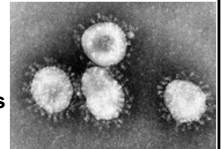


The 2019-2020 Novel Coronavirus Outbreak

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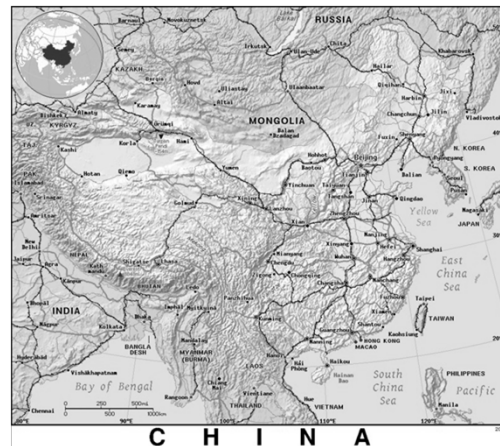
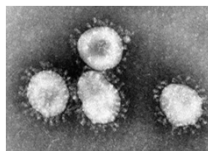
Coronaviruses

- 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

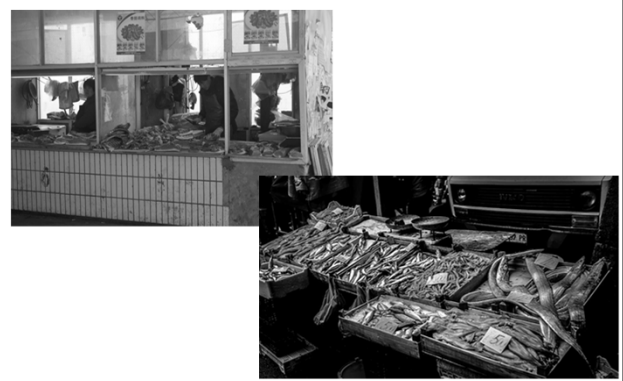
- No vaccines exist
- No anti-virals exist
- Treatment is supportive
- Patients should be placed in droplet isolation







Credit: Howchou CC BY-SA 3.0

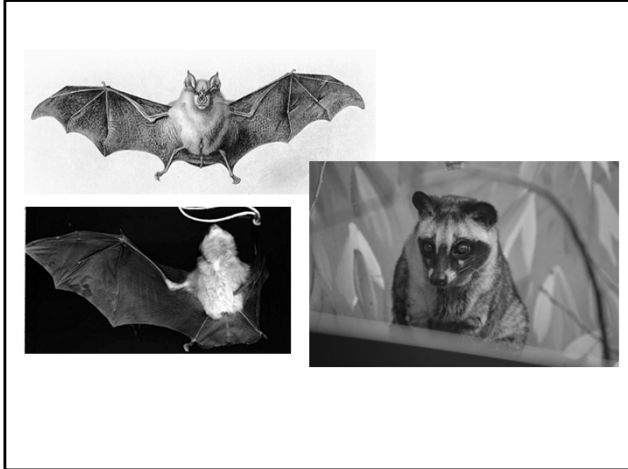


**Coronaviruses can
go rogue:**

**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



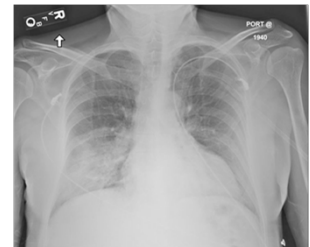
MERS (Middle East Respiratory Syndrome)

Symptoms:

- Cough
- Dyspnea
- Fever

Chest x-ray:

- Patchy pneumonia
- ARDS

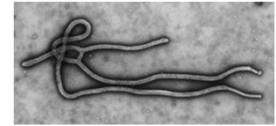


Lessons learned from MERS

- 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



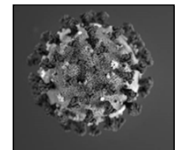
Lessons learned from Ebola

- 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



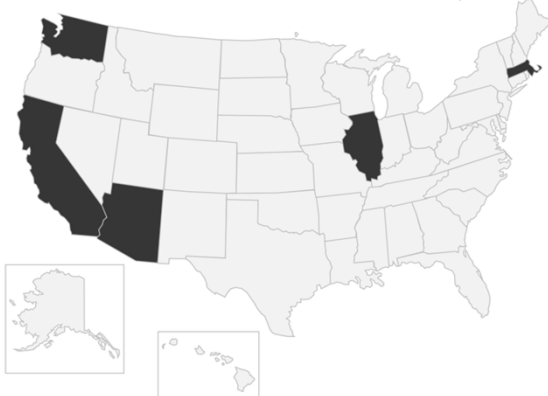
The 2020 Novel Coronavirus (2019-nCoV) Outbreak

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Countries With Coronavirus 2019-nCoV
As of February 3, 2020



States with confirmed 2019-nCoV Feb 2, 2020



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.

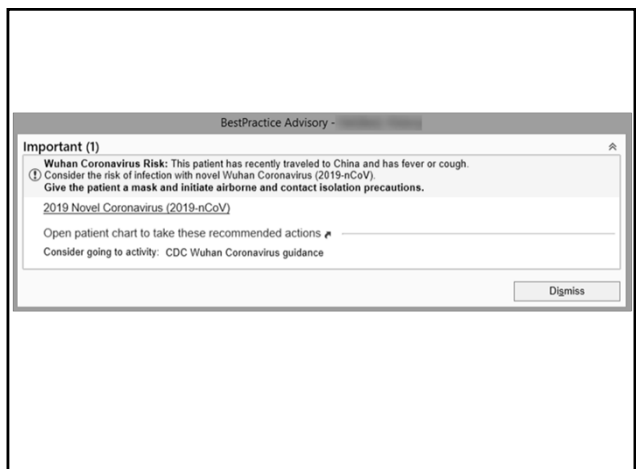
Illness Severity

- 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



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/>