

# COVID-19 Updates: May 4, 2020

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Whitney Essex, MSN, FNP-BC  
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VIROLOGY

EPIDEMIOLOGY

INFECTION CONTROL

DIAGNOSIS

DISEASE

TREATMENT

Could you review what we know about the recent reports of COVID-19 positive patients having a higher risk of stroke? Thank you!

•Theresa Emmerling, Crow Northern Cheyenne Hospital, [theresa.emmerling@ihs.gov](mailto:theresa.emmerling@ihs.gov)

Do we need to make changes to our screening guidelines based on the new symptoms. I don't see guidance on if someone has any one or combination of these is needed. Can Dr Mera share the updated screening guidelines at Cherokee when they are available?

•-Freida Eng, Question During ECHO

Would like to learn more about Remdesivir and convalescent plasma. What's the Oxford vaccine status?

•Hector Burgos, IHS Pine Ridge, SD, [hector.burgos@ihs.gov](mailto:hector.burgos@ihs.gov), MD

Data on perinatal transmission?

•Question during ECHO

Please include dental treatment into your discussions. Dental procedures produce a mass amount of aerosols.

•Emily Warnstadt, Yakama Indian Health Services, Toppenish, WA, [emily.warnstadt@ihs.gov](mailto:emily.warnstadt@ihs.gov), RDH

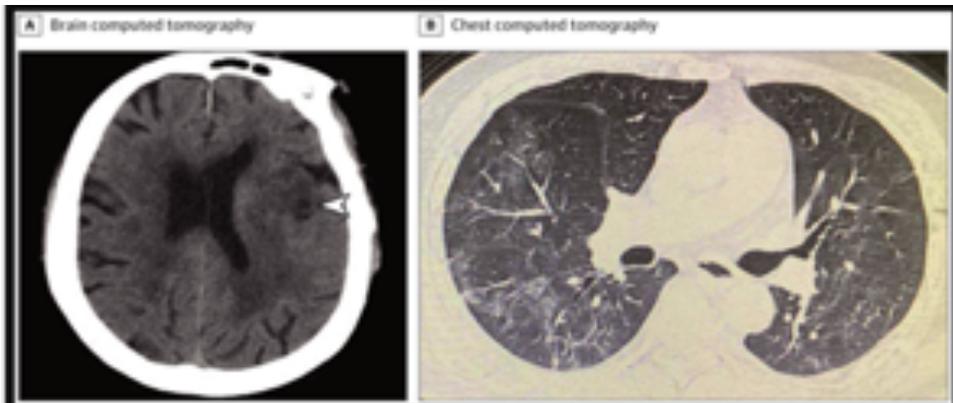
What kind of virus is this and what caused is its origin?

•Paul Kathenge, Rockville Centre For Sustainable Development, [kathengep@gmail.com](mailto:kathengep@gmail.com)

# Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 Wuhan, China

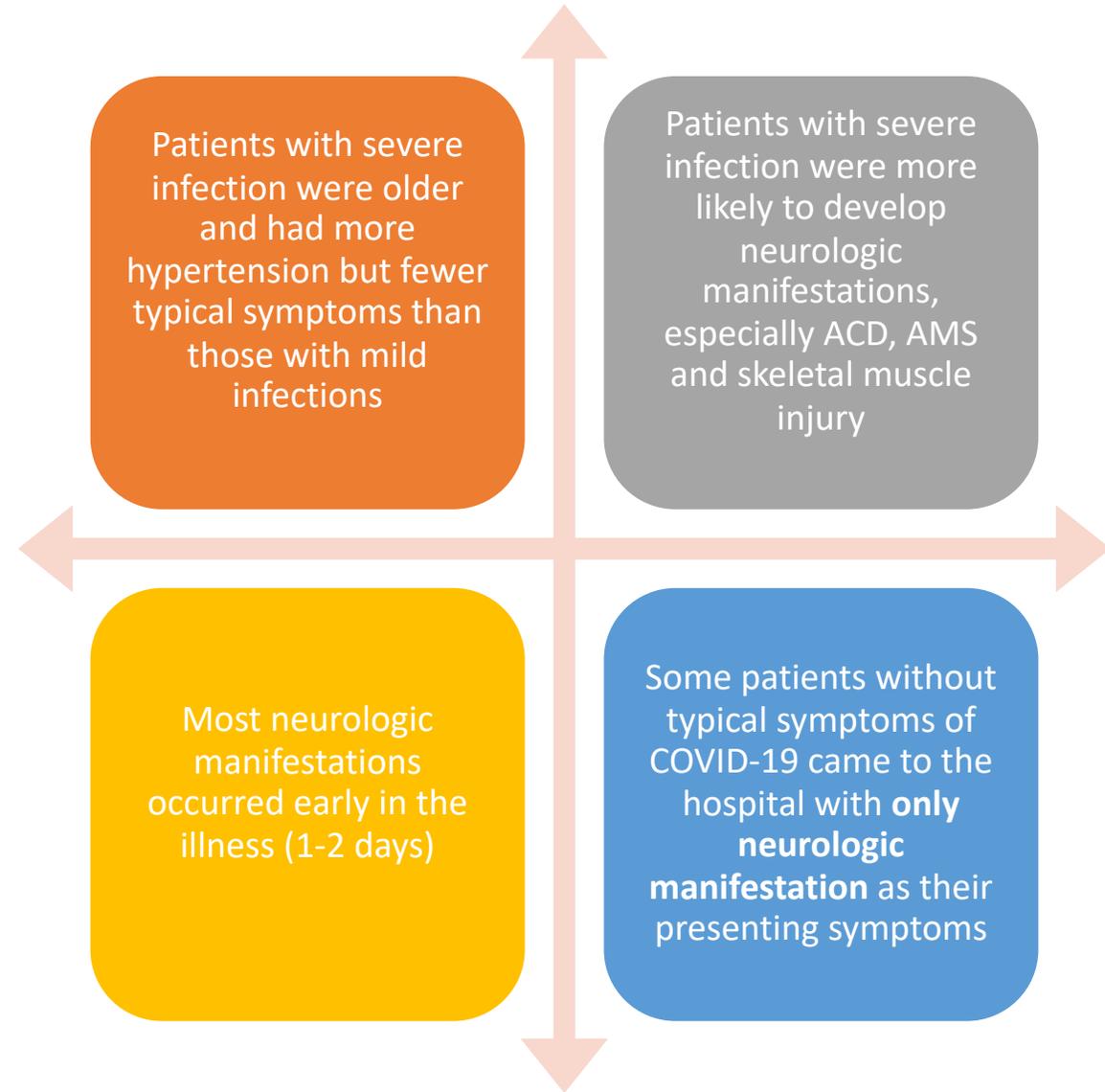
JAMA April 2020

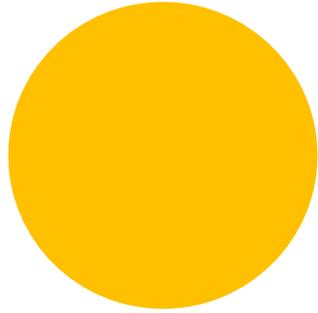
- Multicenter, retrospective, observational case series of 214 consecutive hospitalized patients with SARS-Co-2
- Main Outcome: Neurologic manifestations
  - **Central nervous system manifestations** (dizziness, headache, impaired consciousness, acute cerebrovascular disease, ataxia, and seizure)
  - **Peripheral nervous system manifestations** (taste/smell/vision impairment, and nerve pain)
  - **Skeletal muscular injury manifestations**
- Results:
  - Mean age, 52.7 years; men 40.7%, non severe infections in 58.9%, **severe infections in 41.1%**
  - Overall, 78 patients (**36.4%**) had neurologic manifestations.
  - Neurologic manifestations were more common in patients with severe infections
    - **Acute Cerebrovascular Disease** (5 [5.7%] vs 1 [0.8%])
    - **Impaired consciousness** (13 [14.8%] vs 3 [2.4%])
    - **Skeletal muscle injury** (17 [19.3%] vs 6 [4.8%])



# Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China

JAMA, April 2020





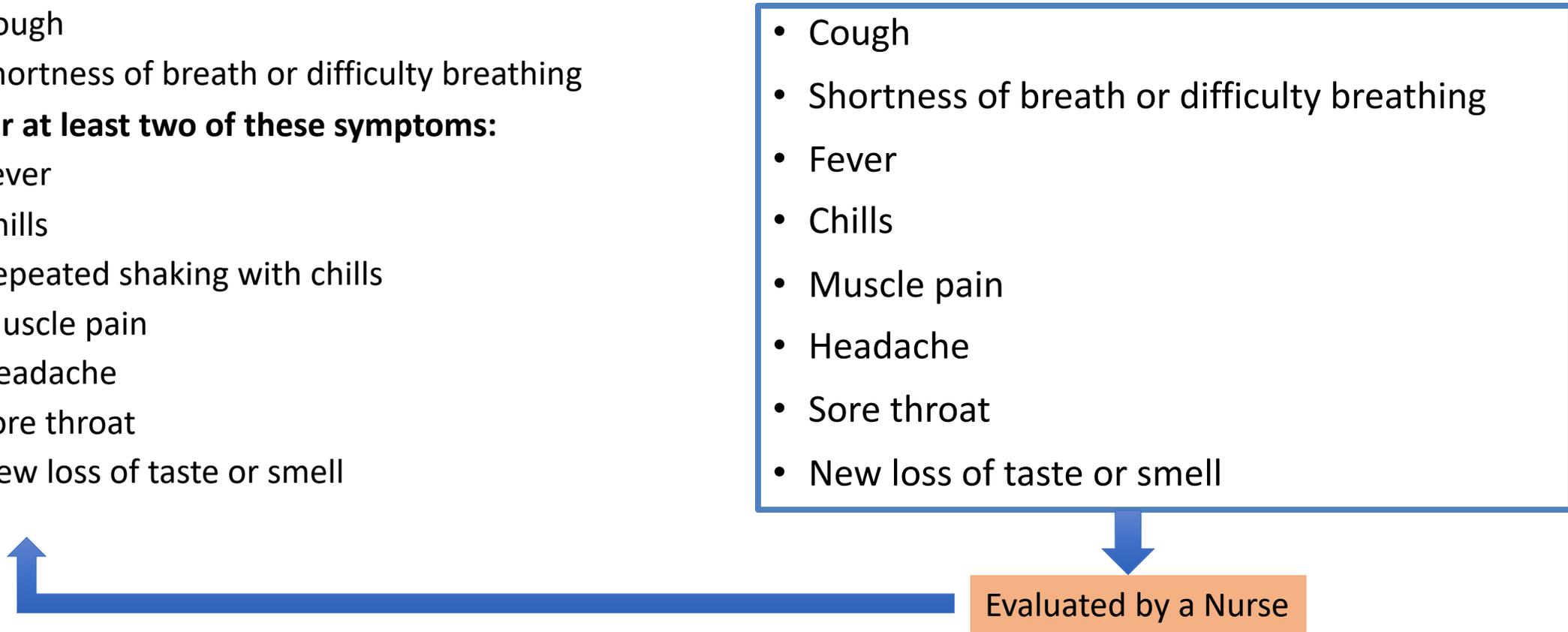
# COVID-19 Screening

## CDC Guidelines

- Cough
- Shortness of breath or difficulty breathing
- **Or at least two of these symptoms:**
- Fever
- Chills
- Repeated shaking with chills
- Muscle pain
- Headache
- Sore throat
- New loss of taste or smell

## CNHS Screening at Facility Entry

- Cough
- Shortness of breath or difficulty breathing
- Fever
- Chills
- Muscle pain
- Headache
- Sore throat
- New loss of taste or smell



Evaluated by a Nurse

The diagram shows a flow from the CNHS screening criteria to a box labeled 'Evaluated by a Nurse'. A blue arrow points down from the bottom of the CNHS list to the box. A long blue arrow then points from the box back to the left, ending in an upward-pointing arrowhead that points towards the CDC Guidelines section.

# Remdesivir Clinical Trials

## **Remdesivir in adults with severe COVID-19: a randomized, double-blind, placebo-controlled, multicenter trial**

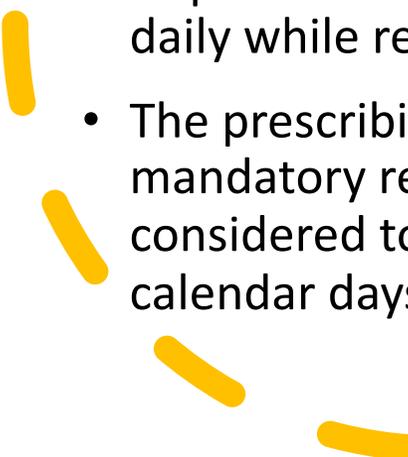
- 237 adult patients with severe COVID-19 who within 12 days of symptom onset were randomized to receive IV remdesivir or placebo for 10 days (158 to remdesivir and 79 to placebo)
- Remdesivir use was not associated with a difference in time to clinical improvement
  - Hazard ratio 1.23 [95% CI 0.87–1.75]
- Remdesivir recipients with symptom duration of < 10 days had a faster time to clinical improvement (18 days vs 23 days)
  - Hazard ratio 1.52 [0.95–2.43] (Not statistically significant)
- Adverse events were similar in both arms
  - (Remdesivir 66% vs Placebo 64%)
- Remdesivir was stopped early because of adverse events in 18 (12%) patients versus four (5%) patients in the placebo group.

## **Adaptive COVID 19 Treatment Trial**

- Preliminary results indicate that patients who received remdesivir had a 31% faster time to recovery than those who received placebo ( $p < 0.001$ ).
- The median time to recovery was 11 days for remdesivir group compared with 15 days for placebo group.
- Results also suggested a survival benefit, with a mortality rate of 8.0% for remdesivir recipients versus 11.6% for the placebo group ( $p = 0.059$ ).
- Preliminary findings from a randomized, placebo-controlled trial of IV Remdesivir in nearly 1100 patients hospitalized with COVID-19 with lung involvement, including those requiring supplemental oxygen or mechanical ventilation



# Mandatory Requirements For Remdesivir Administration Under Emergency Use Authorization:

- Treatment of suspected or laboratory confirmed COVID-19 in adults and children hospitalized with severe disease.
  - Severe disease is defined as patients with an oxygen saturation (SpO<sub>2</sub>) ≤ 94% on room air or requiring supplemental oxygen or requiring invasive mechanical ventilation or requiring ECMO.
  - Adult and pediatric patients (>28 days old) must have an eGFR determined and full-term neonates (≥7 days to ≤28 days old) must have serum creatinine determined prior to remdesivir first administration.
  - Hepatic laboratory testing should be performed in all patients prior to starting remdesivir and daily while receiving remdesivir.
  - The prescribing health care provider and/or the provider's designee are/is responsible for mandatory reporting of all medication errors and adverse events (death, serious adverse events\*) considered to be potentially related to remdesivir occurring during remdesivir treatment within 7 calendar days from the onset of the event.
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## INSTRUCTIONS FOR HEALTH CARE PROVIDERS

- As the health care provider, you must communicate and provide to your patient or parent/caregiver information consistent with the “Fact Sheet” prior to the patient receiving remdesivir, including:
  - FDA has authorized the emergency use of remdesivir, which is not an FDA approved drug.
  - The patient or parent/caregiver has the option to accept or refuse remdesivir.
  - The significant known and potential risks and benefits of remdesivir, and the extent to which such risks and benefits are unknown.
  - Information on available alternative treatments and the risks and benefits of those alternatives.
- This must be documented in the medical record.
- If providing this information will delay the administration of remdesivir to a degree that would endanger the lives of patients, the information must be provided to the patients as soon as practicable after remdesivir is administered.

# Remdesivir: Dosing

- The optimal duration of treatment for COVID-19 is unknown.
- The suggested dose for adults and pediatric patients weighing  $\geq 40$  kg requiring invasive mechanical ventilation and/or ECMO is a single loading dose of 200 mg on Day 1 followed by once-daily IV 100 mg for 9 days (days 2 through 10).
  - The suggested for those **not requiring invasive mechanical ventilation and/or ECMO** the duration of treatment should be 5 days. If a patient does not demonstrate clinical improvement, treatment may be extended for up to 5 additional days.
- The suggested dose for pediatric patients with body weight between 3.5 kg and  $< 40$  kg requiring invasive mechanical ventilation and/or ECMO is a single loading dose of remdesivir 5 mg/kg IV on Day 1 followed by remdesivir 2.5 mg/kg IV once daily for 9 days (days 2 through 10).
  - The suggested dose for those **not requiring invasive mechanical ventilation and/or ECMO** is 5 days. If a patient does not demonstrate clinical improvement, treatment may be extended for up to 5 additional days

# Perinatal Transmission

- Mother-to-child transmission of coronavirus during pregnancy is unlikely, but after birth a newborn is susceptible to person-to-person spread.
- A very small number of babies have tested positive for the virus shortly after birth. However, it is unknown if these babies got the virus before or after birth.
- The virus has not been detected in amniotic fluid, breastmilk, or other maternal samples.



## Dental Care in the COVID-19 Pandemic: Key Concepts

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Dental settings have unique characteristics that warrant additional infection control considerations.

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Postpone elective procedures, surgeries, and non-urgent dental visits.

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Proactively communicate to both staff and patients the need for them to stay at home if sick.

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Know steps to take if a patient with COVID-19 symptoms enters your facility.

# Dental: Revisions April 27, 2020

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To address asymptomatic and pre-symptomatic transmission, implement source control (require facemasks or cloth face coverings) for everyone entering the dental setting (dental healthcare personnel [DHCP] and patients), regardless of whether they have COVID-19 symptoms.

Actively screen everyone (patients and DHCP) on the spot for fever and symptoms of COVID-19 before they enter the dental setting (every shift).

# Dental: Recommendations

## Postpone Elective Procedures, Surgeries, and Non-urgent Dental Visits

- Services should be limited to emergency visits only

## Stay at Home if Sick

- Implement sick leave policies that are flexible, non-punitive, and consistent with public health guidance, allowing employees to stay home if they have symptoms of respiratory infection

## Contact Patients Prior to Emergency Dental Treatment

- Use teleconferencing or teledentistry options as alternatives to in office care

# Emergency Dental Care

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## **PATIENTS WITH SUSPECTED OR CONFIRMED POSITIVE COVID-19**

Defer dental treatment

- Give the patient a mask to cover his or her nose and mouth.
- Refer to medical provider/facility.

If emergency dental care is medically necessary

- Airborne Precautions should be followed
  - an isolation room with negative pressure and use of an N95 filtering disposable respirator
- Dental treatment should be provided in a hospital or other facility that can treat the patient using the appropriate precautions.

## **PATIENTS WITHOUT SYMPTOMS OF COVID-19**

If passing the screening at entry, **emergency dental care** may be provided using appropriate

- Engineering controls
- Work practices
- Infection control practices

# Emergency Dental Care for Patients Without Known COVID-19

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1

Avoid aerosol generating procedures whenever possible

2

Avoid the use of dental handpieces and the air-water syringe

3

Use of ultrasonic scalers is not recommended

4

Prioritize minimally invasive/attraumatic restorative techniques (hand instruments only)

# Infection Control Practices

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DHCP should wear a facemask **at all times** while they are in the dental setting

- Surgical masks are preferred for DHCP
- Clerical personnel without patient care duties *may* wear a cloth face covering (or surgical mask) for source control
- DHCP may wear a cloth face covering when not engaged in direct patient care activities and then switch to a respirator or a surgical mask when PPE is required

DHCP should remove respirator or surgical mask and put on cloth face covering when leaving the facility

Teach DHCP that if they must touch or adjust their mask or cloth face covering, they should perform hand hygiene immediately before and after

Dental facilities should provide DHCP with **job-specific training on PPE** and have them demonstrate competency with selection and proper use (putting on and removing without self-contamination)

# Recommended PPE: Emergency dental care for patients without known COVID-19

- **N95** respirator or powered air purifying respirator (PAPR). If N95 is not available, use a combination of surgical mask and full face shield.
- **Eye protection**
- **Gloves**
- **Gown**

If an N95, PAPR, or surgical mask and a full face shield are not available, do not perform any emergency dental care. Refer the patient to a clinician who has the appropriate PPE.

# Hand Hygiene

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Before and after all patient contact, contact with potentially infectious material, and before putting on and after removing PPE, including gloves.

Hand hygiene after removing PPE is particularly important to remove any pathogens that might have been transferred to bare hands during the removal process.

Use of alcohol-based hand rub (ABHR) with 60-95% alcohol or washing hands with soap and water for at least 20 seconds.

If hands are visibly soiled, use soap and water before ABHR.

Hand hygiene supplies should be readily available to all DHCP in every care location.

# After Dental Care

Ensure that environmental cleaning and disinfection procedures are followed consistently and correctly.

Routine cleaning and disinfection procedures are appropriate for SARS-CoV-2 in healthcare settings, including those patient-care areas in which aerosol-generating procedures are performed.

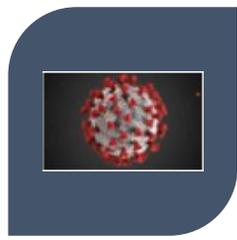
Manage laundry and medical waste in accordance with routine procedures.

Clean and disinfect all reusable dental equipment used for patient care according to manufacturer's instructions and facility policies.

# Patient Follow-up

DHCP should institute a policy to contact all patients who received emergency dental care in the dental setting 48 hours after receiving emergency care.

- Ask patients if they are exhibiting any signs or symptoms of COVID-19.
- If a patient reports signs or symptoms of COVID-19, refer the patient to their medical provider for assessment and follow CDC's [Healthcare Personnel with Potential Exposure Guidance](#).



# Virology

- **Virus**

- RNA viruses with spike-like surface proteins
- SARS-CoV: **Severe Acute Respiratory Syndrome CoronaVirus** (2003 outbreak)
- SARS-CoV2: **Cause of present coronavirus Pandemic**

- **Disease**

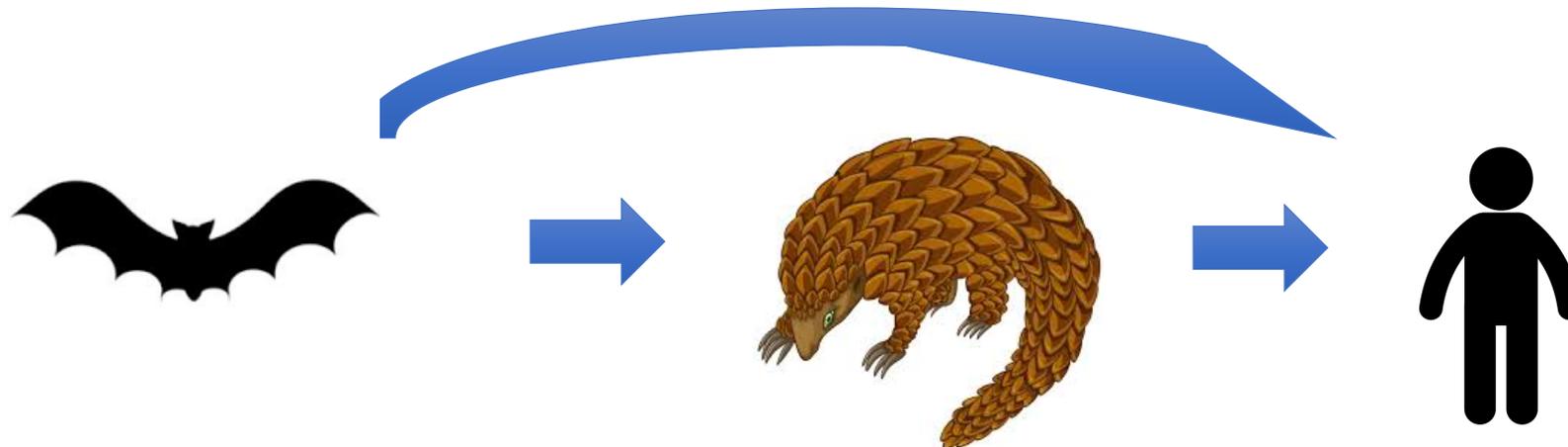
- CoVID-19: **Coronavirus disease** from SARS-CoV2 discovered in **2019**

- **Human origin** cause human URIs

- HKU1/NL63/229E/OC43

- **Animal Origin**

- SARS-CoV: 2003, China
- MERS-CoV: 2012, Arabian peninsula
- SARS-CoV2: 2019, China



# Virology:

## Is SARS-CoV-2 a Natural Virus or Man-made?

“It is improbable that SARS-CoV-2 emerged through laboratory manipulation of a related SARS-CoV-like coronavirus.”

- “If genetic manipulation had been performed, one of the several reverse-genetic systems available for betacoronaviruses would probably have been used. **However, the genetic data irrefutably show that SARS-CoV-2 is not derived from any previously used virus backbone.**

“Instead, we propose two scenarios that can plausibly explain the origin of SARS-CoV-2”

- Natural selection in an animal host before zoonotic transfer
- Natural selection in humans following zoonotic transfer.

# The Future of the COVID-19 Pandemic: Lessons from Pandemic Influenza

| Characteristics                                  | COVID-19                 | Influenza H1N1          |
|--|--------------------------|-------------------------|
| Novel Pathogen                                   | YES                      | YES                     |
| No preexisting immunity in the population        |                          |                         |
| Asymptomatic transmission possible               | YES                      | YES                     |
| Spreads mainly through droplets but also aerosol | YES                      | YES                     |
| Capable of infecting millions                    | YES                      | YES                     |
| <b>Incubation period</b>                         | <b>2-14 days (Avg 5)</b> | <b>1-4 days (Avg 2)</b> |
| <b>Asymptomatic carrier</b>                      | <b>~ 25 %</b>            | <b>16% (4%-32%)</b>     |
| <b>R<sub>0</sub></b>                             | <b>2.7</b>               | <b>1.8</b>              |
| <b>Pre-symptomatic Shedding</b>                  | <b>+++</b>               | <b>+</b>                |



Different



Similar

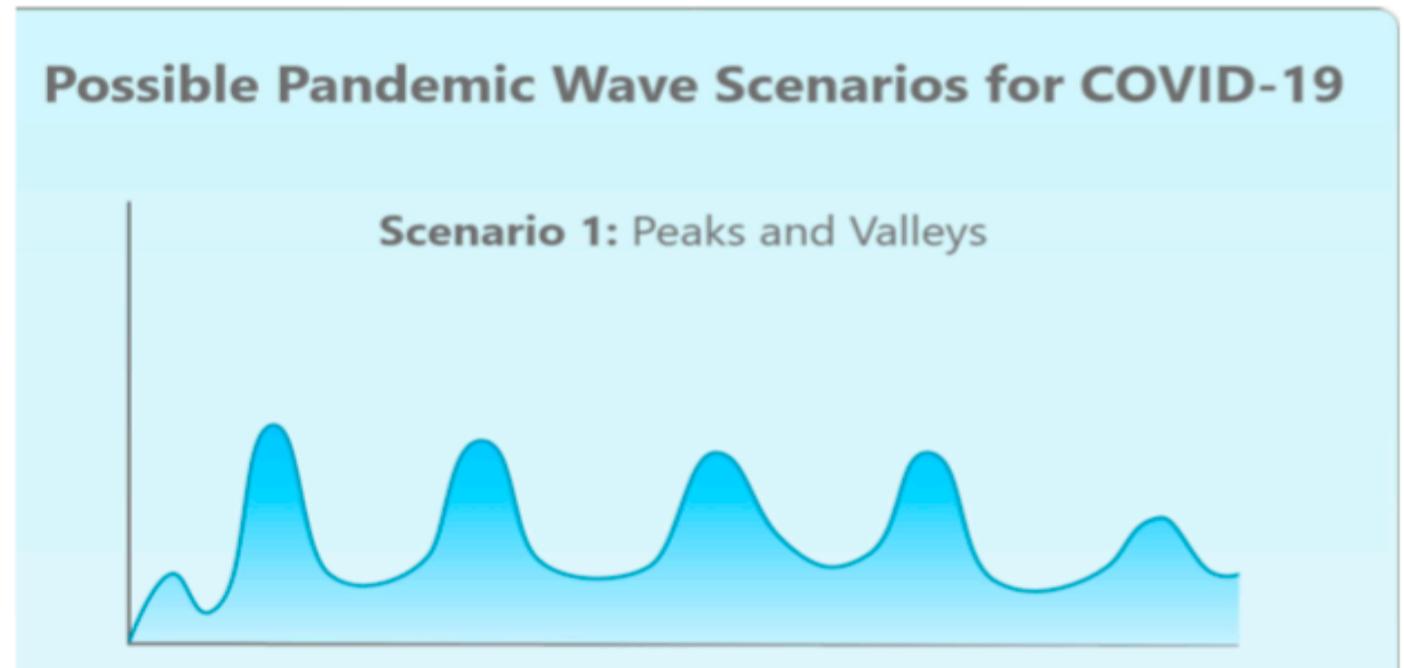
# The Future of the COVID-19 Pandemic: Lessons from Pandemic Influenza

- Of eight major pandemics that have occurred since the early 1700s, no clear seasonal pattern emerged for most. Two started in winter in the Northern Hemisphere, three in the spring, one in the summer, and two in the fall
- Seven of them had an early peak that disappeared over the course of a few months without significant human intervention.
- Subsequently, each of those seven had a second substantial peak approximately 6 months after first peak.

# The Future of the COVID-19 Pandemic: Lessons from Pandemic Influenza

## Scenario 1

- The first wave of COVID-19 in spring 2020 is followed by a series of repetitive smaller waves that occur through the summer and then consistently over a 1- to 2-year period, gradually diminishing sometime in 2021.
- The occurrence of these waves may vary geographically and may depend on what mitigation measures are in place and how they are eased.
- Depending on the height of the wave peaks, this scenario could require periodic reinstatement and subsequent relaxation of mitigation measures over the next 1 to 2 years



# The Future of the COVID-19 Pandemic: Lessons from Pandemic Influenza

## Scenario 2

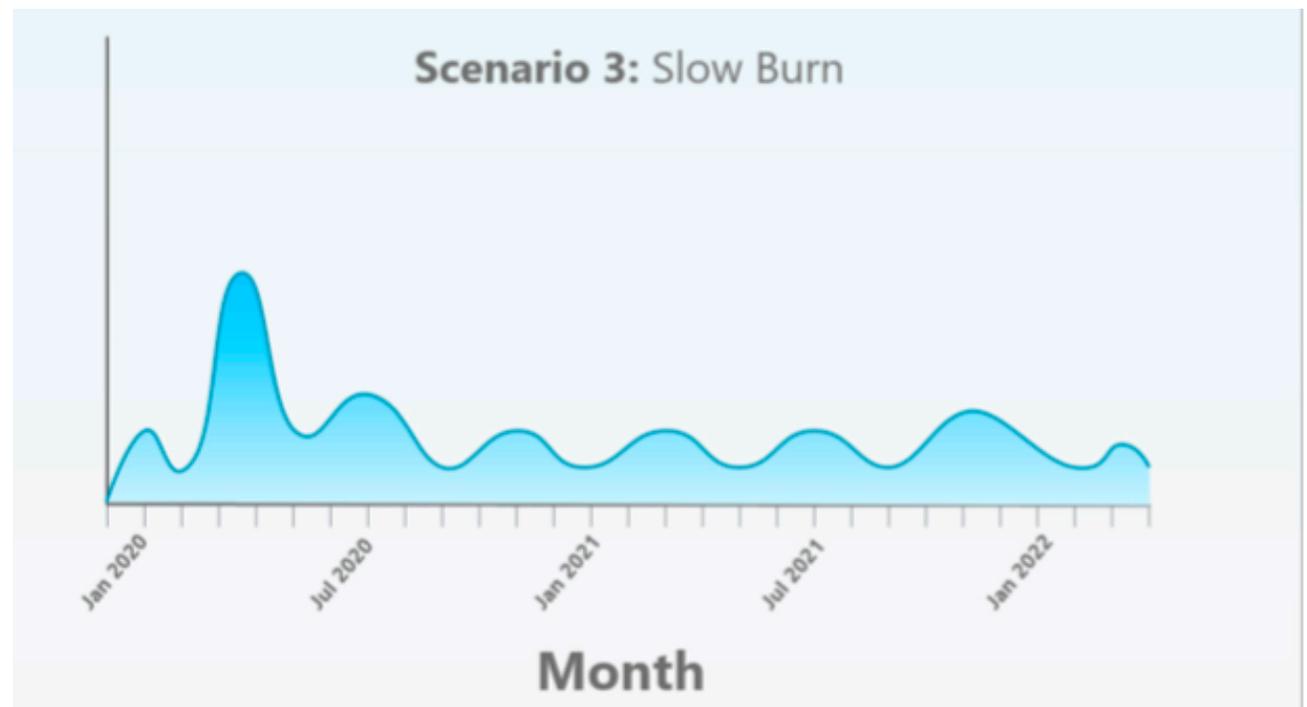
- The first wave of COVID-19 in spring 2020 is followed by a larger wave in the fall or winter of 2020 and one or more smaller subsequent waves in 2021.
- This pattern will require the reinstatement of mitigation measures in the fall in an attempt to drive down spread of infection and prevent healthcare systems from being overwhelmed.
- **This pattern is similar to what was seen with the 1918-19 pandemic (CDC 2018).** During that pandemic, a small wave began in March 1918 and subsided during the summer months. A much larger peak then occurred in the fall of 1918. A third peak occurred during the winter and spring of 1919; that wave subsided in the summer of 1919, signaling the end of the pandemic.
- **The 1957-58 pandemic (H2N2) followed a similar pattern,** with a smaller spring wave followed by a much larger fall wave (Saunders-Hastings 2016). Successive smaller waves continued to occur for several years (Miller 2009).
- **The 2009-10 pandemic also followed a pattern** of a spring wave followed by a larger fall wave (Saunders-Hastings 2016).



# The Future of the COVID-19 Pandemic: Lessons from Pandemic Influenza

## Scenario 3

- The first wave of COVID-19 in spring 2020 is followed by a “slow burn” of ongoing transmission and case occurrence, but without a clear wave pattern.
- Again, this pattern may vary somewhat geographically and may be influenced by the degree of mitigation measures in place in various areas. While this third pattern was not seen with past influenza pandemics, it remains a possibility for COVID-19.
- This third scenario likely would not require the reinstatement of mitigation measures, although cases and deaths will continue to occur.



# The Future of the COVID-19 Pandemic: Lessons from Pandemic Influenza

Whichever scenario the pandemic follows (assuming at least some level of ongoing mitigation measures), we must be prepared for at least another 18 to 24 months of significant COVID-19 activity, with hot spots popping up periodically in diverse geographic areas.



As the pandemic wanes, it is likely that SARS-CoV-2 will continue to circulate in the human population and will synchronize to a seasonal pattern with diminished severity over time, as with other less pathogenic coronaviruses, such as the betacoronaviruses OC43 and HKU1 (Kissler, 2020), and past pandemic influenza viruses have done.

# Resources

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html>

JAMA Neurol. Published online April 10, 2020. doi:10.1001/jamaneurol.2020.1127

<https://www.niaid.nih.gov/news-events/nih-clinical-trial-shows-remdesivir-accelerates-recovery-advanced-covid-19>

Yeming Wang et al Published online April 29, 2020

Theories of SARS-CoV-2 origins: NATuRe MediCiNe | VOL 26 | April 2020 | 450–455 |

[www.nature.com/naturemedicine](http://www.nature.com/naturemedicine)