COVID-19 Scientific and Public Health Policy Update – (March 17, 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 <u>not intended to serve as recommendations</u> 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 study (yet to be peer reviewed) on the aerosol and surface stability of SARS-CoV-2 suggests that aerosol and fomite transmissions are plausible as the virus remained viable in aerosols for 3 hours (albeit reduction in infectiousness was observed), on copper for up to 4 hours, on cardboards for up to 24 hours and on plastics and steel for up to 4 days.

- A study conducting a multicenter cohort analysis of 191 patients in Wuhan suggests that potential risk factors of older age, high SOFA score, and d-dimer greater than 1 μg/mL could help clinicians to identify patients with poor prognosis at an early stage. The analysis also reported that the median duration of viral shedding was 20 days in survivors, but SARS-CoV-2 was detectable until death in non-survivors. Further studies need to be conducted to validate post-mortem transmission.

- UK-based laboratory Mologic is starting work with scientists in Senegal (Pasteur Institute in Dakar) to make a diagnostic test for coronavirus that can produce test results within 10 minutes. The test kits will be produced by DiaTropix which has a production facility in Senegal.

- The Phase 1 clinical trial of the NIAD and Moderna's vaccine mRNA-1273 has begun. The first patient was administered the trial vaccine yesterday. Meanwhile, Inovio aims to begin safety tests of its vaccine candidate next month first in the US, followed by a similar study in China and South Korea. But even if the tests go well, experts say it could take more than a year to develop and fully test a vaccine.

- As cases in the continent continue to rise over the past week, African countries have imposed tighter travel and public health policies such as cessation of air traffic (e.g., Morocco, Egypt), entry restrictions for non-citizens / non-residents (e.g., Kenya), visa limitations (e.g., South Africa), social distancing etc.

- Similarly, heavily affected countries globally have started to enforce strict public health and travel policies such as community quarantines / shutdown (e.g., Germany, Spain), border closures (e.g., Canada, Czech Republic), extension of travel ban to EU countries (e.g., USA), and mandatory quarantine for all travelers (e.g., Australia, New Zealand)

B. New guidelines and resources

- Since March 10th, WHO has published new and updated guidance on Critical Preparedness and Response Actions for COVID-19, Clinical Management of Severe Acute Respiratory Infections if COVID-19 is suspected, Considerations in Investigation of Cases and Clusters, Guidance for High Risk Populations and Children, Guidance on Risk Communication and Community Engagement

- US CDC has published guidance on Preparedness of Healthcare Facilities, Long-term Care Facilities / Nursing Homes, Criteria for Return to Work of a Healthcare Personnel with Confirmed or Suspected COVID-19, IPC for Outpatient Hemodialysis Facilities, Protecting and Preparing Home and Family for COVID-19

- ECDC has issued new guidance and resources on Discharge criteria for confirmed COVID-19 cases, IPC in Healthcare Settings, Information for Specific Groups (e.g., Elderly, Chronic Disease Patients, Pregnant Women etc.) and Considerations relating to Social Distancing Measures

- 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

Epidemiology

- A study (yet to be peer reviewed) on the aerosol and surface stability of SARS-CoV-2 suggests that aerosol and fomite transmissions are plausible as the virus remained viable in aerosols for 3 hours (albeit reduction in infectiousness was observed), on copper for up to 4 hours, on cardboards for up to 24 hours and on plastics and steel for up to 4 days.

- A mathematical model of SARS-CoV-2 transmission in four datasets from within and outside Wuhan estimated that the median daily reproduction number (Rt) in Wuhan declined from 2.35 one week before travel restrictions were introduced on Jan 23, 2020, to 1.05 one week after, implying the travel restrictions have limited spread.

- A study conducting a multicenter cohort analysis of 191 patients in Wuhan suggests that potential risk factors of older age, high SOFA score, and d-dimer greater than 1 μg/mL could help clinicians to identify patients with poor prognosis at an early stage. The analysis also reported that the median duration of viral shedding was 20 days in survivors, but SARS-CoV-2 was detectable until death in non-survivors. The longest observed duration of viral shedding in survivors was 37 days, supporting the strategy of isolating infected patients. Further studies need to be conducted to validate post-mortem transmission.

- A report on 12,000+ COVID-19 cases in Italy until March 11 shows that of the patients who died, 42% were aged 80–89 years, 32% were aged 70–79 years, 8% were aged 60–69 years, and 3% were aged 50–59 years (those aged >90 years made up 14%). The male to female ratio is 80% to 20% with an older median age for women (83.4 years for women vs 79.9 years for men). 9-11% of patients from Mar 1-11, have been admitted to intensive care units. 20% of health workers have been infected.

- An analysis of the prediction value of the Internet search data from web-based search engines and social media for the COVID-19 outbreak in China suggests that internet surveillance could help predict the trajectory of an outbreak, after analysis of Google and Baidu searches on 'coronavirus' and 'pneumonia' were found to be correlated (r>0.89) with the published daily cases of COVID-19.

Diagnostics

- An analysis of 1070 specimens collected from 205 patients with COVID-19 suggests that lower respiratory tract samples most often test positive for the virus. The live virus was detected in feces, implying potential fecal transmission. A small percentage (1%) of blood samples had positive PCR test results, suggesting that infection sometimes may be systemic.

- Given that CT scanning is not available in all emergency departments, an initial report suggests the use of Lung US for the early diagnosis of COVID-19 in emergency departments, after Chest CT scans of 12 patients showed a strong correlation with the results from Lung US.

- A comparative study on the clinical features of COVID-19 pneumonia to other pneumonias suggests that COVID-19 has similar onsets to other pneumonias. CT scan may be a reliable test for screening COVID-19 cases. Liver function damage is more frequent in COVID-19 than NON-NCOVID-19 patients. LDH and α-HBDH may be considerable markers for evaluation of COVID-19.

- UK-based laboratory Mologic is starting work with scientists in Senegal (Pasteur Institute in Dakar) to make a diagnostic test for coronavirus that can produce test results within 10 minutes. The test kits will be produced by DiaTropix which has a production facility in Senegal.

- A group of scientists have developed a preliminary laboratory safe, low-cost detection protocol for COVID-19, a real-time reverse-transcription PCR (rtPCR)-based assay protocol composed of easy specimen self-collection from a subject via pharyngeal swab, Trizolbased RNA purification, and SYBR Green-based rtPCR primarily for asymptomatic patients. This protocol shows an accuracy and sensitivity limit of 1-10 virus particles, the cost for each sample is estimated to be <USD15, and overall time it takes for an entire protocol is estimated to be less than 4 hours. Further examinations are required, however, for clinical use

- Given the high costs of hospital-based assessment, a report laid out the possibility of a home assessment approach to evaluate potential COVID-19 cases which includes setting up a team of 1 physician, 1 nurse, 1 or more trained PPE observers, and a site-commander; using appropriate PPE; leaving used assessment tools with patient and etc.

Care and Treatment

- A report on post-discharge surveillance of 2 positive cases suggests that a small proportion of recovered patients may have positive virus detection after discharge (after positive detection was observed after patients tested negative for the virus), and the positivity does not necessarily mean that the patient is transmissive. These findings need further investigation and thus post-discharge surveillance is suggested.

- A novel deep learning platform, Deep Docking (DD), applied to 1.3 billion compounds from ZINC15 library has identified potential inhibitors of SARS-CoV-2 main protease. The compounds are made publicly available for further characterization and development by scientific community

Vaccines

- The Phase 1 clinical trial of the NIAD and Moderna's vaccine mRNA-1273 has begun. The first patient was administered the trial vaccine yesterday. Meanwhile, Inovio aims to begin safety tests of its vaccine candidate next month first in the US, followed by a similar study in China and South Korea. But even if the tests go well, experts say it could take more than a year to develop and fully test a vaccine.

Country response

- Report on Italy's response to the COVID-19 outbreak suggests that to better manage the outbreak, Italy could have increased laboratory testing capacity immediately and converted a dedicated COVID-19 facility more quickly on top of surge ICU capacity response. The report also suggests that given the surge in ICU demand from this outbreak, health care systems not organized in collaborative emergency networks should work toward one now.

- The report summarizes Singapore's approach in containing COVID-19 which led to an effective reproduction number that is less than 1. Interventions implemented include rapid scale up testing capacity (up to 2,200 tests per day), enhanced surveillance at health care settings, rollout of 800 Public Health Preparedness Clinics (PHPC) and etc.

- An analysis of the impact of travel restrictions and border control measures suggests that 779 COVID-19 cases would have been exported by February 15, 2020 without any border or travel restrictions from China. Travel lockdowns enforced by the Chinese government averted 71% of these cases. In addition, during the first 3.5 weeks of implementation, the travel restrictions decreased the daily rate of exportation by 81.3%, on average.

D. Related Public Health Policy

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

Africa

- As cases in the continent continue to rise over the past week, African countries have imposed tighter travel and public health policies to manage the outbreak:
  - **Entry restrictions:**
    - › Ghana will ban entry to anyone who has been to a country with more than 200 cases in the last 14 days starting from March 17
    - › Kenya is blocking entry to all non-citizens and non-residents travelling from countries with COVID-19 cases

- › Somalia bans entry all passengers originating from China, Iran, South Korea, and Italy or transiting through one of those countries in the last 14 days

- › Botswana will ban entry to non-citizens and non-residents travelling from 17 high risk countries

— **Border closures and flight suspensions**

- › Algeria suspends all travel to and from Europe starting March 19

- › Chad closes its border with Cameroon

- › Egypt will halt all air traffic from its airports starting Thursday (Mar 19) until Mar 31

- › Madagascar has suspended all flights to and from Europe for 30 days

- › Morocco has suspended day all international passenger flights to and from its airports

- › Namibia has suspended flights to and from Qatar, Ethiopia and Germany for 30 days

- › Senegal is banning cruise ships from docking in its ports

- › South Africa is banning flights to and from Italy, Spain, Germany, UK, the US, South Korea, Iran and China from March 18 onwards; it has also shut down 55 land entry points and two sea ports of entry

- › South Sudan has halted direct flights to and from several countries including Egypt and the UAE

- › Sudan has closed all airports, ports and land crossings; only humanitarian, commercial and technical support shipments would be excluded from the restrictions

- › Tunisia closes maritime borders to all countries, while air borders with Italy will be suspended permanently

— **Visa limitations:** Gabon suspends issuance of tourist visas for EU, China, South Korea and US citizens; South Africa will revoke nearly 10,000 visas issued this year to people from China and Iran, and visas will now be required for other high-risk countries that had been visa-free, including Italy and the United States; Botswana suspends visa issuance for travelers from high risk areas

— **Mandatory quarantine:** Uganda requires travelers from 16 high risk countries (including US, UK, Italy, China, France) to self-quarantine at their own cost for 14 days either at home or at a government facility

— **Shutdown of educational / religious institutions and entertainment venues, banning of mass gatherings:** Algeria, Egypt, Ethiopia, Gabon, Kenya, Mauritania, Morocco, Ghana, Namibia, Rwanda, Senegal, South Africa, Sudan, Tunisia

— **Limiting official travel:** Angola, Botswana, Ghana, Botswana

- Ethiopia will also operate government buses free of charge to help control crowding in public transport and has announced budget for supply of masks, sanitizers and soap to the public. PM Abiy announced a partnership with Chinese e-commerce founder Jack Ma for an Africa wide supply of key coronavirus materials including masks, testing kits and literature.

- Ghana allocates $100M to a coronavirus fund, while Egypt pledges $6 billion to combat COVID-19

- Rwanda is requiring passengers in Kigali to wash their hands thoroughly before being allowed onto buses, while Uganda plans to spray travelers arriving in the country with disinfectants.

- Algeria calls for the creation of a national health monitoring agency and a national health observatory to manage the outbreak.

- South Africa has repatriated 146 people from Wuhan last Saturday. They are now in quarantine at the Ranch Resort outside Polokwane

- The Southern African Development Community (SADC) has recommended temporary suspension of all in-person SADC meetings, urging instead the use of video conferencing, webinars and other tech-based solutions during the ongoing coronavirus outbreak.

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**

  — South Korea has expanded special screening measures to arrivals from all European countries amid concerns of imported cases; requiring travelers to use an app that they will be required to interact for two weeks, answering questions on their health. If a person does not comply then they will receive a call, and action could be taken.

  — USA has declared a national emergency and has imposed a travel ban on foreigners travelling from EU's Schengen border free zones, UK and Ireland. The government has issued recommendations for people to avoid social gatherings of more than 10 people. Multiple states have closed down bars, cafes and restaurants.

  — Italy closes Rome's Ciampino airport and a terminal at the Fiumicino airport as airlines slash flights to Italy.

  — France will deploy 100,000 police to enforce a lockdown, fixed checkpoints will be set up across the country, people will be required to stay at home and only go out for essential activities.

  — Germany shuts down non-essential shops, bars, clubs, theatres, museums, brothels and churches and restricts border access with France, Austria, Switzerland and Luxembourg

  — Spain imposes community quarantine and restricts entry to citizens, residents, diplomats, cross-border workers and people justifying force majeure.

- As cases across multiple countries across all continent grow, countries have increasingly **imposed restrictive travel and public health policies** (not exhaustive)

  — **Border closures (full or partial e.g., entry restrictions for travelers from high risk areas):** Czech Republic, Canada, Denmark, Armenia, Chile, Colombia, Cyprus, Guatemala, Georgia, Hungary, Latvia, Lebanon, Poland, Qatar, Russia, Cambodia, Peru, Vietnam

  — **Suspension of all international flights:** Norway, Saudi Arabia, Kuwait, Jordan, Iraq

— **Suspension of flights to and from high risk areas** e.g., Italy, Germany: Greece, Moldova, Portugal, Russia, Turkey

— **Mandatory quarantine:** Australia, China, Greece, New Zealand and Poland are requiring all arrivals from overseas to self-quarantine for 14 days, while Singapore, Taiwan, Turkey and Vietnam are extending mandatory quarantine requirements to travelers from UK and EU countries

— **Shutdown of educational institutions, religious institutions, and other public areas**: Czech Republic, Denmark, Greece, Indonesia, Malaysia, Costa Rica, India, Netherlands, Turkey, UAE and etc.

— **Banning of mass / public gatherings:** Austria, New Zealand, Switzerland and etc.

— **Visa limitations:** India and UAE suspends visa issuance; Russia and Qatar limits visa issuance to EU citizens; Thailand cancels visa on arrival

● In addition, countries have taken multiple actions to manage dwindling PPE material supply

— Indonesia will temporarily ban the export of face masks

— Japan has issued a law banning resale of face masks

— UK has asked manufacturers including Ford, Honda and Rolls Royce to help make health equipment including ventilators

● Multiple events globally have been cancelled or postponed due to the outbreak e.g., French mayoral elections, London marathon, Boston marathon, Coachella, English Premier League etc.

E. List of travel restrictions imposed by African countries

Contents of this section include only <u>publicly announced</u> 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.
[Algeria](#)	Suspends all travel links to Europe starting March 19
Benin	Passengers who have been in Coronavirus (COVID-19) affected countries are subject to self-quarantine for 14 days. This does not apply to crew members.
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 [Closed border with Cameroon](#)
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](#)	Egypt will halt all air traffic from its airports starting Thursday until March 31 to prevent the spread of coronavirus.
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	Travellers who have been to China will be denied entry until further notice. 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. Granting of [tourist visas is suspended](#) for travelers from the most infected areas, namely the European Union, China, South Korea and the United States.
[Ghana](#)	Ghana will ban entry to anyone who has been to a country with more than 200 cases in the last 14 days starting from March 17, unless they are an official resident or a Ghanaian national.
[Kenya](#)	Foreign travelers (not residents) travelling from countries with COVID-19 cases are banned entry. Citizens and residents returning from countries with COVID-19 cases will be required to self-isolate or be quarantined in a government facility.
Lesotho	Travellers from China and other COVID-19 affected areas are requested to self-quarantine for 14 days.

Liberia	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.
	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.
	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.
Madagascar	Passengers who have been in China in the past 14 days are not allowed to enter Madagascar.
	This does not apply to nationals of Madagascar or to passengers who reside in Madagascar. Travelers who have been to Iran, Italy or South Korea in the past 14 days will be denied entry.
	All travelers from China will be subject to a 14-day quarantine.
	All connecting flights between Madagascar and Europe will be suspended for 30 days.
Malawi	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.
Mauritania	All travellers from China, South Korea, Iran and Italy will be quarantined for 14 days.
Mauritius	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
	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.
	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.
Mozambique	All visas have been indefinitely suspended for travellers holding People's Republic of China passports.
Morocco	Morocco suspended all international passenger flights to and from its airports
Namibia	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
	Flights linking Namibia to and from Qatar, Ethiopia and Germany have been suspended for 30 days
Nigeria	Passengers coming from China will be subjected to a 14-day quarantine.
Seychelles	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 allowed to transit or enter Seychelles. This does not apply to nationals of Seychelles.

	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
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	All passengers originating from China, Iran, South Korea, and Italy or transiting through one of those countries for the last 14 days will not be allowed to enter the country.
South Africa	South Africa has implemented travel bans on flights to and from Italy, Spain, Germany, UK, the US, South Korea, Iran and China Effective March 16, government will shut down 55 land entry points and two sea ports of entry will be shut down. South Africa will revoke nearly 10,000 visas issued this year to people from China and Iran, and visas will now be required for other high-risk countries that had been visa-free, including Italy and the United States.
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. Direct flights to and from several countries including Egypt and UAE have been halted.
Sudan	Sudan has closed all airports, ports and land crossings; only humanitarian, commercial and technical support shipments would be excluded from the restrictions
Tunisia	Maritime borders will be closed to all countries while air borders with Italy will be suspended permanently.
Uganda	Travelers from 16 high risk countries (China, France, Germany, Iran, Italy, South Korea, Spain, Netherlands, Sweden, Norway, Austria, and Malaysia) would have to self-quarantine at their own cost for 14 days either at home or at a government facility
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.

F. Guidance and resources (Full list)

WHO guidelines and resources

Organization	Date published	Guidance or resource name
Country readiness		

Organization	Date published	Guidance or resource name
WHO	9-Jan-2020	National capacities review tool for a novel coronavirus
WHO	16-Mar-2020	Critical preparedness, readiness and response actions for COVID-19
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	13-Mar-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

Organization	Date published	Guidance or resource name
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
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
WHO	13-Mar-2020	Considerations in the investigation of cases and clusters of COVID-19
Risk communication & community engagement		
WHO	16-Mar-2020	Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response
WHO	5-Mar-2020	The COVID-19 Risk Communication Package For Healthcare Facilities
WHO	10-Mar-2020	Risk Communication guidance - COVID-19, older adults and people with underlying medical conditions
WHO	10-Mar-2020	Guidance to protect children and support safe school operations

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Organization	Date published	Guidance or resource name
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
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		

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Organization	Date published	Guidance or resource name
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
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

Organization	Date published	Guidance or resource name
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
US CDC	n/a	Interim Guidance for Healthcare Facilities: Preparing for Community Transmission of COVID-19 in the United States
US CDC	n/a	Preparing for COVID-19: Long-term Care Facilities, Nursing Homes
US CDC	n/a	Steps Healthcare Facilities Can Take Now to Prepare for Coronavirus Disease 2019 (COVID-19)
US CDC	n/a	Criteria for Return to Work for Healthcare Personnel with Confirmed or Suspected COVID-19 (Interim Guidance)
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
ECDC	10-Mar-2020	Novel coronavirus (SARS-CoV-2) - Discharge criteria for confirmed COVID-19 cases
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

Organization	Date published	Guidance or resource name
		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
US CDC	n/a	Interim Additional Guidance for Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed COVID-19 in Outpatient Hemodialysis Facilities
ECDC	29-Jan-2020	Public health management of persons having had contact with novel coronavirus cases in the European Union
ECDC	12-Mar-2020	Infection prevention and control for COVID-19 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

Organization	Date published	Guidance or resource name
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
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
US CDC	n/a	Protect Your Home
US CDC	n/a	Protect Your Family
US CDC	n/a	How to Prepare for COVID-19
ECDC	13-Feb-2020	Guidance on community engagement for public health events caused by communicable disease threats in the EU/EEA
ECDC	12-Mar-2020	Information on COVID-19 for specific groups: the elderly, patients with chronic diseases, people with immunocompromising condition and pregnant women
ECDC	11-Mar-2020	Considerations relating to social distancing measures in response to the COVID-19 epidemic
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)

Organization	Date published	Guidance or resource name
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