim Guidance for Airlines and Airline Crew: Coronavirus Disease 2019 (COVID-19)
US CDC	4-Feb-2020	2019 Novel Coronavirus: Interim Health Guidance from the Federal Aviation Administration and the Centers for Disease Control and Prevention for Air Carriers and Crews
US CDC	n/a	Preventing Spread of Disease on Commercial Aircraft: Guidance for Cabin Crew
US CDC	n/a	Interim Guidance for Businesses and Employers to Plan and Respond to 2019 Novel Coronavirus (2019-nCoV), February 2020
US CDC	n/a	Interim Guidance for Emergency Medical Services (EMS) Systems and 911 Public Safety Answering Points (PSAPs) for 2019-nCoV in the United States
US CDC	18-Feb-2020	Interim Guidance for Ships on Managing Suspected Coronavirus Disease 2019