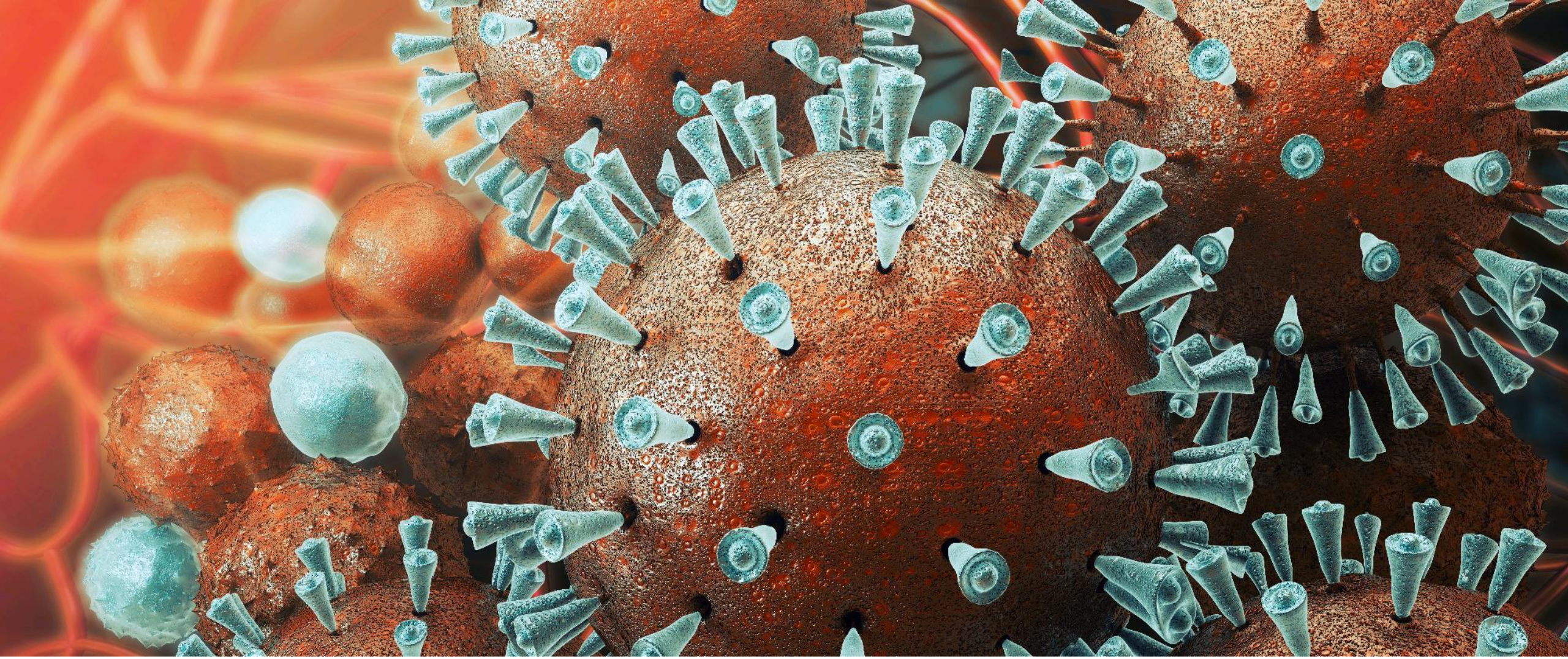


2019 NOVEL CORONAVIRUS

Video Conference: February 7, 2020

NORTH Dakota

Be Legendary.™

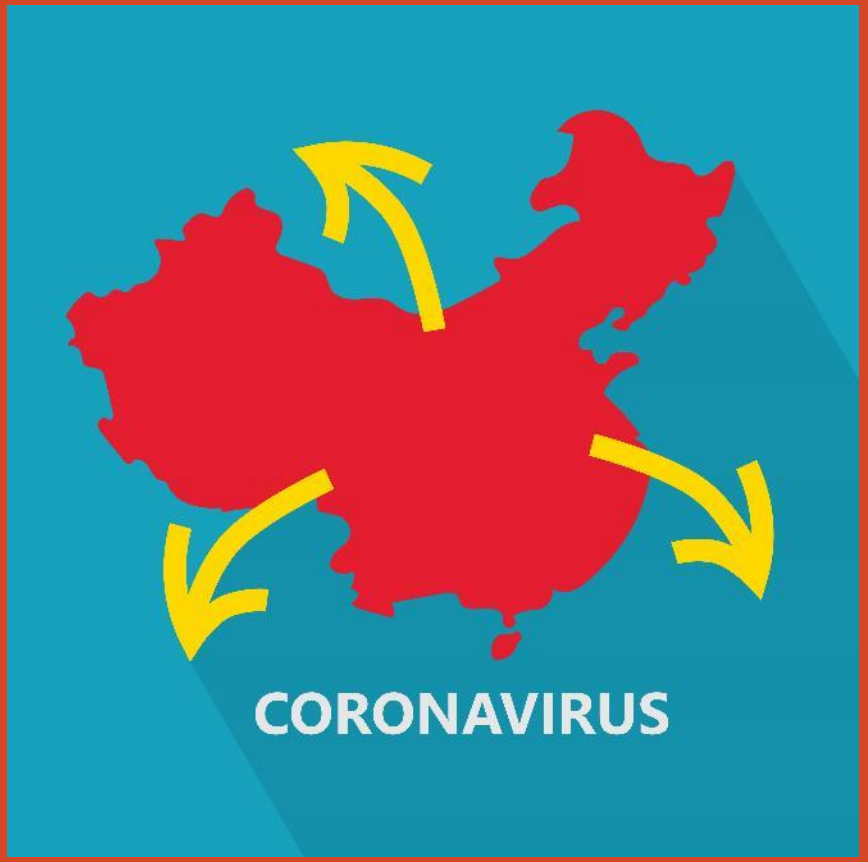
This is an **emerging, rapidly evolving situation**. Information in this presentation is current as of February 7, 2020. Please check the NDDoH Novel Coronavirus website for the most current information and guidance.

www.health.nd.gov/coronavirus

BACKGROUND INFORMATION AND SITUATIONAL UPDATE

CORONAVIRUS

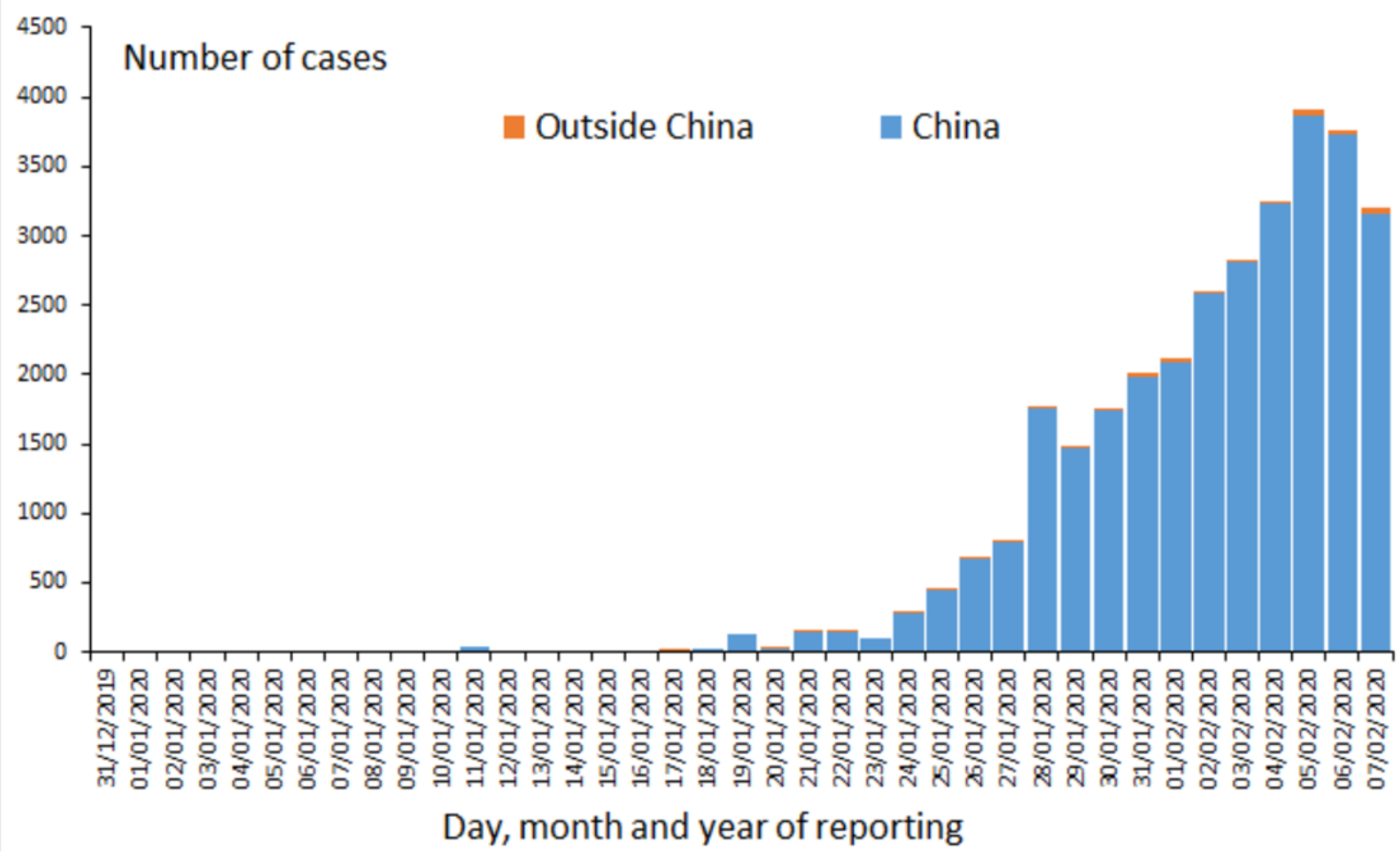
- Coronaviruses are a large family of viruses that are common in many different species of animals, including camels, cattle, cats, and bats.
- Rarely, animal coronaviruses can infect people and then spread between people such as with MERS, SARS, and now with 2019-nCoV.
- 2019-nCoV is a betacoronavirus, like MERS and SARS, all of which have their origins in bats.



2019 NOVEL CORONAVIRUS

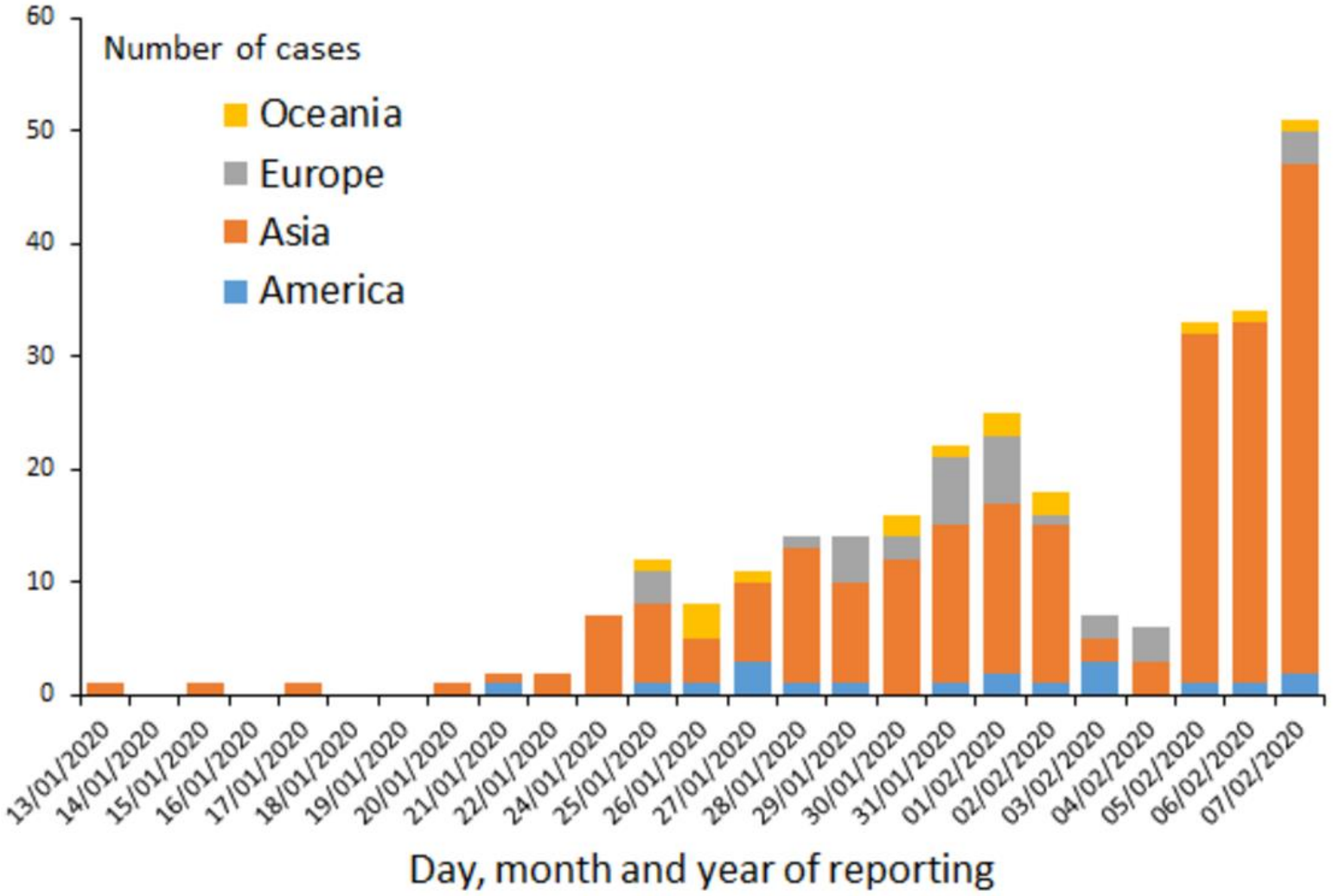
- Outbreak of respiratory illness caused by 2019-nCoV first detected in Wuhan, China.
- Early cases were associated to a large seafood and animal market.
- Person-to-person spread is occurring.

DISTRIBUTION OF LABORATORY CONFIRMED CASES OF 2019-NCOV WORLDWIDE THROUGH 2/7/2020



ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

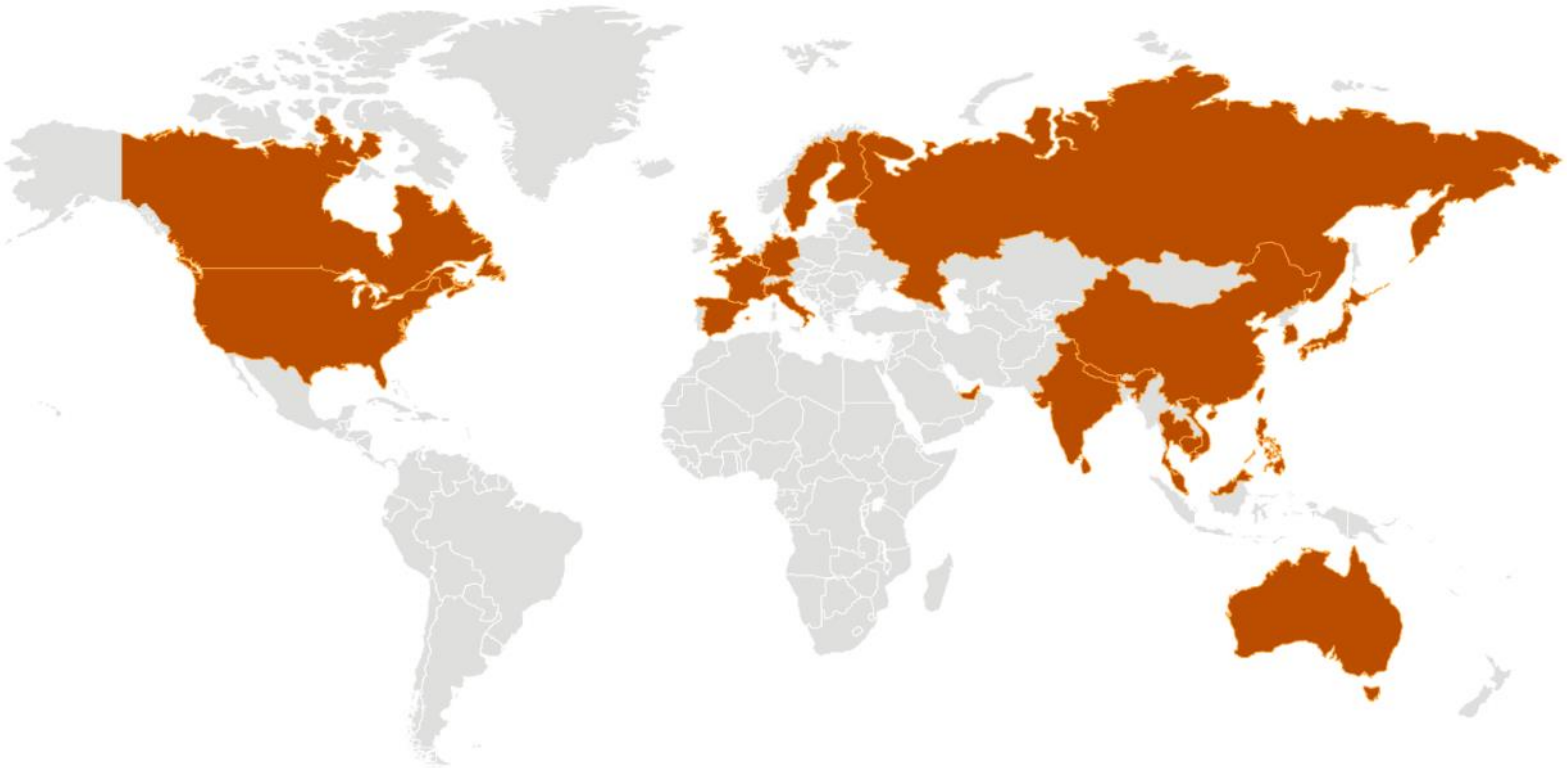
DISTRIBUTION OF LABORATORY CONFIRMED CASES OF 2019-NCOV OUTSIDE OF CHINA THROUGH 2/7/2020



ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

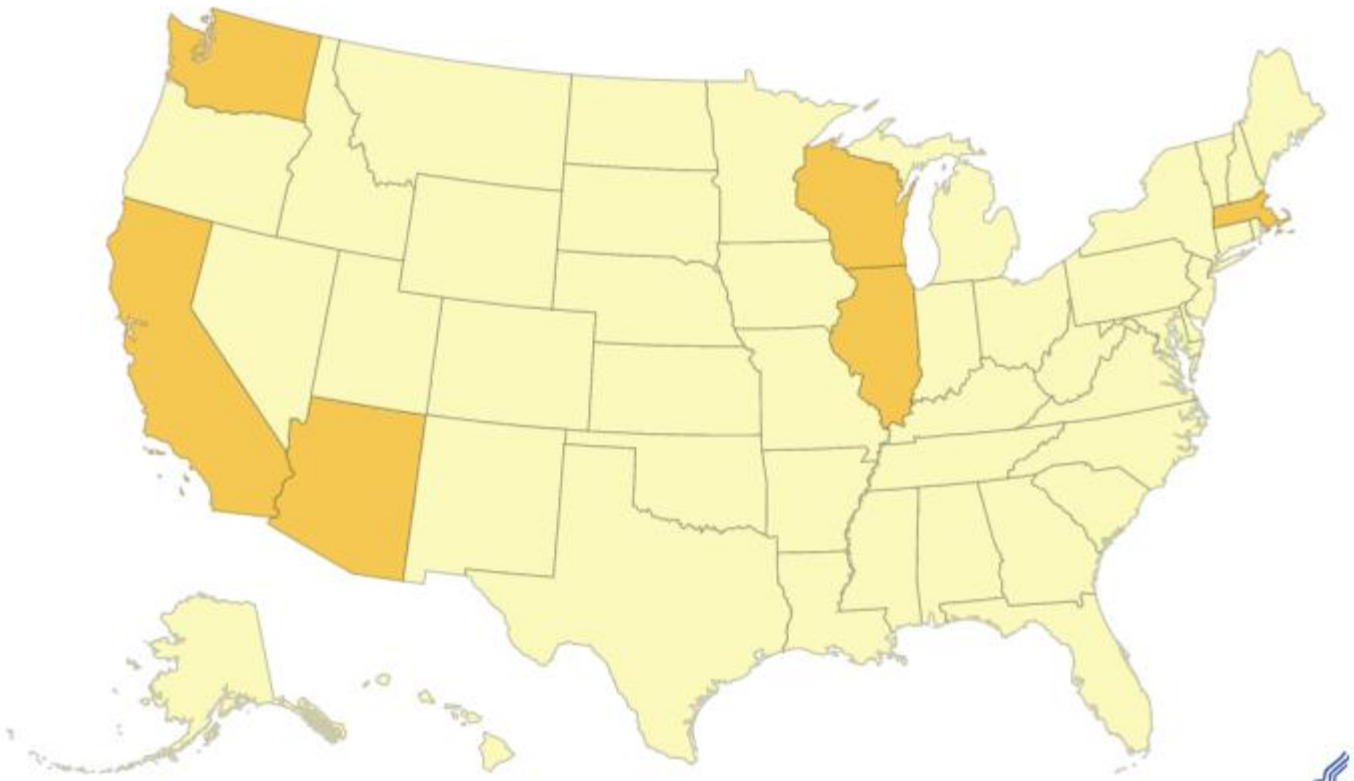
GLOBAL 2019 NOVEL CORONAVIRUS

- 28 countries with confirmed 2019-nCoV cases.



NOVEL CORONAVIRUS IN THE U.S.

- 12 cases from 6 states reported in the U.S.
  - 8 with a history of travel to Wuhan, China
  - 1 with contact to a case in China
  - 3 household contacts of U.S. cases



NOVEL CORONAVIRUS IN THE U.S.

People Under Investigation (PUI) in the United States*
As of 2/7/2020

People under Investigation (PUI) in the United States	
Positive	**12**
Negative	**225**
Pending§	**100**
Total	**337**

PUBLIC HEALTH RESPONSE

FLOWCHART TO IDENTIFY AND ASSESS

- On NDDoH website
- Included in 02/01/2020 HAN

Flowchart to Identify and Assess 2019 Novel Coronavirus

For the evaluation of patients who may be ill with or who may have been exposed to 2019 Novel Coronavirus (2019-nCoV)

A. Identify

If in the *past 14 days since first onset of symptoms* a history of *either*

Travel to China	← OR →	Close contact with a person known to have 2019-nCoV illness*

B. AND the person has

Fever or symptoms of lower respiratory illness
(e.g., cough or shortness of breath)

if both exposure and illness are present

↓

1. Isolate

- Place facemask on patient
- Isolate the patient in a private room or a separate area
- Wear appropriate personal protective equipment (PPE)

2. Assess clinical status

EXAM	Is fever present?	Is respiratory illness present?
	☐ Subjective?	☐ Cough?
	☐ Measured? _____°C/F	☐ Shortness of breath?

3. Inform

- Contact North Dakota Department of Health at 701-328-2378 or 800-472-2180 to report at-risk patients and their clinical status
- Assess need to collect specimens to test for 2019-nCoV
- Decide disposition

If discharged to home

↓

Instruct patient

As needed depending on severity of illness and health department consultation

- Home care guidance
- Home isolation guidance

Advise patient

If the patient develops new or worsening fever or respiratory illness

- Call clinic to determine if reevaluation is needed
- If reevaluation is needed call ahead and wear facemask

* Documentation of laboratory-confirmation of 2019-nCoV may not be possible for travelers or persons caring for patients in other countries. For more clarification on the definition for close contact see CDC's Interim Guidance for Healthcare Professionals: www.cdc.gov/coronavirus/2019-nCoV/hcp/clinical-criteria.html

PERSON UNDER INVESTIGATION

Clinical Features	&	Epidemiologic Risk
Fever[1] or signs/symptoms of lower respiratory illness (e.g. cough or shortness of breath)	AND	Any person, including health care workers, who has had close contact[2] with a laboratory-confirmed[3,4] 2019-nCoV patient within 14 days of symptom onset
Fever[1] and signs/symptoms of a lower respiratory illness (e.g., cough or shortness of breath)	AND	A history of travel from Hubei Province, China[5] within 14 days of symptom onset
Fever[1] and signs/symptoms of a lower respiratory illness (e.g., cough or shortness of breath) requiring hospitalization[4]	AND	A history of travel from mainland China[5] within 14 days of symptom onset

REPORTING

- Healthcare providers should **immediately** notify both infection control personnel at their healthcare facility and the NDDoH in the event of a PUI for 2019-nCoV.
  - NDDoH: 701-328-2378 or 800-472-2180

MANAGEMENT OF PUI

- Symptomatic people who meet CDC's definition of PUI should be evaluated by healthcare providers in conjunction with the NDDoH.
- PUIs awaiting results of rRT-PCR testing for 2019-nCoV should remain in isolation at home or in a healthcare facility until their test results are known.
- Depending on the clinical suspicion of 2019-nCoV infection, PUIs for whom an initial rRT-PCR test is negative may be candidates for removal of any isolation and travel restrictions specific to symptomatic people, but any restrictions for asymptomatic people according to the assigned risk level should still apply.

PEOPLE WITH CONFIRMED 2019-NCOV

- People with confirmed 2019-nCoV infection should remain in isolation, either at home or in a healthcare facility as determined by clinical status, until they are determined by the NDDoH in coordination with CDC to be no longer infectious.
- The location of isolation will be determined by NDDoH and isolation may be compelled by public health order, if necessary.
- Local or long-distance travel is permitted only by medical transport or private vehicle.

RISK
LOW
MEDIUM
HIGH
VERY HIGH
EXTREME

Warning - Level 3, Avoid Nonessential Travel

U.S. State Dept. - Level 4, Do Not Travel

TRAVEL TO CHINA

- Do not travel to China
- Transportation closed in areas of Hubei province, including Wuhan city
- Limited access to adequate healthcare in affected areas

2019 nCoV CORONAVIRUS

HEALTH ALERT: *Travelers from China*

There is an outbreak of respiratory illness in China.

Travelers are required to be monitored for up to 14 days after leaving China.

Travelers should stay home and monitor their health within this 14-day period.

A health official will contact you to give additional instructions.

Take your temperature with a thermometer 2 times a day and watch your health.

If you develop a fever (100.4°F/38°C or higher), cough, or have difficulty breathing:

- Call your health department for advice before seeking care.
- If you can't reach your health department, call ahead before going to a doctor's office or emergency room.
- Tell them your symptoms and that you were in China.

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

CDC

For more information: **www.cdc.gov/nCoV**

CS 314423-D 02/03/2020

ISOLATION VS. QUARANTINE

- ISOLATION
  - Separation of a person or group known or reasonably believed to be **infected** with a communicable disease and potentially infectious from those who are not infected to prevent spread.
- QUARANTINE
  - Separation of a person or group reasonably believed to have been **exposed** to a communicable disease but not yet symptomatic from others who have not been exposed, to prevent possible spread.

EXPOSURE RISK CATEGORIES

High-Risk

- Living in the same household as, being an intimate partner of, or providing care in a nonhealthcare setting (such as a home) for a person with symptomatic laboratory-confirmed 2019-nCoV infection ***without using recommended precautions*** for home care and home isolation.
  - The same risk assessment applies for the above-listed exposures to a person diagnosed clinically with 2019-nCoV infection outside of the United States who did not have laboratory testing.
- Travel from Hubei Province, China

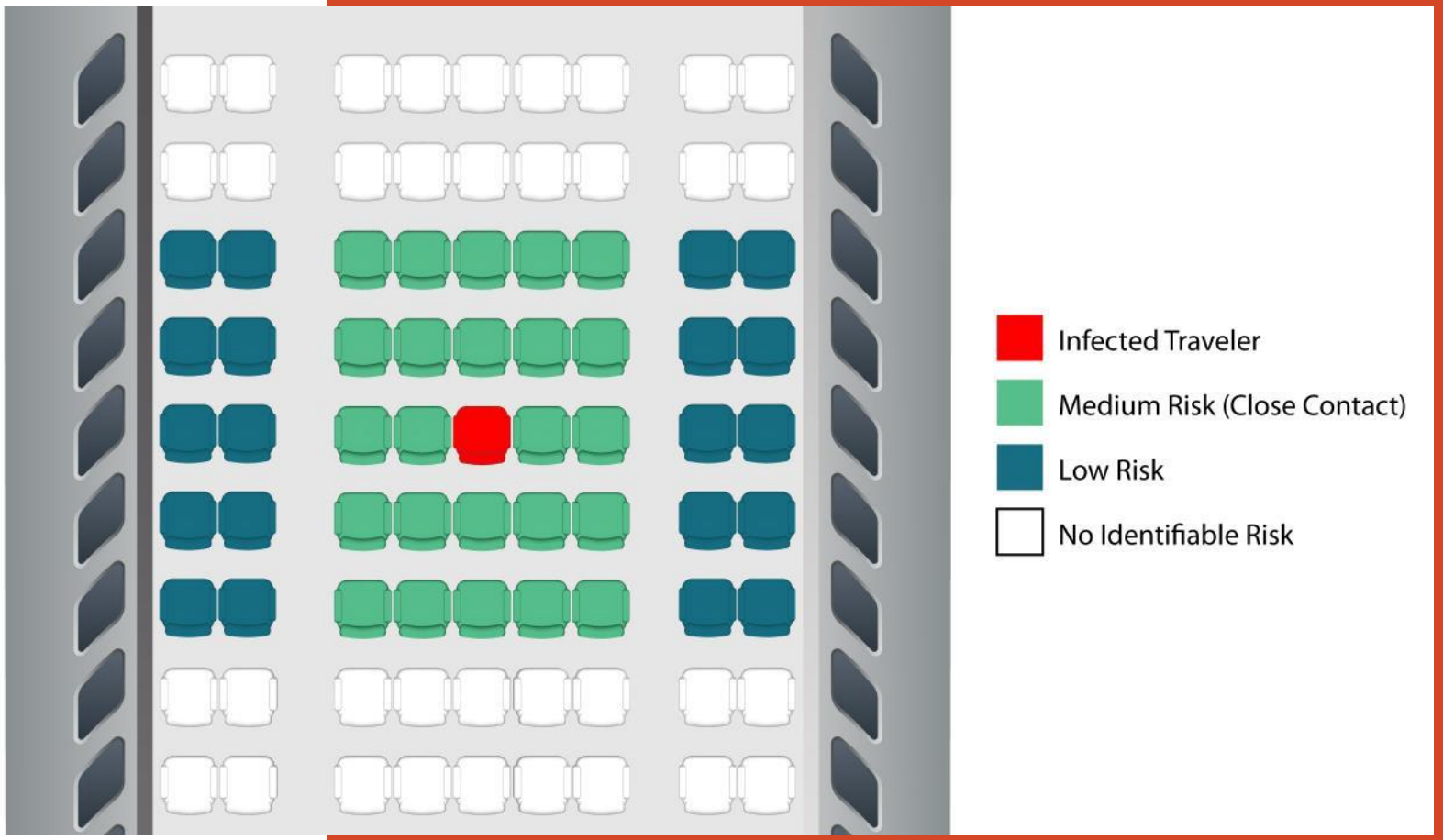
EXPOSURE RISK CATEGORIES

Medium Risk

- Close contact with a person with symptomatic laboratory-confirmed 2019-nCoV infection, and not having any exposures that meet a high-risk definition.
  - The same risk assessment applies for close contact with a person diagnosed clinically with 2019-nCoV infection outside of the United States who did not have laboratory testing.
  - On an aircraft, being seated within 6 feet (two meters) of a traveler with symptomatic laboratory-confirmed 2019-nCoV infection; this distance correlates approximately with 2 seats in each direction

AIR TRAVEL RISK

- Sample seating chart for a 2019-nCoV aircraft contact investigation showing risk levels based on distance from the infected traveler.



EXPOSURE RISK CATEGORIES

Medium-Risk

- Living in the same household as, an intimate partner of, or caring for a person in a nonhealthcare setting (such as a home) to a person with symptomatic laboratory-confirmed 2019-nCoV infection ***while consistently using recommended precautions*** for home care and home isolation.
- Travel from mainland China outside Hubei Province AND not having any exposures that meet a high-risk definition.

EXPOSURE RISK CATEGORIES

Low-Risk

- Being in the same indoor environment (e.g., a classroom, a hospital waiting room) as a person with symptomatic laboratory-confirmed 2019-nCoV infection for a prolonged period of time but not meeting the definition of close contact.
- On an aircraft, being seated within two rows of a traveler with symptomatic laboratory-confirmed 2019-nCoV infection but **not** within 6 feet (2 meters) (AND not having any exposures that meet a medium- or a high-risk definition.

SYMPTOMATIC[1]

Risk Category	Movement Restrictions and Public Activities	Medical Evaluation	Travel
High risk	Immediate isolation.	Medical evaluation is recommended; diagnostic testing for 2019-nCoV should be guided by CDC's PUI definition but is recommended for symptomatic people with a known high-risk exposure. If medical evaluation is needed, it should occur with pre-notification to the receiving HCF and EMS, if EMS transport indicated, and with all recommended infection control precautions in place.	Controlled; air travel only via air medical transport. Local travel is only allowed by medical transport (e.g., ambulance) or private vehicle while symptomatic person is wearing a face mask.
Medium risk	Immediate isolation.	Medical evaluation and care should be guided by clinical presentation; diagnostic testing for 2019-nCoV should be guided by CDC's PUI definition If medical evaluation is needed, it should occur with pre-notification to the receiving HCF and EMS, if EMS transport indicated, and with all recommended infection control precautions in place.	Controlled; air travel only via approved air medical transport. Local travel is only allowed by medical transport (e.g., ambulance) or private vehicle while symptomatic person is wearing a face mask.
Low risk	Recommendation to avoid contact with others and public activities while symptomatic	Person should seek health advice to determine if medical evaluation is needed. If sought, medical evaluation and care should be guided by clinical presentation; diagnostic testing for 2019-nCoV should be guided by CDC's PUI definition	Recommendation to not travel on long-distance commercial conveyances or local public transport while symptomatic
No Identifiable Risk[2]	No restriction	Routine medical care	No restriction

ASYMPTOMATIC

Risk Category	Movement Restrictions and Public Activities	Monitoring	Travel
High risk	Remain quarantined (voluntary or under public health orders on a case-by-case basis) in a location to be determined by public health authorities. No public activities.	Daily active monitoring	Controlled
Medium risk	To the extent possible, remain at home or in a comparable setting. Avoid congregate settings, limit public activities, and practice social distancing.	**Travelers from mainland China outside Hubei Province with no known high-risk exposure:** Self-monitoring with public health supervision **All others in this category:** Active monitoring	Recommendation to postpone additional long-distance travel after they reach their final destination. People who intend to travel should be advised that they might not be able to return if they become symptomatic during travel.
Low risk	No restriction	Self-observation	No restriction
No Identifiable Risk	No restriction	None	No restriction

TRAVELER AND CONTACT NOTIFICATIONS

- The NDDoH will receive notifications of individuals in North Dakota who have traveled from China or were known contacts to cases.
- Notification and management effective starting 02/03/2020
  - Not retro-active (i.e., people who returned from China prior to 02/03 will not be monitored by NDDoH)
    - These individuals should still watch for symptoms for 14 days after arrival.

NDDOH MONITORING

- Self-monitoring with NDDoH supervision: means NDDoH assumes the responsibility for oversight of self-monitoring for certain groups of people.
  - CDC recommends that health departments establish initial communication with these people, provide a plan for self-monitoring and clear instructions for notifying the health department before the person seeks health care if they develop fever, cough, or difficulty breathing, and as resources allow, check in intermittently with these people over the course of the self-monitoring period.

NDDOH MONITORING

- Active monitoring: means that the NDDoH assumes responsibility for establishing regular communication with potentially exposed people to assess for the presence of fever, cough, or difficulty breathing.
  - For people with high-risk exposures, CDC recommends this communication occurs at least once each day.
  - The mode of communication can be determined by the state or local public health authority and may include telephone calls or any electronic or internet-based means of communication.

WHAT ELSE IS THE NDDOH DOING?

- On January 18, 2020, the NDDoH released a health advisory providing an update from the CDC about this situation.
- Guidance to healthcare providers about illness presentation, diagnostic testing, infection prevention, and how to report suspect cases to the NDDoH have also been provided.
- The NDDoH established a 2019 Novel Coronavirus website: www.health.nd.gov/coronavirus

WHAT ELSE IS THE NDDOH DOING?

- On January 27, 2020, the NDDoH activated the Emergency Operations Center.
- On January 29, 2020, the NDDoH held a video conference with North Dakota Universities to provide education, recommendations, and dialogue around Coronavirus.
- On January 29, 2020, the NDDoH distributed a news release regarding Novel Coronavirus and the Department's anticipated response.
- On January 31, 2020, a second news release was distributed.

WHAT ELSE IS THE NDDOH DOING?

- On February 1, 2020, a second health advisory was distributed to North Dakota health care providers regarding Coronavirus, providing an update on the situation and additional guidance.
- The NDDoH is taking numerous calls from the public, local public health, media, and health care providers regarding Coronavirus.
- The NDDoH is including Novel Coronavirus information on social media platforms.

WHAT ELSE IS THE NDDOH DOING?

- NDDoH staff are participating on applicable webinars, conference calls, and media briefings regarding Novel Coronavirus.
- On February 6, 2020, provided a memo to educate childcares, schools and universities regarding student and/or employee exclusion for those individuals who meet risk criteria that requires exclusion.

INFECTION PREVENTION

INFECTION CONTROL

- Place surgical mask on patient
- Should be a private room with door closed or airborne isolation room
- Healthcare workers should use **standard, contact**, and **airborne** precautions with **eye protection**

MINIMIZE EXPOSURES

- Patients should be instructed to call ahead before arrival.
- Provide a facemask to the patient upon arrival.
- Consider posting signs/posters to provide patients instructions about hand hygiene and respiratory etiquette (including how to use masks).
- Ensure rapid identification and isolation of patients with symptoms of suspected 2019-nCoV.

ADHERE TO INFECTION CONTROL PRECAUTIONS

- Standard, contact, and airborne precautions, including eye protection
- Personal Protective Equipment (PPE)
  - Gloves
  - Gowns
  - Respiratory protection
  - Eye protection
- Facilities should have policies and procedures describing the donning and doffing PPE.

GUIDELINES FOR ISOLATION PRECAUTIONS: PREVENTING TRANSMISSION OF INFECTIOUS AGENTS IN HEALTHCARE SETTINGS (2007)

www.cdc.gov/infectioncontrol/guidelines/isolation/index.html

PATIENT PLACEMENT

- Airborne Infection Isolation Room (AIIR) with the door closed except when entering and exiting
- If AIIR not available, patients requiring hospitalization should be transferred to a facility with an AIIR.
  - If not requiring hospitalization, place in a single room with the door closed and keep the facemask on the patient.
- Healthcare personnel (HCP) entering the room should use recommended PPE.
- HCP entering the room soon after the patient vacates should use respiratory protection.

DIAGNOSTIC SPECIMEN COLLECTION

- Limit individuals in the room to the patient and individual collecting the specimen.
- Adhere to standard, contact and airborne precautions, including eye protection.
- Procedures should take place in and AIIR room or examination room with the door closed.

DISCONTINUATION OF ISOLATION PRECAUTIONS

- Determined on a case-by-case basis, in conjunction with state and federal health authorities.

ADDITIONAL GUIDANCE

- Restrict visitors from entering the room of a 2019-nCoV patient.
- Dedicate medical equipment used for patient care.
- Routine cleaning and disinfection procedures should be used.
- Monitor and mange ill and exposed healthcare personnel.

GENERAL RESPIRATORY PRECAUTIONS

- Wash your hands often with soap and water for at least 20 seconds. If soap and water are not available, use an alcohol-based hand sanitizer.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Avoid close contact with people who are sick.
- Stay home when you are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces.
- Be current on all immunizations to stay healthy, including influenza vaccine.

CLINICAL ASPECT AND TREATMENT

2019-NCOV VIRUS CHARACTERISTICS

- 75-80% identical to SARS-CoV
- More closely related to several bat coronaviruses
- Grows better in primary human airway epithelial cells than standard tissue-culture cells, unlike SARS and MERS
- SARS and MERS grow better in intrapulmonary epithelial cells, therefore transmission is most often from symptomatic patients
- 2019-nCoV uses same receptor (hACE2) as SARS, so transmission may be less in asymptomatic patients (so transmission may be less in asymptomatic patients, but remains unknown at this time)

INCUBATION PERIOD

- CDC believes at this time that symptoms of 2019-nCoV may appear in as few as 2 days or as long as 14 after exposure. This is based on what has been seen previously as the incubation period of MERS viruses.
- Preliminary data suggests mean incubation time to be 5.2 days

TRANSMISSION

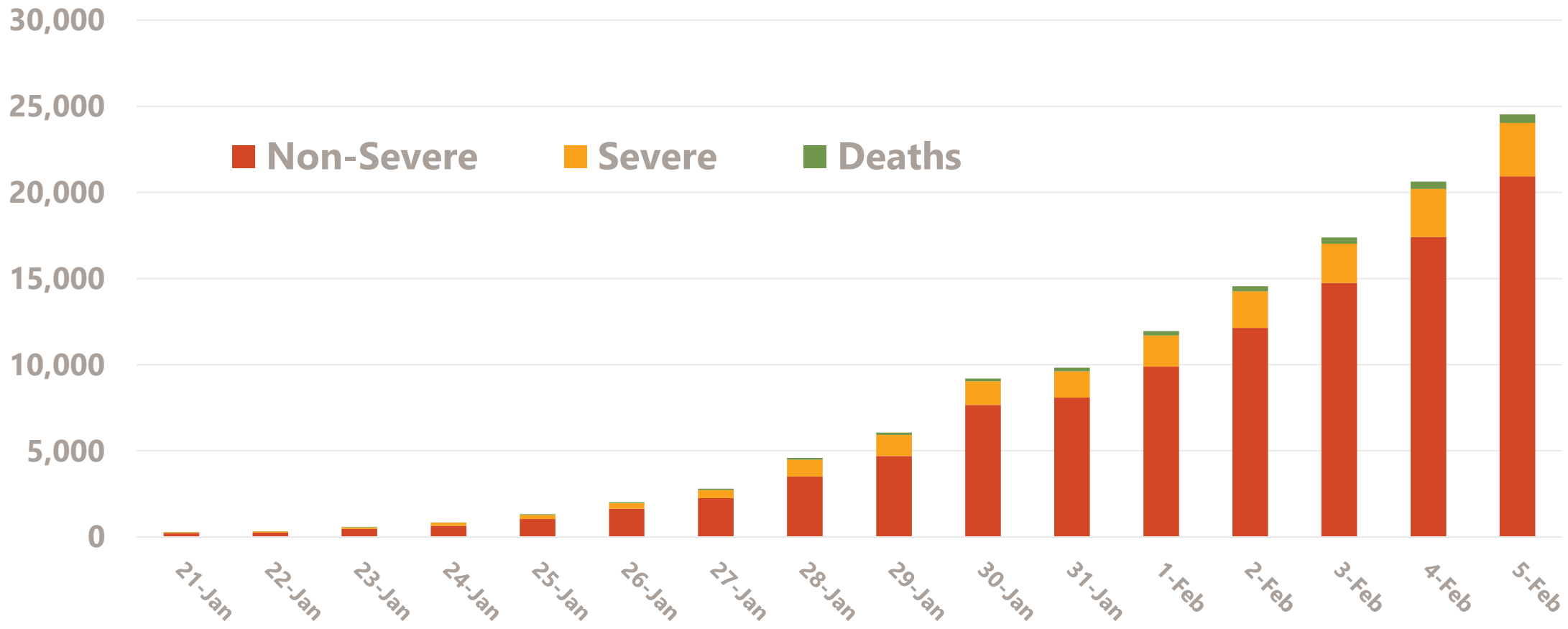
- Most often, spread from person-to-person happens among close contacts (about 6 feet).
- Person-to-person spread is thought to occur mainly via respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory pathogens spread.
- These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
- It’s currently unclear if a person can get 2019-nCoV by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes.
- There have been reports of spread from an infected patient with no symptoms to a close contact, as well as possible vertical transmission, but this is still being investigated.

CLINICAL FINDINGS OF 2019-NCOV

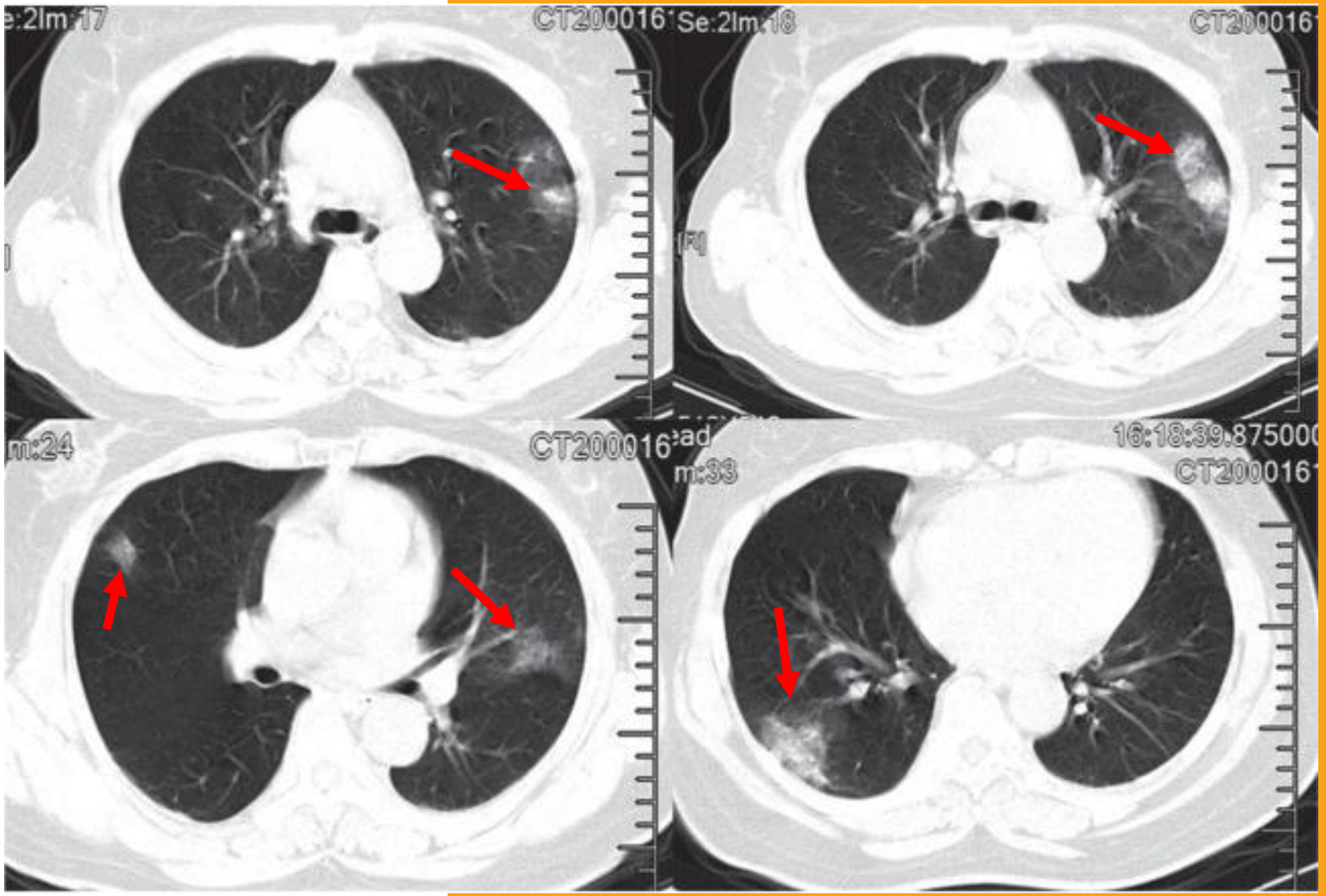
Clinical Findings	Frequency
Fever	83-98%
Cough	76-82%
Myalgias or Fatigue	11-44%
Dyspnea in hospitalized patients	52%
ARDS in hospitalized patients	17-29%
Comorbidity in ICU patients	38%
Leukopenia	9-25%
Leukocytosis	24-30%
Lymphopenia	63%
Elevated transaminases	37%

SPECTRUM OF ILLNESS WITH 2019-NCOV

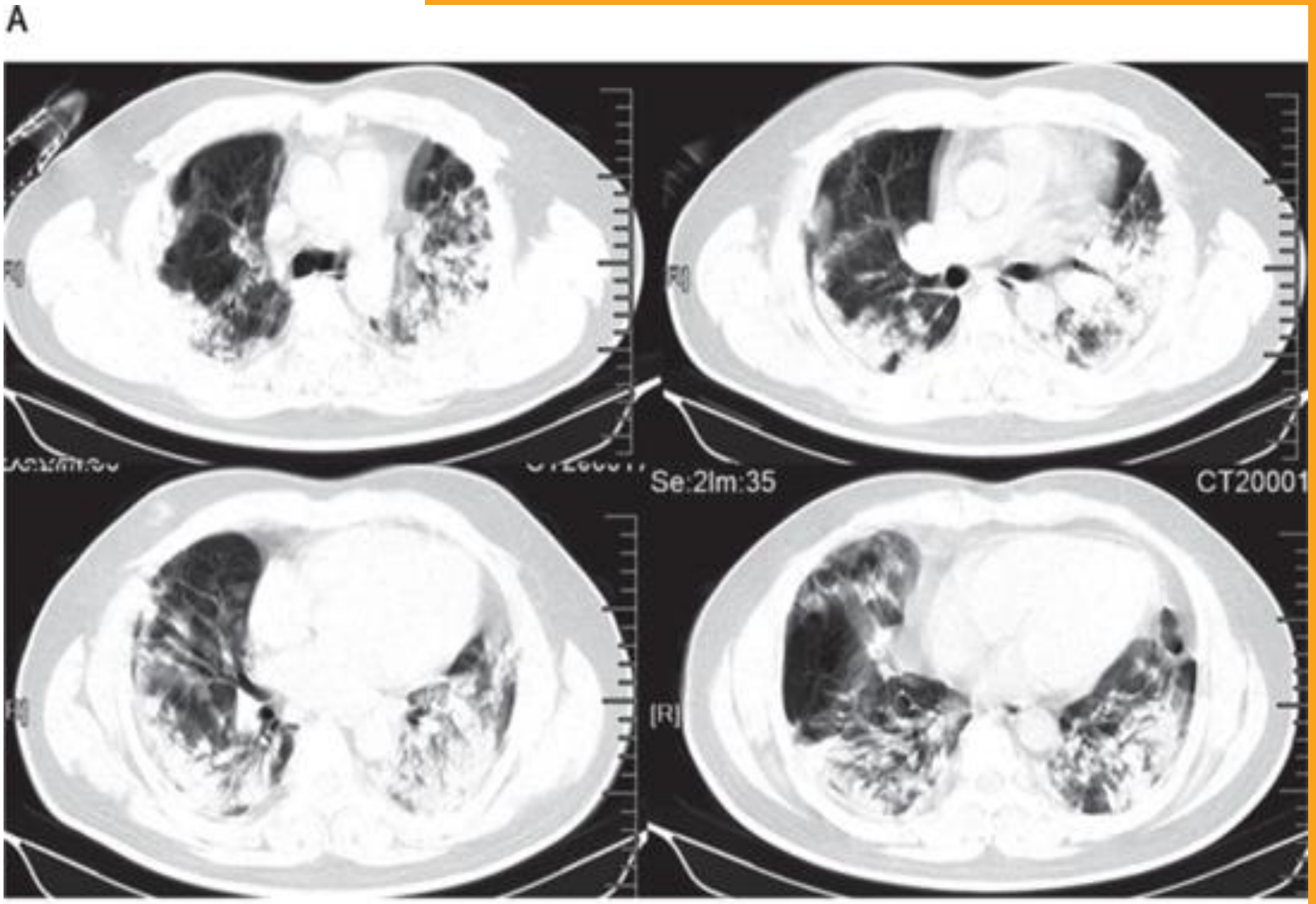
CUMULATIVE INCIDENCE OF 2019-NCOV DAILY WHO SITUATION REPORTS



PATCHY GROUND-GLASS INFILTRATES



DENSER CONSOLIDATION AND ARDS



RISK FACTORS FOR PROGRESSION TO SEVERE DISEASE

- Older age
- Underlying chronic medical conditions
  - Lung disease
  - Cancer
  - Heart failure
  - Cerebrovascular disease
  - Renal disease
  - Liver disease
  - Diabetes mellitus
  - Immunocompromised
  - Pregnancy

Table 1. Pathogenicity and Transmissibility Characteristics of Recently Emerged Viruses in Relation to Outbreak Containment.

Virus	Case Fatality Rate (%)	Pandemic	Contained	Remarks
2019-nCoV	Unknown*	Unknown	No, efforts ongoing	
pH1N1	0.02–0.4	Yes	No, postpandemic circulation and establishment in human population	
H7N9	39	No	No, eradication efforts in poultry reservoir ongoing	
NL63	Unknown	Unknown	No, endemic in human population	
SARS-CoV	9.5	Yes	Yes, eradicated from intermediate animal reservoir	58% of cases result from nosocomial transmission
MERS-CoV	34.4	No	No, continuous circulation in animal reservoir and zoonotic spillover	70% of cases result from nosocomial transmission
Ebola virus (West Africa)	63	No	Yes	

* Number will most likely continue to change until all infected persons recover.

TREATMENT OF 2019-NCOV

- No specific therapeutics
- Treatment is supportive
  - Prompt implementation of infection control measures
  - Fluids and oxygen as needed
  - Antibiotics for secondary bacterial infection
  - Ventilatory and blood pressure support for severe cases
- Glucocorticoids should be avoided

SPECULATIVE TREATMENTS ENTERING CLINICAL TRIALS

- Gilead's Remdesivir
  - Nucleoside broad-spectrum RNA polymerase inhibitor, Phase III clinical trial in China
- Biocryst's Galidesivir
  - Nucleoside broad-spectrum RNA polymerase inhibitor, advanced development stage
- Regeneron's REGN3048-3051
  - Monoclonal antibody developed to target MERS. Phase-I NIAID study in U.S.
- Lopinavir/ritonavir (brand name Kaletra)
  - Approved HIV drug, protease inhibitor. Shown to reduce mortality in SARS when combined with Ribavirin in open clinical trial during SARS outbreak (historical controls)

PREVENTION

- There is currently no vaccine to prevent 2019-nCoV infection.
- The best way to prevent infection is to avoid being exposed to this virus.

PREVENTION

- CDC always recommends everyday preventive actions to help prevent the spread of respiratory viruses, including:
  - Wash your hands
  - If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol.
    - Always wash hands with soap and water if hands are visibly dirty.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Avoid close contact with people who are sick.
- Stay home when you are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces using a regular household cleaning spray or wipe.

LABORATORY TESTING, SPECIMEN COLLECTION, AND LAB SAFETY

IF TESTING IS WARRANTED

- Diagnostic tests are available at CDC
- CDC and NDDoH will assist with specimen collection, storage, and shipment

Interim 2019 novel coronavirus (2019-nCoV) patient under investigation (PUI) form

As soon as possible, notify and send completed form to: 1) your local/state health department, and 2) CDC: email (eocreport@cdc.gov, subject line: nCoV PUI Form) or fax (770-488-7107). If you have questions, contact the CDC Emergency Operations Center (EOC) at 770-488-7100.

Today's date_____ **State patient ID**_____ **NNDSS local record ID/Case ID**[1] _____ **State**___ **County**_____

Interviewer's name_____ **Phone**_____ **Email**_____

Physician's name _____ **Phone**_____ **Pager or Email**_____

Sex ☐ M ☐ F **Age**_____ ☐ yr ☐ mo **Residency** ☐ US resident ☐ Non-US resident, country_____

PUI Criteria

Date of symptom onset_____

Does the patient have the following signs and symptoms (check all that apply)?

☐ Fever[2] ☐ Cough ☐ Sore throat ☐ Shortness of breath

In the 14 days before symptom onset, did the patient:

Spend time in Wuhan City, China?	☐ Y ☐ N ☐ Unknown
Does the patient live in Wuhan City? ☐ Y ☐ N ☐ Unknown Date traveled **to** Wuhan City_____ Date traveled **from** Wuhan City_____ Date **arrived** in US_____	
Have close contact[3] with a person who is under investigation for 2019-nCoV while that person was ill?	☐ Y ☐ N ☐ Unknown
Have close contact[3] with a laboratory-confirmed 2019-nCoV case while that case was ill?	☐ Y ☐ N ☐ Unknown

Additional Patient Information

Is the patient a health care worker? ☐ Y ☐ N ☐ Unknown

Have history of being in a healthcare facility (as a patient, worker, or visitor) in Wuhan City, China? ☐ Y ☐ N ☐ Unknown

Is patient a member of a cluster of patients with severe acute respiratory illness (e.g., fever and pneumonia requiring hospitalization) of unknown etiology in which nCoV is being evaluated? ☐ Y ☐ N ☐ Unknown

Does the patient have these additional signs and symptoms (check all that apply)?

☐ Chills ☐ Headache ☐ Muscle aches ☐ Vomiting ☐ Abdominal pain ☐ Diarrhea ☐ Other, Specify_____

Diagnosis (select all that apply): Pneumonia (clinical or radiologic) ☐ Y ☐ N Acute respiratory distress syndrome ☐ Y ☐ N

Comorbid conditions (check all that apply): ☐ None ☐ Unknown ☐ Pregnancy ☐ Diabetes ☐ Cardiac disease ☐ Hypertension

☐ Chronic pulmonary disease ☐ Chronic kidney disease ☐ Chronic liver disease ☐ Immunocompromised ☐ Other, specify

Is/was the patient: Hospitalized? ☐ Y, admit date_____ ☐ N **Admitted to ICU?** ☐ Y ☐ N

Intubated? ☐ Y ☐ N **On ECMO?** ☐ Y ☐ N **Patient died?** ☐ Y ☐ N

Does the patient have another diagnosis/etiology for their respiratory illness? ☐ Y, Specify_____ ☐ N ☐ Unknown

Respiratory diagnostic results

Test	Pos	Neg	Pending	Not done
Influenza rapid Ag ☐ A ☐ B	☐	☐	☐	☐
Influenza PCR ☐ A ☐ B	☐	☐	☐	☐
RSV	☐	☐	☐	☐
H. metapneumovirus	☐	☐	☐	☐
Parainfluenza (1-4)	☐	☐	☐	☐
Adenovirus	☐	☐	☐	☐

Test	Pos	Neg	Pending	Not done
Rhinovirus/enterovirus	☐	☐	☐	☐
Coronavirus (OC43, 229E, HKU1, NL63)	☐	☐	☐	☐
M. pneumoniae	☐	☐	☐	☐
C. pneumoniae	☐	☐	☐	☐
Other, Specify_____	☐	☐	☐	☐

Specimens for 2019-nCoV testing

Specimen type	Specimen ID	Date collected	Sent to CDC?
NP swab			☐
OP swab			☐
Sputum			☐
BAL fluid			☐
Tracheal aspirate			☐

Specimen type	Specimen ID	Date collected	Sent to CDC?
Stool			☐
Urine			☐
Serum			☐
Other, specify____			☐
Other, specify____			☐

[1] *For NNDSS reporters, use GenV2 or NETSS patient identifier.*

[2] *Fever may not be present in some patients, such as those who are very young, elderly, immunosuppressed, or taking certain medications. Clinical judgement should be used to guide testing of patients in such situations.*

[3] *Close contact is defined as: a) being within approximately 6 feet (2 meters) or within the room or care area for a prolonged period of time (e.g., healthcare personnel, household members) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection); or b) having direct contact with infectious secretions (e.g., being coughed on) while not wearing recommended personal protective equipment. Data to inform the definition of close contact are limited. At this time, brief interactions, such as walking by a person, are considered low risk and do not constitute close contact.*

Version 1.0 January 17, 2020

REAL-TIME RT-PCR

- Detects:
  - 2019-nCoV_N1
  - 2019-nCoV_N2
  - 2019-nCoV_N3

- Limitations:
  - A false negative result may occur if inadequate numbers of organisms are present in the specimen due to improper collection, transport or handling
  - RNA viruses in particular show substantial genetic variability.

SPECIMEN INFORMATION

- Upper Respiratory Specimens:
  - Nasopharyngeal swab AND oropharyngeal swab (NP/OP swab)
    - Use only synthetic fiber swabs with plastic shafts.
    - Do not use calcium alginate swabs or swabs with wooden shafts, as they may contain substances that inactivate some viruses and inhibit PCR testing.
    - Place swabs immediately into sterile tubes containing 2-3 ml of viral transport media. NP and OP specimens should be kept in separate vials.
    - Refrigerate specimen at 2-8°C and ship overnight on ice pack.
  - Nasopharyngeal wash/aspirate or nasal aspirate
    - Collect 2-3 mL into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container. Refrigerate specimen at 2-8°C and ship overnight on ice pack.

COLLECTION OF SWABS

- ***Nasopharyngeal swab:*** Insert a swab into the nostril parallel to the palate. Leave the swab in place for a few seconds to absorb secretions. Swab both nasopharyngeal areas with the same swab.

- ***Oropharyngeal swab (e.g., throat swab):*** Swab the posterior pharynx, avoiding the tongue.

SPECIMEN INFORMATION

- Lower Respiratory Specimens:
  - Broncheoalveolar lavage
    - Collect 2-3 mL into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container. Refrigerate specimen at 2-8°C and ship overnight on ice.
  - Tracheal aspirates
    - Collect 2-3 mL into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container. Refrigerate specimen at 2-8°C and ship overnight on ice.
  - Sputum
    - Have the patient rinse the mouth with water and then expectorate deep cough sputum directly into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry

SPECIMEN INFORMATION

- Serum Samples
  - ***Children and adults:*** Collect 1 tube (5-10 mL) of whole blood in a serum separator tube.
  - ***Infant:*** A minimum of 1 mL of whole blood is needed for testing pediatric patients. If possible, collect 1 mL in a serum separator tube.

SPECIMEN INFORMATION

- Specimen Handling:
  - Specimens can be stored at 4ºC for up to 72 hours after collection.
  - If a delay in extraction is expected, store specimens at -70ºC or lower.
  - Extracted nucleic acids should be stored at -70ºC or lower
- Specimen Rejection:
  - Specimens not kept at 2-4°C (≤4 days) or frozen at -70°C or below
  - Incomplete specimen labeling or documentation
  - Inappropriate specimen type
  - Insufficient specimen volume

LABORATORY BIOSAFETY

- Clinical laboratories performing routine hematology, urinalysis, and clinical chemistry studies, and microbiology laboratories performing diagnostic tests on serum, blood, or urine specimens should follow standard laboratory practices, including Standard Precautions, when handling potential 2019-nCoV specimens

LABORATORY BIOSAFETY

- The following activities may be performed in BSL-2 facilities using standard BSL-2 work practices:
  - Pathologic examination and processing of formalin-fixed or otherwise inactivated tissues
  - Molecular analysis of extracted nucleic acid preparations
  - Electron microscopic studies with glutaraldehyde-fixed grids
  - Routine examination of bacterial and mycotic cultures
  - Routine staining and microscopic analysis of fixed smears
  - Final packaging of specimens for transport to diagnostic laboratories for additional testing. Specimens should already be in a sealed, decontaminated primary container.
  - Inactivated specimens (e.g., specimens in nucleic acid extraction buffer)

LABORATORY BIOSAFETY

- The following activities involving manipulation of potentially infected specimens should be, at a minimum, performed in a Class II BSC:
  - Aliquoting and/or diluting specimens
  - Inoculating bacterial or mycological culture media
  - Performing diagnostic tests that do not involve propagation of viral agents in vitro or in vivo
  - Nucleic acid extraction procedures involving potentially infected specimens
  - Preparation and chemical- or heat-fixing of smears for microscopic analysis

RISK ASSESSMENT

- A site specific risk assessment should be performed to determine if enhanced biosafety precautions are warranted based on situational needs (e.g. high testing volumes)

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