

Wuhan Coronavirus Preparedness White Paper

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This White Paper is intended to assist with the development of practical and timely response plans for the Wuhan coronavirus (W-CoV) outbreak. It is written in outline format for quick reference and is subject to revision. It references contemporary information as well as established government plans. Although W-CoV appears to share properties with other known coronaviruses, it will undoubtedly present new and possibly unforeseen challenges. At present, no antiviral therapies or vaccines are available for treating this family of RNA viruses. Medical treatment consists of supportive care.

BACKGROUND

Wuhan coronavirus (W-CoV) is closely related to the SARS coronavirus (CoV).
Replication of W-CoV has been demonstrated for humans.
Person-to-person transmission of W-CoV has been demonstrated for humans.
Confirmed cases of W-CoV include nosocomial transmission to health care workers.
Influence of age, gender and co-morbidities on W-CoV clinical outcomes remain preliminary.
Duration and level of W-CoV shedding (contagious periods) are unknown.
Initial estimates of W-CoV case fatality are in the range of 3% (17 deaths / 616 cases).

- <https://www.ecohealthalliance.org/2020/01/phylogenetic-analysis-shows-novel-wuhan-coronavirus-clusters-with-sars>
- <https://bnonews.com/index.php/2020/01/the-latest-coronavirus-cases/>

PARALLELS

SARS-CoV and MERS-CoV outbreaks have been associated with regular transmission and increased transmission rates due to so-called "super spreaders."

The frequency and ratio of W-CoV "regular spreaders" to "super spreaders" are unknown.

Cases of SARS-CoV and MERS-CoV include nosocomial transmission to health care workers.
The case fatality of SARS-CoV was in the range of 10%.
The case fatality of MERS-CoV was in the range of 34%.

- <https://www.cell.com/action/showPdf?pii=S1931-3128%2815%2900382-0>
- <http://www.emro.who.int/health-topics/mers-cov/mers-outbreaks.html>
- https://www.who.int/csr/sars/country/table2004_04_21/en/

CURRENT SITUATION — January 22, 2020

At present, total estimated cases of W-CoV are in the range of 1,000 - 10,000 with the epicenter in Wuhan.

Reportedly, China is shutting public transportation out of Wuhan to curb W-CoV spread. Since W-CoV cases have spread beyond Wuhan, the impact of mass quarantine are unknown. Increased travel and mixing due to Chinese New Year will amplify W-CoV cases. WHO is expected to declare a "public health emergency of international concern" for W-CoV.

- <https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/news--wuhan-coronavirus/>

ASSESSMENTS

There is potential for wider geographic spread and exponential increases of W-CoV cases.

There is potential for weeks to months of new W-CoV cases.

There is potential for evolving W-CoV virulence; selective pressures for humans is unknown.

RELEVANT EVENTS

The 2002 - 2004 SARS-CoV outbreak offers relevant lessons.

The 2012 - 2019 MERS-CoV outbreak offers relevant lessons.

The 2020 Providence Everett WA case offers current relevant lessons.

HEALTH SYSTEM PLANS

Given the emerging situation, timely planning is essential.

Protocols and procedures should be established, evaluated and discussed with responsible administrators, emergency department, intensive care, and infectious disease providers.

Training of designated health care teams should be undertaken before the first case arrives at any institution.

Responsible individuals should be designated to identify, capture and communicate any lessons learned.

Responsible individuals should be given authority to procure, monitor and maintain supplies of necessary PPE.

If the W-CoV outbreak increases in scale, anticipate PPE shortages and establish contingency plans.

The checklist for health system response plans should consider:

- Electronic health record flags and templates
- Presumptive case identification and triage
- Presumptive case isolation
- Presumptive case reporting to CDC and county health
- Rapid diagnostic sampling and reporting

- Procedures for enabling internal (within system) contact tracing
- Procedures for enabling external (community) contact tracing
- Procedures for relocating and isolating exposed persons
- Procedures for non-customary cost accounting

- Agreement on initiation of airborne precautions and use of PPE
- Agreement on inpatient care location, both pediatric and adult
- Agreement on responsible health care teams, both pediatric and adult
- Agreement on health care team rotations, both pediatric and adult
- Agreement on interaction and/or triage involving other health care facilities

- Designate persons responsible for overall situational awareness and communications
- Anticipate disinformation and formulate effective responses to such information
- Identify health system shortfalls (i.e., weakest links) and formulate potential solutions

RELEVANT DOCUMENTS

The **National Response Framework** provides the foundational for emergency management to all types of incidents. On the federal level, it offers guidance for "all-hazards" preparedness.

- https://www.fema.gov/media-library-data/1572366339630-0e9278a0ede9ee129025182b4d0f818e/National_Response_Framework_4th_20191028.pdf

The **Biological Incident Annex** provides guidance and serves as a reference for federal agency planning efforts involving biological incidents. Engaged and ongoing partners include state, county, and private sectors.

- [https://www.fema.gov/media-library-data/1511178017324-92a7a7f808b3f03e5fa2f8495bdf335/BIA_Annex_Final_1-23-17_\(508_Compliant_6-28-17\).pdf](https://www.fema.gov/media-library-data/1511178017324-92a7a7f808b3f03e5fa2f8495bdf335/BIA_Annex_Final_1-23-17_(508_Compliant_6-28-17).pdf)

The **Public Health Emergency Medical Countermeasures Enterprise (PHEMCE)** plan coordinates the development, acquisition, stockpiling, and use of medical products that are needed to effectively respond to a variety of high-consequence public health emergencies.

- <https://www.phe.gov/Preparedness/mcm/phemce/Pages/strategy.aspx>

These three organizing documents and associated **technical resources** offer guidance for viral-based threats, such as pandemic influenza, but they offer no specific guidance for emergencies involving coronaviruses.

- <https://asprtracie.hhs.gov/technical-resources/67/mass-distribution-and-dispensing-of-medical-countermeasures/0>

A 2019 paper by authors at the **Johns Hopkins Center for Health Security** reviewed important measures that confer health system resilience.

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6798426/pdf/12889_2019_Article_7707.pdf

OBSERVATION

For the United States, the scale of threat posed by the expanding W-CoV outbreak remains uncertain. In addition, several major hospital systems provide care across different state and county jurisdictions with varying levels of preparedness. Effective response plans must account for these outstanding uncertainties and disparities.

RELEVANT LINKS

- <https://www.who.int/health-topics/coronavirus>
- <https://www.cdc.gov/coronavirus/2019-ncov/index.html>
- <http://publichealth.lacounty.gov/acd/nCorona2019.htm>

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