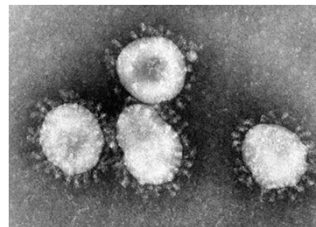


The 2019-2020 Novel Coronavirus Outbreak

James Allen, MD
Medical Director,
The Ohio State University Wexner Medical
Center East Hospital
Professor of Internal Medicine
Division of Pulmonary and Critical Care Medicine
The Ohio State University Wexner Medical Center

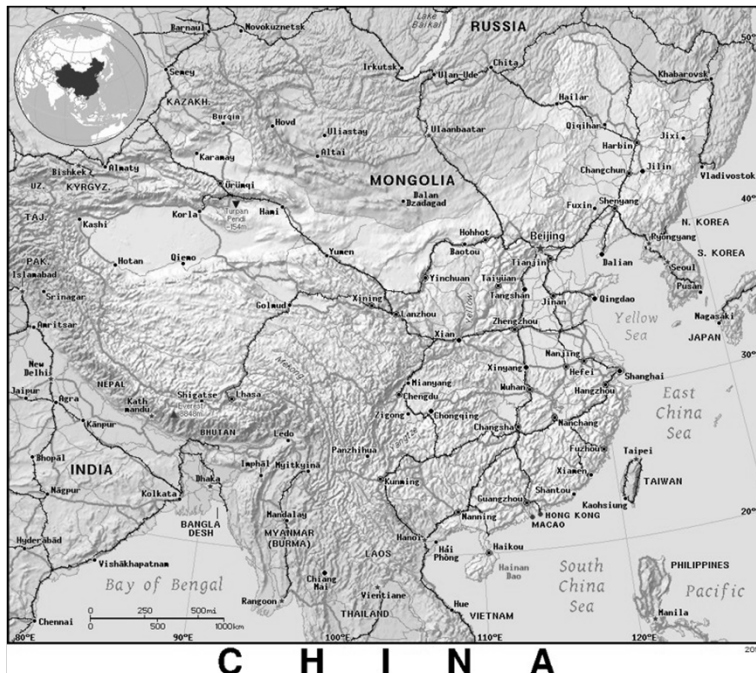
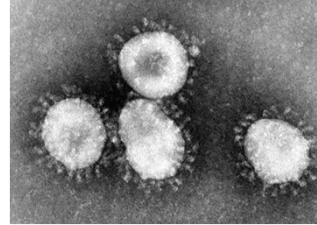
Coronaviruses

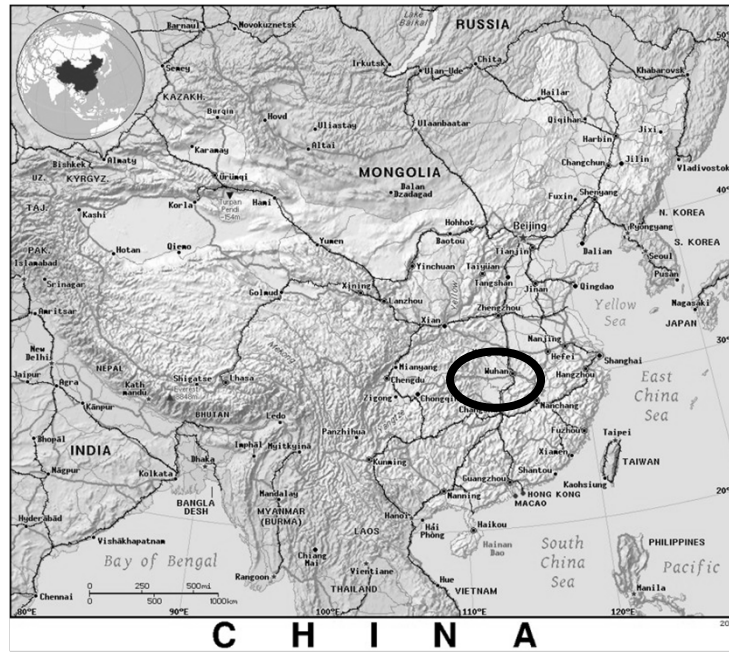
- **Hosts: humans, other mammals, birds**
- **Frequent cause of the common cold**
 - **Accounts for 5-10% of adult URIs**
- **Typical symptoms: fever, cough, sore throat**
- **Can cause viral pneumonia or bronchitis**
- **Primarily occur in winter and early spring**
- **Spread by aerosol droplets and contact with secretions**



Coronaviruses

- No vaccines exist
- No anti-virals exist
- Treatment is supportive
- Patients should be placed in droplet isolation









Credit: Howchou CC BY-SA 3.0

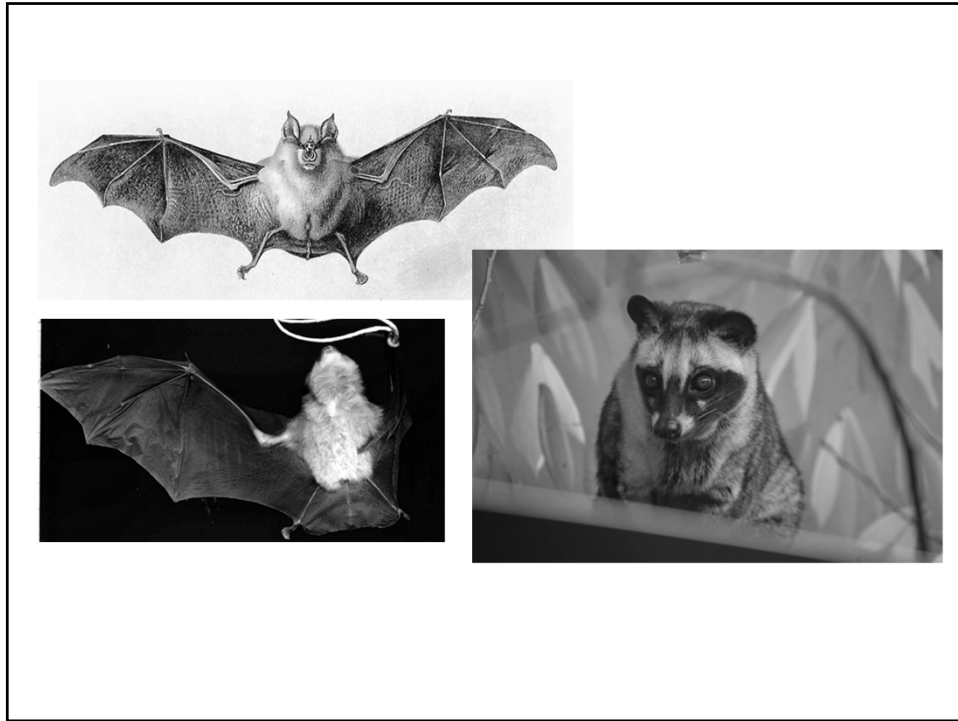


Coronaviruses can go rogue:

**SARS
MERS**

SARS (Severe Acute Respiratory Syndrome)

- **Onset November 2002**
- **Last known case 2004**
- **Total 8,098 cases with 774 deaths (9.6% mortality)**
- **Caused by a Coronavirus**
- **Original viral host: Horseshoe Bats in Yunnan Province, China**
 - **Civet cats were the intermediary**



SARS (Severe Acute Respiratory Syndrome)

- In February 2003, a U.S. businessman became ill on a flight to Hanoi
 - Several healthcare workers then became ill
- In Hong Kong, a doctor from Guangdong infected 16 people at the Metropole Hotel
 - These visitors then traveled to Canada, Singapore, Taiwan, and Vietnam
- February 23, 2003 – First case in Toronto
 - 257 people then infected



SARS (Severe Acute Respiratory Syndrome)

- **Symptoms: fever, myalgia, pharyngitis, shortness of breath, cough**
- **Incubation period = 4-6 days (range 1-14 days)**
- **Transmission: droplet**
- **United States: 27 cases, no deaths**
- **Last reported case: January 2004**

Lessons learned from SARS:

- **Air travel permits rapid world-wide spread**
- **Don't cover it up**
- **Rapid epidemiologic investigation is essential**
- **Countries must work together**
- **Have a high clinical suspicion**
- **Infection control works**
- **Health personnel are at greatest risk**

MERS (Middle East Respiratory Syndrome)

- **Onset 2012 in Saudi Arabia**
- **Caused by a Coronavirus**
- **Overall: 1,227 cases, 37% mortality**
- **Saudi Arabia outbreak 2014: 402 cases, 27% mortality**
- **South Korea outbreak 2015: 150 cases, 17% mortality**
- **United States: 2 cases in 2014, both healthcare workers traveling from Saudi Arabia**



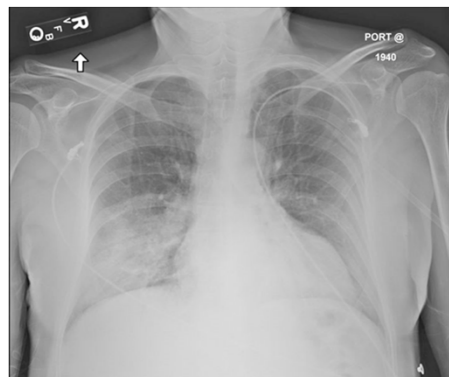
MERS (Middle East Respiratory Syndrome)

Symptoms:

- Cough
- Dyspnea
- Fever

Chest x-ray:

- Patchy pneumonia
- ARDS



Lessons learned from MERS

- A single missed infected person can cause a nationwide outbreak
- Hospitals and ERs can accelerate spread
- Doctors in community hospitals and clinics are the first line of defense
- New coronavirus strains can have a very high mortality rate
- Outbreaks are expensive
 - 2015 outbreak in South Korea estimated cost was \$8.5 billion

Ebola

- NOT a coronavirus
- Hemorrhagic fever
- Spread by contact with body fluids
- Animal origin: fruit bats and monkeys
- 24 outbreaks in sub-Saharan Africa since 1976
- Mortality rate: 50%
- 2014 spread to United States by 2 travelers
 - Two healthcare workers became infected



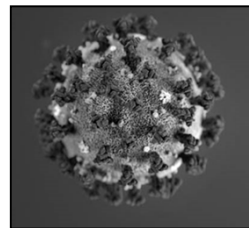
Lessons learned from Ebola

- All countries need to strengthen infection control capacities
- Research in novel microorganisms is necessary
- Public trust in public health organizations must be cultivated



Novel Coronavirus (2019-nCoV)

- Spread by droplets
- Mortality rate = 3%
- Thousands of cases, most in China
- World-wide spread to other countries by air travelers from Wuhan
- NOT detected by the standard respiratory viral PCR panel used by hospital labs

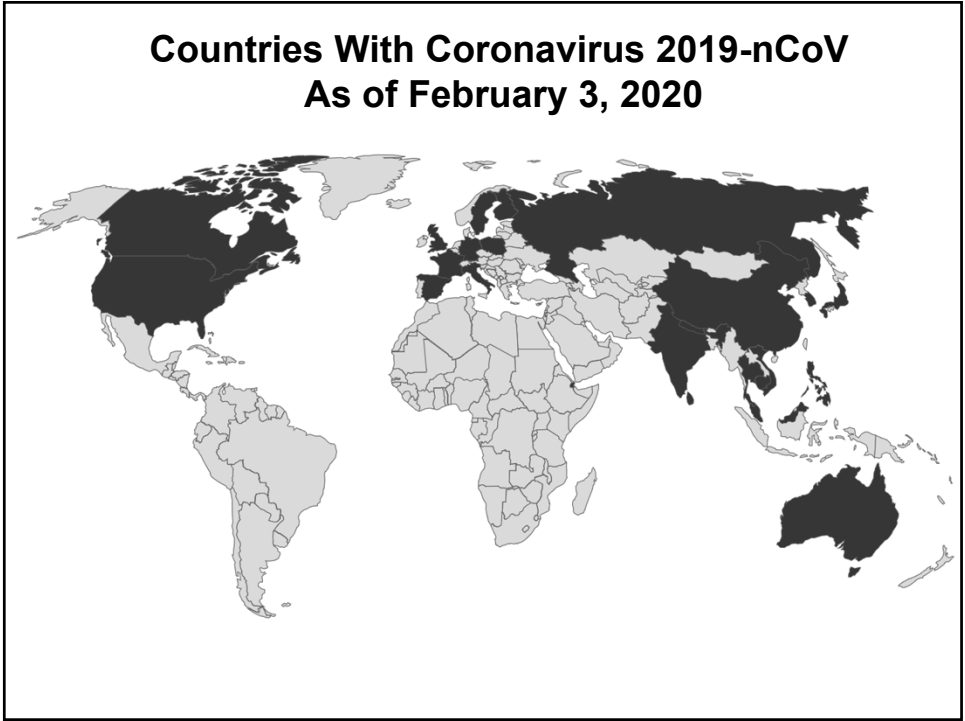


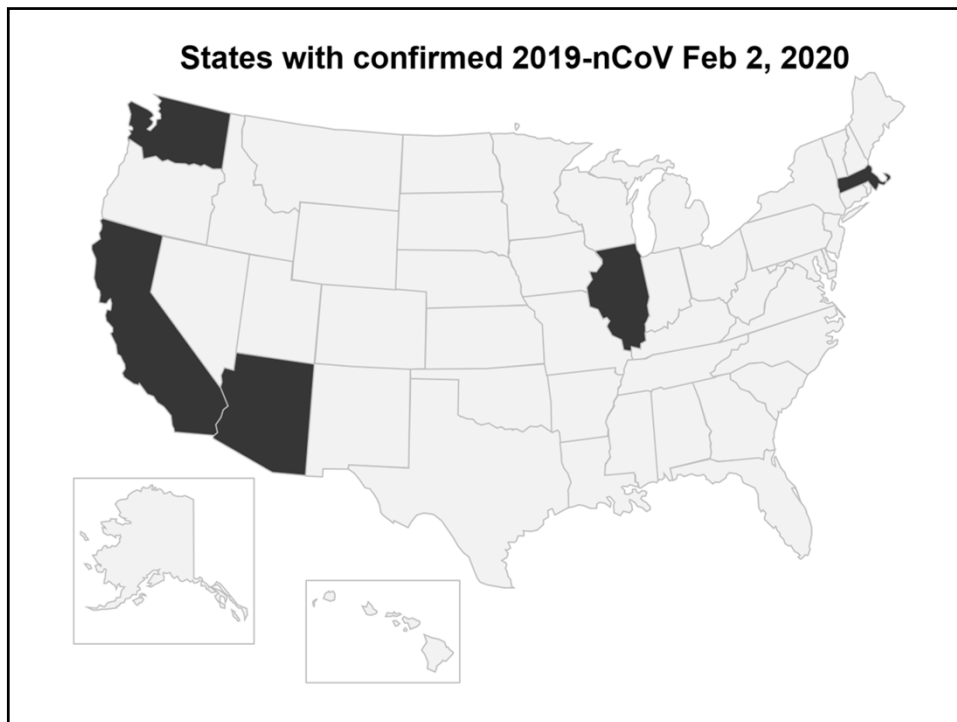
The 2020 Novel Coronavirus (2019-nCoV) Outbreak

Michael Haden, MD
Clinical Instructor in Internal Medicine
Division of Infectious Disease
The Ohio State University Wexner Medical Center

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2019 nCoV in the United States

- **241 total Patients Under Investigation (PUI) in 36 states**
- **114 returned negative**
- **121 pending**
- **6 confirmed positive**
 - **Washington, California, Arizona, Illinois, Massachusetts**
 - **All had recent travel to Wuhan**

Information updated on 2/3/20

Risk Assessment

- **This is a serious public health threat, however the risk to individuals is dependent on exposure.**
- **More cases are likely in the coming days with increased travel to and from China due to the Lunar New Year.**
- **General American public are unlikely to be exposed to this virus and immediate health risk of 2019 nCoV is low.**

Illness Severity

- **2019-nCoV infections range from people being mildly sick to severely ill and dying.**

When should you suspect 2019-nCoV?

1. Fever **AND** symptoms of lower respiratory infection **AND** either:
 - Travel from Wuhan City, China in the past 14 days
 - Close contact in the past 14 days with a person under investigation for 2019-nCoV

OR
2. Fever **OR** symptoms of lower respiratory infection **AND**:
 - Close contact in the past 14 days with a person with laboratory-confirmed 2019-nCoV

BestPractice Advisory -

Important (1)

Wuhan Coronavirus Risk: This patient has recently traveled to China and has fever or cough.

ⓘ Consider the risk of infection with novel Wuhan Coronavirus (2019-nCoV).
Give the patient a mask and initiate airborne and contact isolation precautions.

[2019 Novel Coronavirus \(2019-nCoV\)](#)

Open patient chart to take these recommended actions ➤

Consider going to activity: CDC Wuhan Coronavirus guidance

Dismiss

The CDC recommends ALL of the following:

Contact Isolation:

- Gown
- Gloves
- Hand hygiene with soap and water*

*alcohol based
hand sanitizer
if not available

Droplet Isolation:

- Mask
- Face shield or goggles

Airborne Isolation:

- Negative airflow room
- N-95 mask or PAPR

What to do with a suspected case

- Isolate the patient IMMEDIATELY
 - Airborne, droplet and contact precautions
- Obtain a full travel history
- Prompt communication with local infection control and local health department to determine need for testing
- Testing is currently only being performed at the CDC, thus requires approval first

Testing for 2019-nCoV:

All of the following:

- 1.Sputum or bronchoalveolar lavage or tracheal aspirate**
- 2.Serum**
- 3.Nasopharyngeal AND oropharyngeal swab/wash/aspirate**

Maintain proper infection control when collecting specimens.

Treatment

- No antiviral therapy available**
- Only supportive care measures**

CDC Recommendations

- CDC issued updated travel guidance, recommending travelers avoid all nonessential travel to China. (Level 3 travel health notice)
- Patients who have been in Wuhan within past 14 days and develop fever, cough or have difficulty breathing seek medical care right away.
 - Call ahead before going to see a doctor or emergency room. Tell them you were in Wuhan and your symptoms.
- Persons returning from travel in China who are well are NOT currently recommended to undergo self-isolation, and have no activity restrictions. They should monitor for symptoms and present for evaluation if symptoms develop.

**Any patient with a
suspected viral
respiratory infection
should always be
placed in droplet
isolation**

The mainstays of response to any epidemiologic threat are:

- Preparedness
- Surveillance
- Containment
- Education

Standard Infection Prevention

- Maintain proper hand hygiene practices
- Cover your cough
- Stay home if you are sick
- Get your Influenza vaccination

For updates:

<https://www.cdc.gov/coronavirus/2019-nCoV/index.html>

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/>