

Pandemics, Epidemics and Health Crises

Navigating Opioids, Pain Management and Substance Use Disorders in 2020



Ed Bilsky, Ph.D.

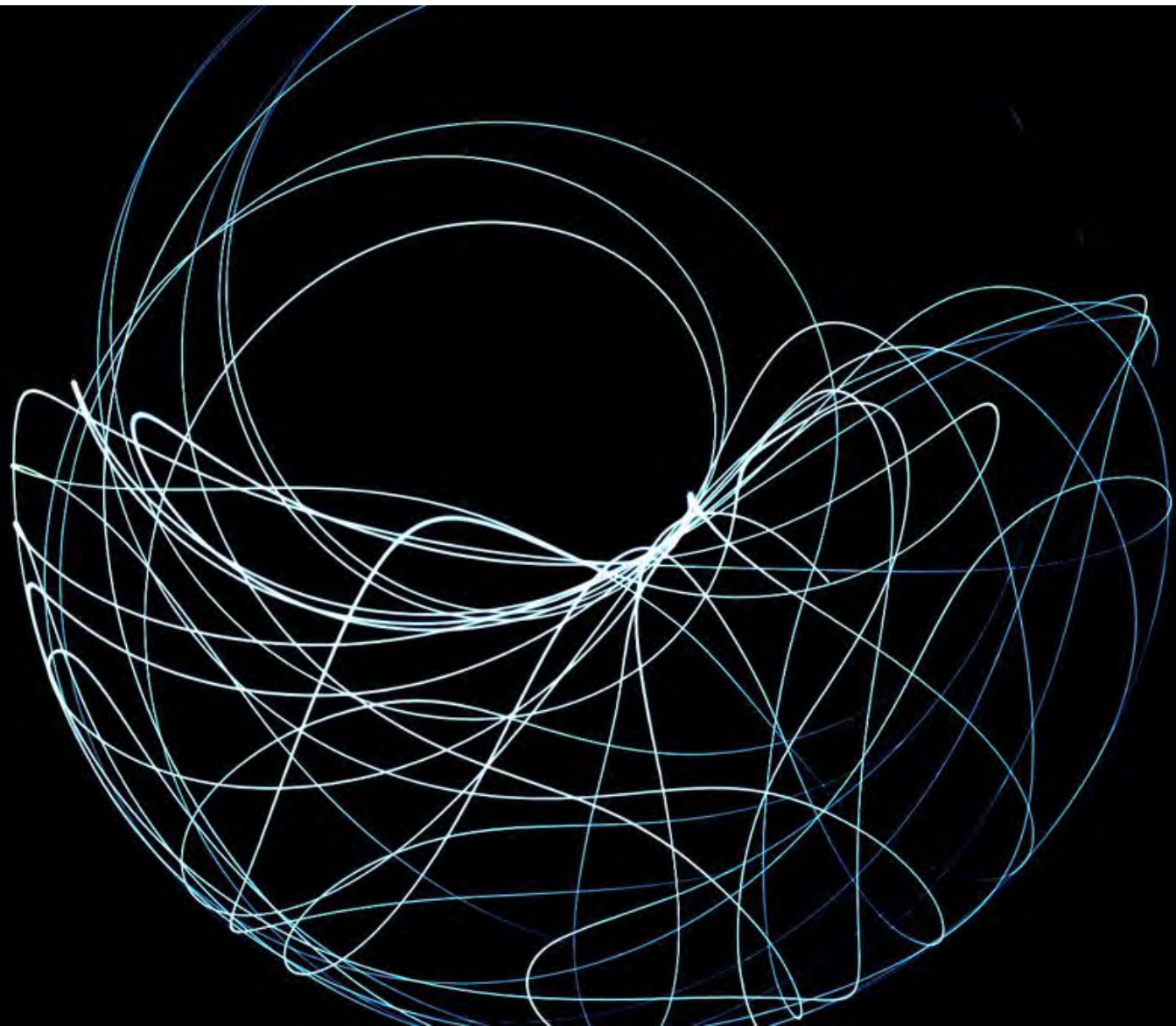
Provost and Chief Academic Officer

Professor of Biomedical Sciences

General Outline

- SARS-CoV-2 and COVID-19
 - COVID-19, the media and reliable sources of information
 - Review of some of the virology and epidemiology
- COVID-19 and healthcare systems
 - EMS, Emergency Departments, Primary Care, etc.
- Impact of COVID-19 on management of substance use disorders
- Impact of COVID-19 on management of chronic pain
- Recommendations and approaches to mitigate COVID-19 impact
- **Questions, discussions, debates, awkward silence?!?**
- **Stretch break to prevent Zoom triggered fatigue syndrome, breakdowns and revolt!**

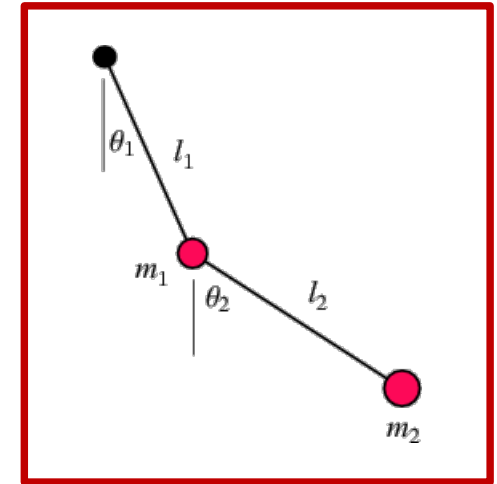




How chaos theory helps explain the weirdness of the Covid-19 pandemic

The pandemic, chaos, and coming to terms with uncertainty.

By Brian Resnick | @B_resnick | brian@vox.com | Updated May 23, 2020, 10:39am EDT



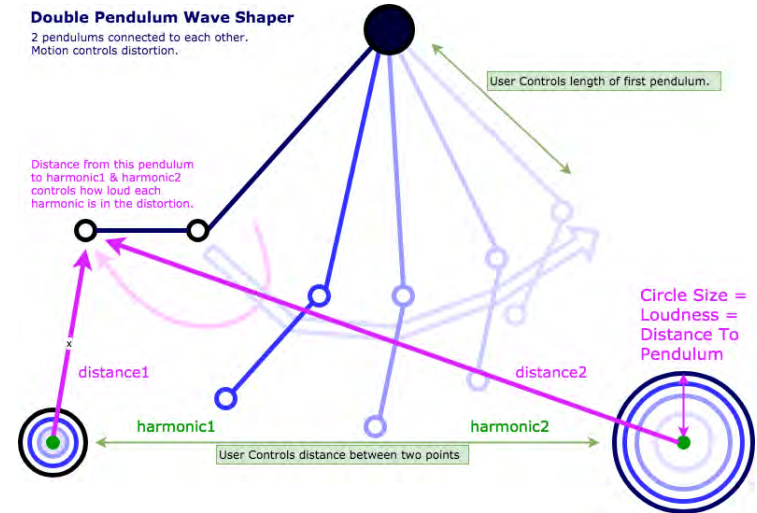
Double Pendulums

The Lagrangian is

$$\begin{aligned}
 L &= \text{kinetic energy} - \text{potential energy} \\
 &= \frac{1}{2}m(v_1^2 + v_2^2) + \frac{1}{2}I(\dot{\theta}_1^2 + \dot{\theta}_2^2) - mg(y_1 + y_2) \\
 &= \frac{1}{2}m(\dot{x}_1^2 + \dot{y}_1^2 + \dot{x}_2^2 + \dot{y}_2^2) + \frac{1}{2}I(\dot{\theta}_1^2 + \dot{\theta}_2^2) - mg(y_1 + y_2)
 \end{aligned}$$

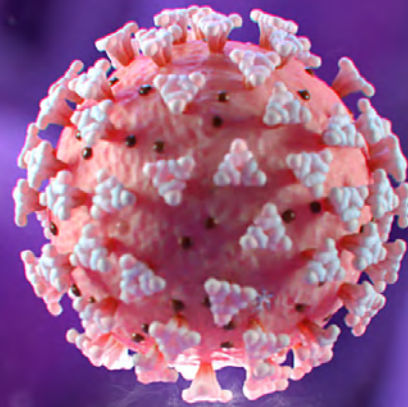
$$\dot{p}_{\theta_1} = \frac{\partial L}{\partial \theta_1} = -\frac{1}{2}ml^2(\dot{\theta}_1\dot{\theta}_2\sin(\theta_1 - \theta_2) + 3\frac{g}{l}\sin\theta_1)$$

$$\dot{p}_{\theta_2} = \frac{\partial L}{\partial \theta_2} = -\frac{1}{2}ml^2(-\dot{\theta}_1\dot{\theta}_2\sin(\theta_1 - \theta_2) + \frac{g}{l}\sin\theta_2).$$



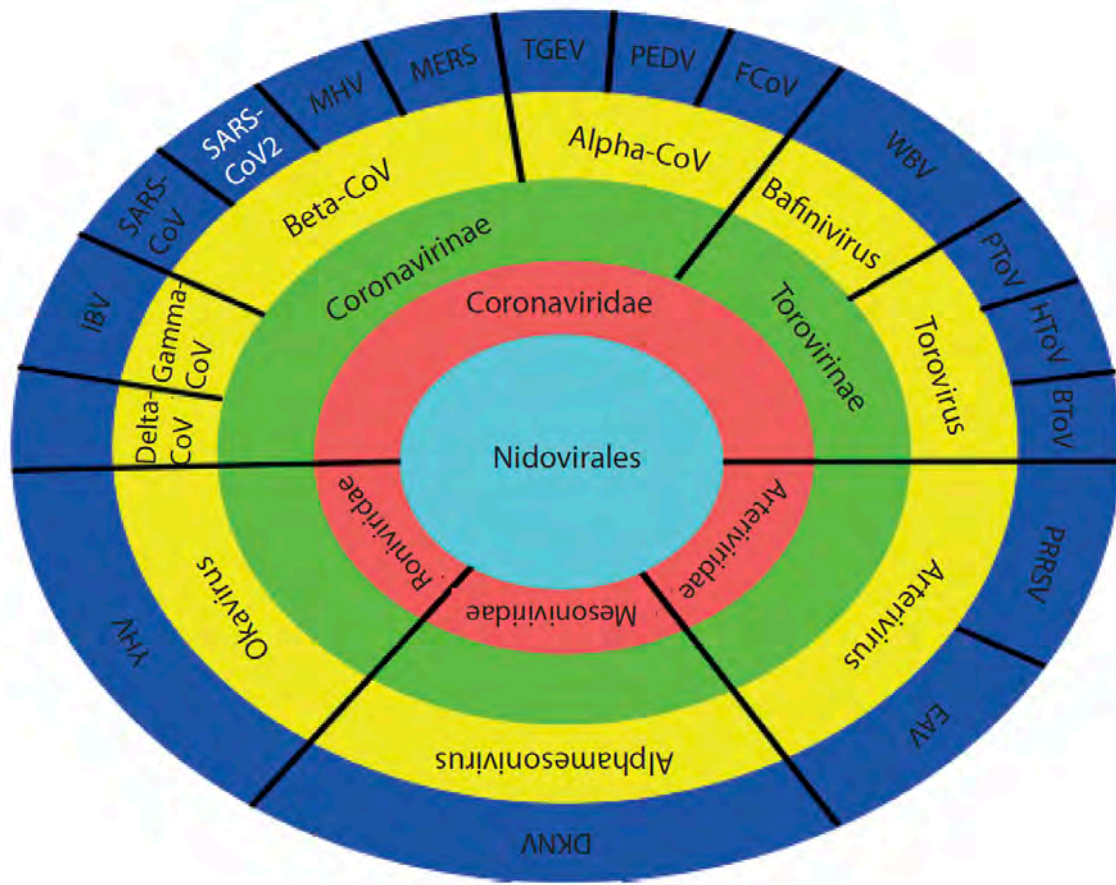


SARS-CoV-2 and COVID-19: Information and Misinformation



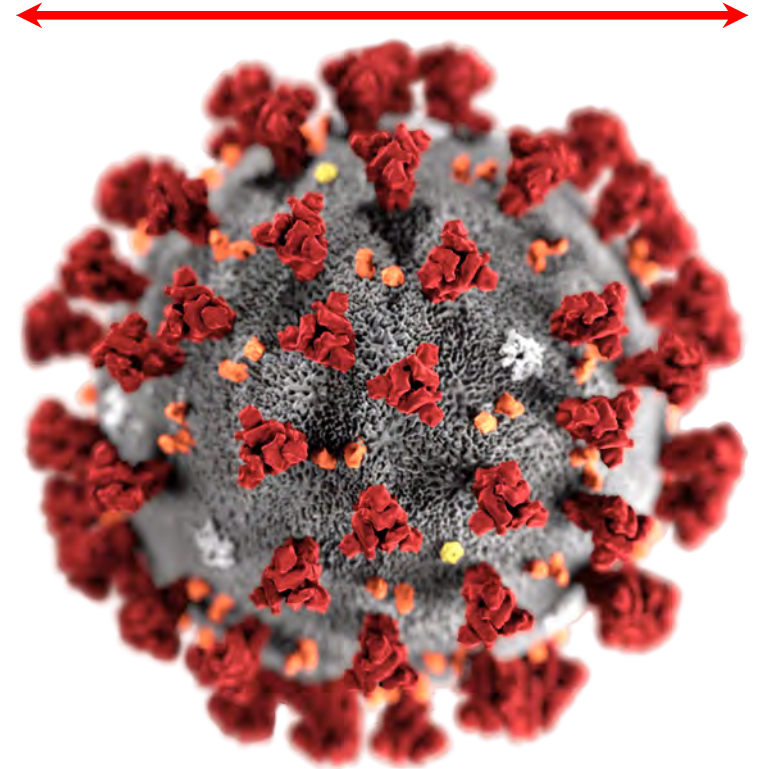
Naming of Viruses and Diseases

- Viruses, and the diseases they cause, often have different names
 - HIV and AIDS
- Viruses are named based on their genetic structure to facilitate the development of diagnostic tests, vaccines and medicines
 - named by the International Committee on Taxonomy of Viruses (ICTV)
- Diseases are named to enable discussion on disease prevention, spread, transmissibility, severity and treatment
 - officially named by WHO using the International Classification of Diseases (ICD)
- ICTV announced “severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)”
 - genetically related to the coronavirus responsible for the 2003 SARS outbreak
- WHO announced “COVID-19” as the name of this new disease
 - **CO**rona **VI**rus **D**isease-20**19**



SARS-CoV-2

60-140 nm*



Manirul Haque et al., Future Virology, epub October 2020
Centers for Disease Control and Prevention's Public Health Image Library

***Respiratory droplets typically in the 5-10 um size**

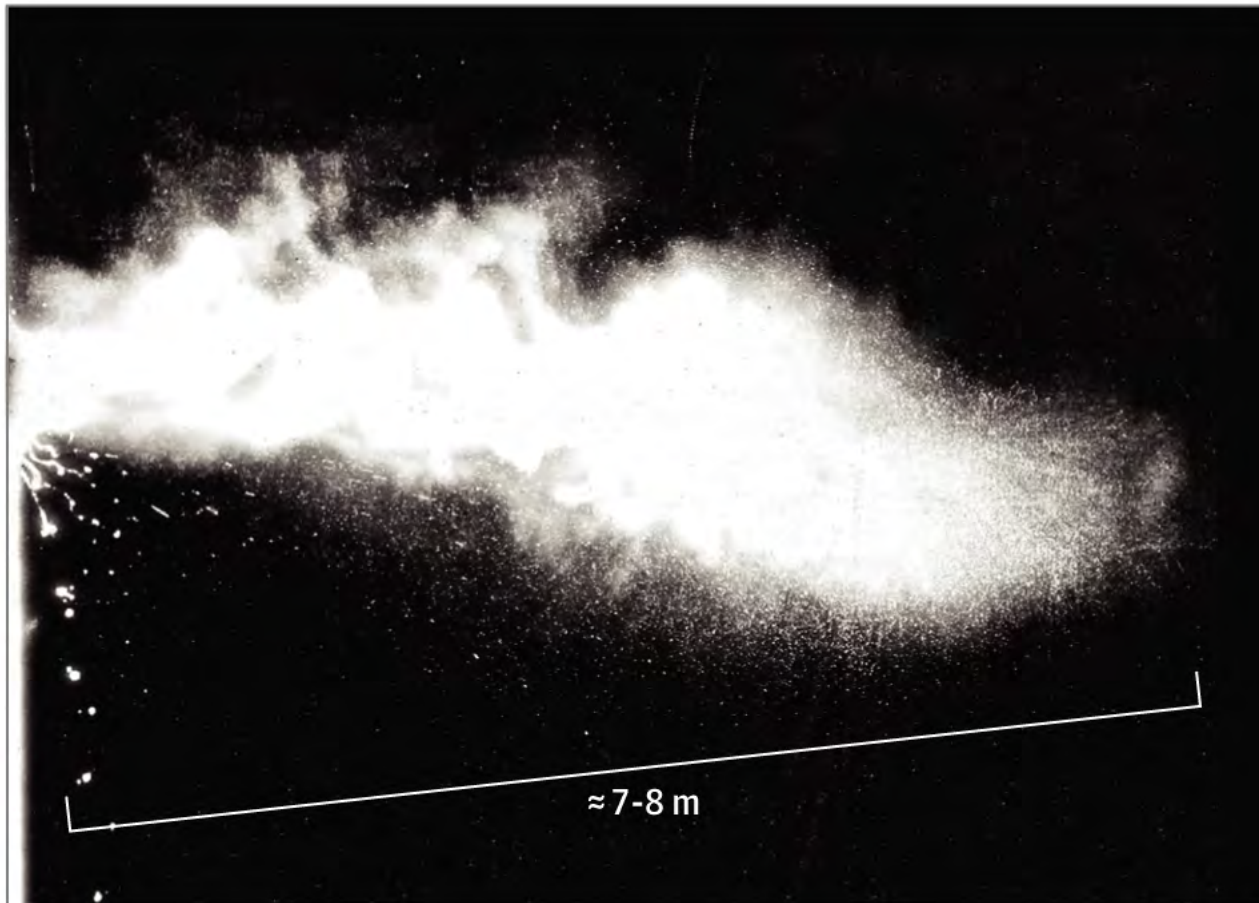


Figure Legend: Multiphase Turbulent Gas Cloud From a Human Sneeze

“Masks can be used both for source control (i.e., reducing spread from an infected person) and for protection of the wearer (i.e., preventing spread to an unaffected person)”

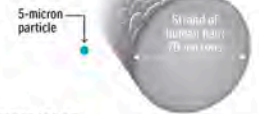
Covid-19: droplet vs airborne transmission

There is debate worldwide over whether the virus is airborne and if this could be a major way it is spread. Timothy Goh explains:

How are respiratory viruses transmitted?

There are two main modes of transmission

- Via droplets - particles more than 5 to 10 microns in diameter
- Through the air for smaller particles

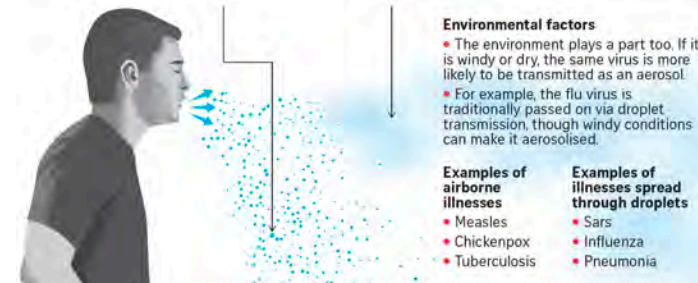


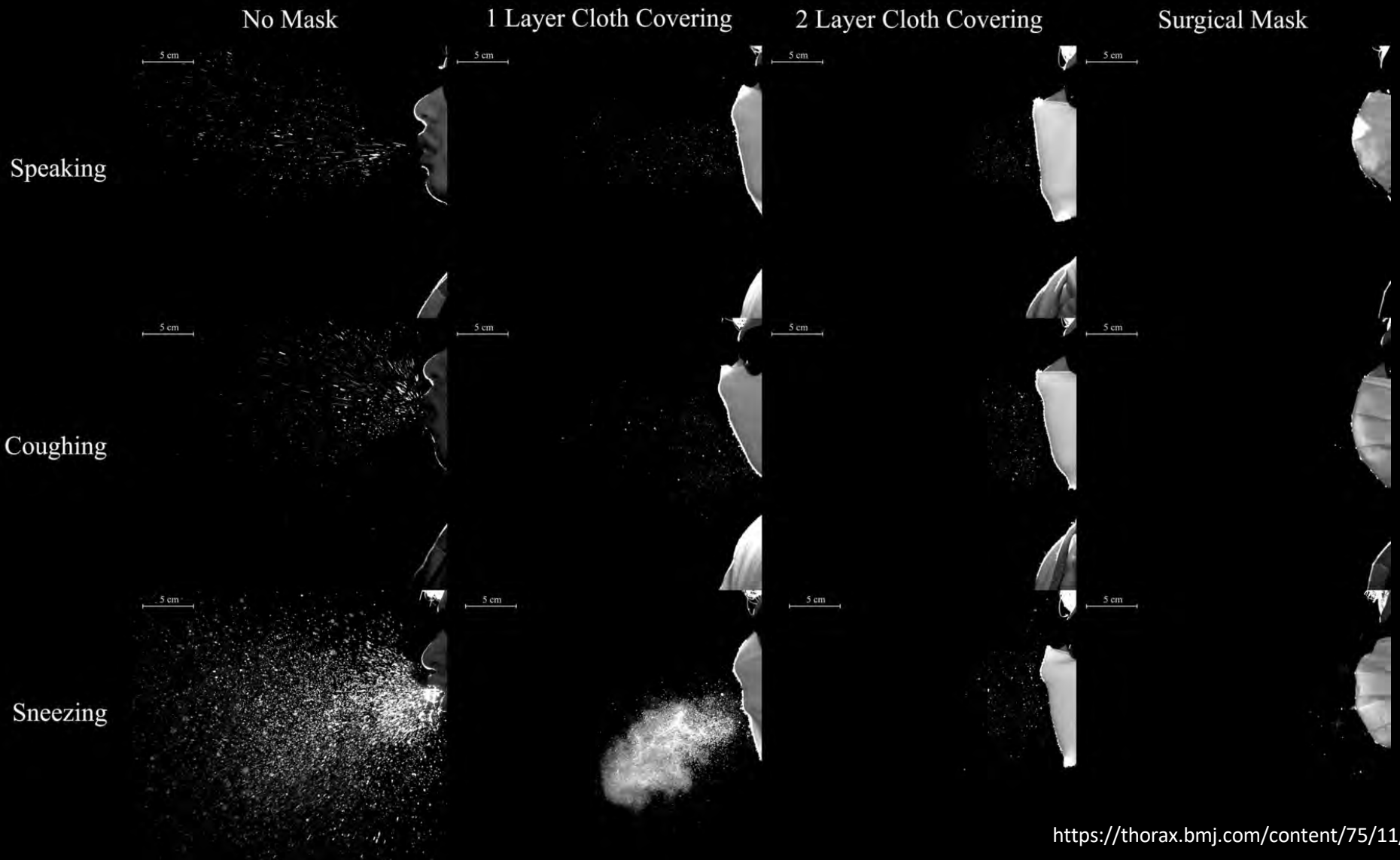
Droplet transmission

- Happens when someone's mouth, nose or eyes come into contact with respiratory droplets from an infected person.
- These droplets are heavy, do not travel far in the air, and fall to the ground quickly.

Airborne transmission

- Here, the virus is present in particles that are so small they can remain suspended in the air for longer, and travel distances greater than 1m.
- Anyone who breathes in the particles becomes infected.





Conspiracy Theories...

From:

Date: Thursday, March 26, 2020 at 4:12 PM

To: "Bilsky, Edward" <ebilsky@pnwu.edu>

Subject: interesting take

I'm guessing you have not yet seen this different perspective:

https://www.youtube.com/watch?v=ZIsysM49D2g&feature=youtu.be&fbclid=IwAR1IK6wLN5D3qF92YgEcRkVszl5HD7miv5BY95AyXIm5-GaQWio6t_gbK4c



Coronavirus Caused By 5G - YouTube

This video got deleted off facebook so i'm uploading again....

www.youtube.com

Thomas Cowan, MD



COVID-19

Get the latest information from the CDC about COVID-19.

[LEARN MORE](#)

See more resources on Google

Dr Thomas Cowen MD... COVID 19, 5G Dangers, Spanish Flu, etc

3,785 views • Mar 30, 2020

73 7 SHARE SAVE ...



Thomas Cowan

Coronavirus
Pandemic

BEFORE THE
MEDICAL BOARD OF CALIFORNIA
DEPARTMENT OF CONSUMER AFFAIRS
STATE OF CALIFORNIA

In the Matter of the Accusation)
Against:)

THOMAS SAMUEL COWAN, M.D.)

Case No. 8002015016334

Physician's and Surgeon's)
Certificate No. G86923)

Respondent)
_____)

DECISION

The attached Stipulated Settlement and Disciplinary Order is hereby adopted as the Decision and Order of the Medical Board of California, Department of Consumer Affairs, State of California.

This Decision shall become effective at 5:00 p.m. on June 9, 2017.

~~IT IS SO ORDERED: May 10, 2017.~~

1:35 / 2:04



COVID-19

Get the latest information from the CDC about COVID-19.

LEARN MORE

See more resources on Google

No, 5G doesn't cause the coronavirus

247,807 views · Mar 23, 2020

8.7K 5.1K SHARE SAVE

Library

Topic Rooms

Within this Subject (27)

- ▶ Basic (5)
- ▶ Intermediate (22)

Other Topic Rooms

- ▶ **Genetics**
- ▶ **Cell Biology**
 - ▶ Cell Origins and Metabolism
 - ▶ Proteins and Gene Expression
 - ▶ Subcellular Compartments
 - ▶ Cell Communication
 - ▶ Cell Cycle and Cell Division
- ▶ **Scientific Communication**
- ▶ **Career Planning**

INTERMEDIATE

▶ CELL ORIGINS AND METABOLISM | Lead Editor: **Gary Coté, Mario De Tullio**



The Origins of Viruses

By: David R. Wessner, Ph.D. (*Dept. of Biology, Davidson College*) © 2010 Nature Education

Citation: Wessner, D. R. (2010) The Origins of Viruses. *Nature Education* 3(9):37



How did viruses evolve? Are they a streamlined form of something that existed long ago, or an ultimate culmination of smaller genetic elements joined together?

Aa Aa Aa

The evolutionary history of viruses represents a fascinating, albeit murky, topic for virologists and cell biologists. Because of the great diversity among viruses, biologists have struggled with how to classify these entities and how to relate them to the conventional tree of life. They may represent genetic elements that gained the ability to move between cells. They may represent previously free-living organisms that became parasites. They may be the precursors of life as we know it.

The Basics of Viruses



March 27 at 7:50 PM · 👤



Out and about today giving some love to local business, including [Sweetcream Dairy](#) for necessary pandemic supplies.
[#SupportLocalBusiness](#) [#IceCreamIsMedicine](#)





They say avoid cold things, no ice cream or iced drinks. The virus thrive s on cold. Can't survive in heat. Best for 25-27 C or 81. Enjoy hot chocolate. Research. Sorry to burst bubble. Temps in Bucercias 81. No cases here.

[Like](#) · [Reply](#) · 3d



The ice cream/cold food advice is incorrect information as per the CDC. One initial source of the ice cream rumor was a fake UNICEF post: "Charlotte Gornitzka, who works for Unicef on coronavirus misinformation, says: "A recent erroneous online message..."

[See More](#)

[Like](#) · [Reply](#) · 3d





NEWS

4-year-old's coronavirus symptoms worsen after taking ibuprofen

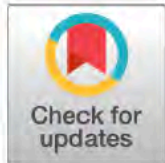
By [Kate Sheehy](#)

March 17, 2020 | 12:15pm | Updated



1 | 2





NEWS

Covid-19: ibuprofen should not be used for managing symptoms, say doctors and scientists

Michael Day

France says ibuprofen may aggravate coronavirus. Experts say more evidence is needed

By [Rob Picheta](#), CNN

🕒 Updated 5:23 PM ET, Wed March 18, 2020

(CNN) — France's health ministry has suggested that popular anti-inflammatory painkillers such as ibuprofen could worsen the effects of the [coronavirus](#), raising questions over which over-the-counter drugs people should be taking to treat the symptoms of the disease.

Health Minister Olivier Veran, who has also worked as a neurologist, tweeted on Saturday that "taking anti-inflammatory drugs (ibuprofen, cortisone...) could be an aggravating factor of the infection. If you have a fever, take paracetamol. If you are already on anti-inflammatory drugs or in doubt, ask your doctor for advice."

His suggestion was criticized by some health experts, who cited the lack of publicly available evidence suggesting a link between ibuprofen and adverse effects of the coronavirus.

Currently, the World Health Organization has no recommendations on the use of ibuprofen versus other anti-inflammatory painkillers for coronavirus symptoms.

FDA advises patients on use of non-steroidal anti-inflammatory drugs (NSAIDs) for COVID-19

[f Share](#) [t Tweet](#) [in LinkedIn](#) [✉ Email](#) [🖨 Print](#)

[3/19/2020] FDA is aware of news reports stating the use of non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, could worsen coronavirus disease (COVID-19). These news reports followed a March 11, 2020 letter in [The Lancet medical journal](#) [↗](#), which hypothesized that an enzyme (a molecule that aids a biochemical reaction in the body) is increased by NSAIDs and could aggravate COVID-19 symptoms.

At this time, FDA is not aware of scientific evidence connecting the use of NSAIDs, like ibuprofen, with worsening COVID-19 symptoms. The agency is investigating this issue further and will communicate publicly when more information is available. However, all prescription NSAID labels warn that “the pharmacological activity of NSAIDs in reducing inflammation, and possibly fever, may diminish the utility of diagnostic signs in detecting infections.”

For those who wish to use treatment options other than NSAIDs, there are multiple over-the-counter (OTC) and prescription medications approved for pain relief and fever reduction. FDA suggests speaking to your health care professional if you are concerned about taking NSAIDs and rely on these medications to treat chronic diseases.

Pandemic-linked Tylenol shortages popping up in some places

UPDATED ON: APRIL 7, 2020 / 8:52 AM / CBS NEWS



RESEARCH ARTICLE

Adverse outcomes and mortality in users of non-steroidal anti-inflammatory drugs who tested positive for SARS-CoV-2: A Danish nationwide cohort study

Lars Christian Lund ¹ [✉], Kasper Bruun Kristensen ¹ [✉], Mette Reilev ¹,
Steffen Christensen ², Reimar Wernich Thomsen ³, Christian Fynbo Christiansen ³,
Henrik Støvring ^{1,4}, Nanna Borup Johansen ⁵, Nikolai Constantin Brun ⁵,
Jesper Hallas ¹, Anton Pottegård ¹ *

1 Clinical Pharmacology and Pharmacy, Department of Public Health, University of Southern Denmark, Odense, Denmark, **2** Department of Anaesthesia and Intensive Care Medicine, Aarhus University Hospital, Aarhus, Denmark, **3** Department of Clinical Epidemiology, Aarhus University Hospital, Aarhus, Denmark, **4** Biostatistics, Department of Public Health, Aarhus University, Aarhus, Denmark, **5** Department of Medical Evaluation and Biostatistics, Danish Medicines Agency, Copenhagen, Denmark





NSAIDs like ibuprofen not tied to severe COVID-19, death

Filed Under: **COVID-19**

Mary Van Beusekom | News Writer | CIDRAP News | Sep 09, 2020



Contrary to early reports, the use of nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen is not associated with severe COVID-19 disease or death, according to a cohort [study](#) published yesterday in *PLOS One*.

Researchers analyzed data from all 9,236 Danish residents who tested positive for SARS-CoV-2, the virus that causes COVID-19, from Feb 27 to Apr 29, of whom 248 (2.7%) had filled a prescription for an NSAID in the 30 days before their diagnosis. In Denmark, a prescription is needed for obtaining NSAIDs, except for low-dose (200-milligram) ibuprofen.



miflippo / iStock

Author summary

Why was this study done?

- › During the early phases of the pandemic of coronavirus disease 2019 (COVID-19), concerns were raised that ibuprofen, a drug commonly used to treat weak pain and fevers, may lead to a more severe course of coronavirus disease.
- › If this risk is verified, it would be important to reduce the use of ibuprofen and ibuprofen-like drugs, commonly referred to as non-steroidal anti-inflammatory drugs (NSAIDs), among patients at risk of COVID-19.

What did the researchers do and find?

- › We identified all Danish residents who tested positive for the infectious agent of COVID-19 and grouped them into users and non-users of NSAIDs.
- › The risks of being hospitalized, admitted to the intensive care unit, or dying were compared between the 2 groups.
- › Overall, risks for all studied outcomes were similar between users and non-users of ibuprofen and other NSAIDs.

What do these findings mean?

- › NSAIDs do not lead to more severe coronavirus disease according to this study.



GEEK

OUT!





Methods

- Danish nationwide registry-based cohort study investigating the association between NSAID use and adverse outcomes
 - All Danish residents who had a positive PCR test for SARS-CoV-2 during the period 27 February 2020 to 29 April 2020 were included in the study
 - Primary outcome was death within 30-days of positive SARS-CoV-2 test
 - Secondary outcomes included hospitalization, ICU admission, mechanical ventilation, and acute renal replacement therapy within 14-days of positive test
- Exclusion criteria
 - individuals with less than 1 year of residence in Denmark prior to the positive test for SARS-CoV-2
 - individuals with an outcome during 30 days to 1 day prior to cohort entry were excluded, partly to ensure that outcomes were incident and plausibly occurring due to COVID-19
- Conducted a post hoc supplementary analysis in a cohort of all Danish patients who tested negative for SARS-CoV-2 in the study period

Variable of Interest

- Current use of any NSAID prior to a positive SARS-CoV-2 test
 - filled a prescription for any NSAID in the 30 days prior to the positive test
- Danish National Prescription Registry, with information on all dispensed prescriptions at community pharmacies in Denmark since 1995
- Users of NSAIDs were compared to individuals without NSAID use in the corresponding time window

Limitations?

Variable of Interest

- Current use of any NSAID prior to a positive SARS-CoV-2 test
 - filled a prescription for any NSAID in the 30 days prior to the positive test
- Danish National Prescription Registry, with information on all dispensed prescriptions at community pharmacies in Denmark since 1995
- Users of NSAIDs were compared to individuals without NSAID use in the corresponding time window
- **In Denmark, NSAIDs are sold by prescription except for low-dose (200 mg) ibuprofen sold over-the-counter in pack sizes of no more than 20 tablets**

Variable of Interest

- Current use of any NSAID prior to a positive SARS-CoV-2 test
 - filled a prescription for any NSAID in the 30 days prior to the positive test
- Danish National Prescription Registry, with information on all dispensed prescriptions at community pharmacies in Denmark since 1995
- Users of NSAIDs were compared to individuals without NSAID use in the corresponding time window
- **In Denmark, NSAIDs are sold by prescription except for low-dose (200 mg) ibuprofen sold over-the-counter in pack sizes of no more than 20 tablets**

Limitations?

Variable of Interest

- Current use of any NSAID prior to a positive SARS-CoV-2 test
 - filled a prescription for any NSAID in the 30 days prior to the positive test
- Danish National Prescription Registry, with information on all dispensed prescriptions at community pharmacies in Denmark since 1995
- Users of NSAIDs were compared to individuals without NSAID use in the corresponding time window
- **In Denmark, NSAIDs are sold by prescription except for low-dose (200 mg) ibuprofen sold over-the-counter in pack sizes of no more than 20 tablets**
- **In 2018, over-the-counter purchases of ibuprofen constituted 15% of total ibuprofen sales and a smaller proportion of total NSAID sales**

Variable of Interest

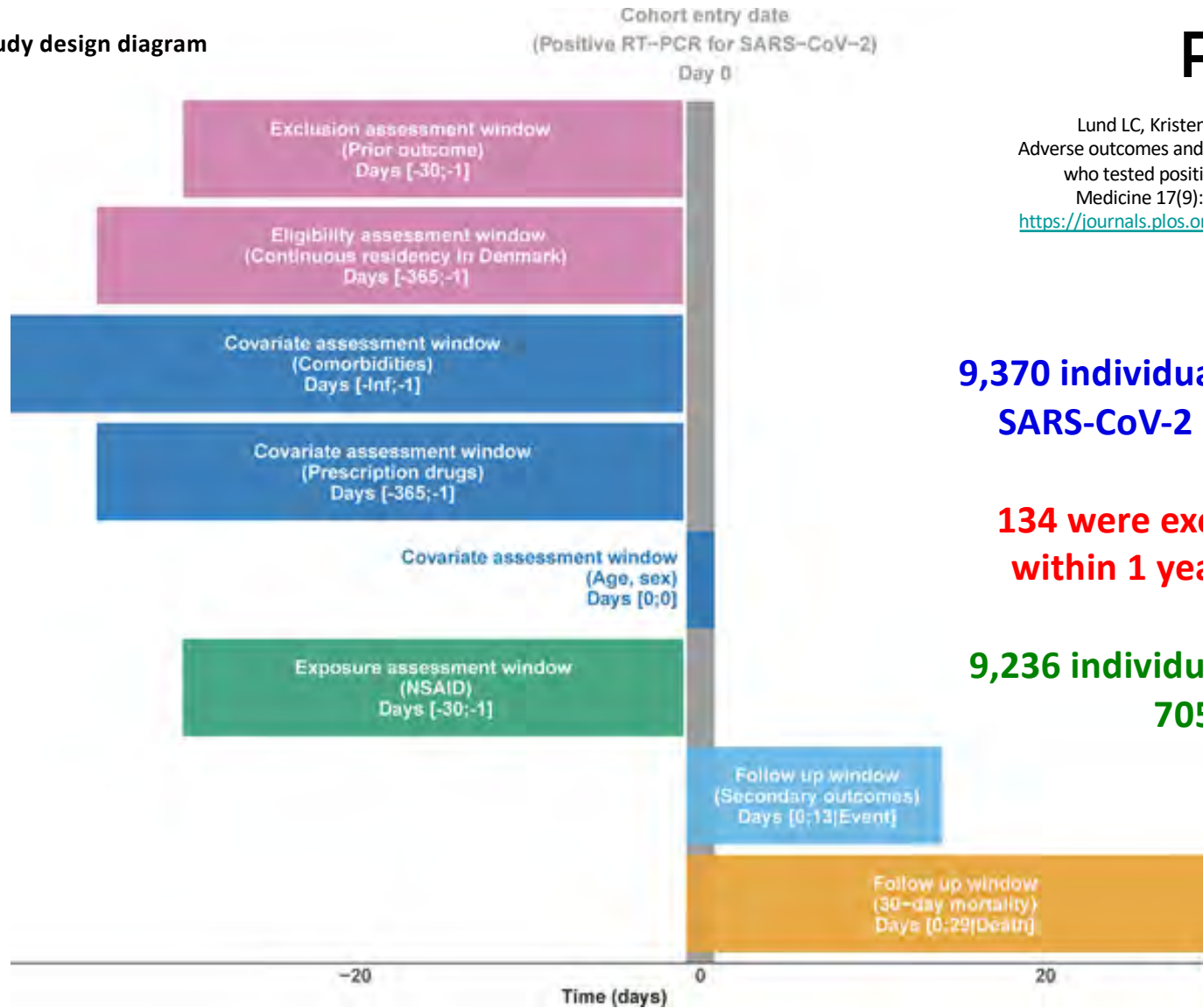
- Current use of any NSAID prior to a positive SARS-CoV-2 test
 - filled a prescription for any NSAID in the 30 days prior to the positive test
- Danish National Prescription Registry, with information on all dispensed prescriptions at community pharmacies in Denmark since 1995
- Users of NSAIDs were compared to individuals without NSAID use in the corresponding time window
- **In Denmark, NSAIDs are sold by prescription except for low-dose (200 mg) ibuprofen sold over-the-counter in pack sizes of no more than 20 tablets**
- **In 2018, over-the-counter purchases of ibuprofen constituted 15% of total ibuprofen sales and a smaller proportion of total NSAID sales**

Potential to identify NSAID use from the Danish National Prescription Registry is high compared to many other countries where over-the-counter use of NSAIDs is common

Propensity Score Matching (PSM)

- Statistical technique that attempts to estimate the effect of a treatment or other intervention by accounting for the covariates that predict receiving the treatment
- PSM attempts to reduce the bias due to confounding variables that could be found in an estimate of the treatment effect obtained from simply comparing outcomes among units that received the treatment versus those that did not
 - Propensity score was used to increase comparability between NSAID users and non-users
- Independent variables in the PS model included:
 - Age
 - Sex
 - Relevant comorbidities
 - Use of selected prescription drugs
 - Phase of the outbreak

Fig 1. Study design diagram



PLOS MEDICINE

Lund LC, Kristensen KB, Reilev M, Christensen S, Thomsen RW, et al. (2020) Adverse outcomes and mortality in users of non-steroidal anti-inflammatory drugs who tested positive for SARS-CoV-2: A Danish nationwide cohort study. PLOS Medicine 17(9): e1003308. <https://doi.org/10.1371/journal.pmed.1003308>
<https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003308>

9,370 individuals who tested positive for SARS-CoV-2 during the study period

134 were excluded due to migration within 1 year prior to cohort entry

9,236 individuals followed for a total of 705 person-years

Results

- Overall outcomes:

- 535 individuals (5.8%) died within 30 days
- 1,512 (16%) were hospitalized within 14 days
- 290 (3.1%) were admitted to the ICU
- 235 (2.5%) received mechanical ventilation
- 61 (0.7%) received acute renal replacement therapy

- NSAID profile:

- 248 (2.7%) patients had filled a prescription for an NSAID within 30 days before the test date
- Older (median age 55 versus 49 years)
- more likely to be overweight or obesity (13% versus 9%)
- More likely to have medical indications for NSAID - e.g., osteoarthritis (19% versus 12%) or rheumatoid arthritis (7% versus 3%)
- Prescribed opioids the year before sampling date (24% versus 11%)

Results

- Overall outcomes:

- 535 individuals (5.8%) died within 30 days
- 1,512 (16%) were hospitalized within 14 days
- 290 (3.1%) were admitted to the ICU
- 235 (2.5%) received mechanical ventilation
- 61 (0.7%) received acute renal replacement therapy

- NSAID profile:

- 248 (2.7%) patients had filled a prescription for an NSAID within 30 days before the test date
- Older (median age 55 versus 49 years)
- more likely to be overweight or obesity (13% versus 9%)
- More likely to have medical indications for NSAID - e.g., osteoarthritis (19% versus 12%) or rheumatoid arthritis (7% versus 3%)
- Prescribed opioids the year before sampling date (24% versus 11%)

After matching, covariates were well balanced w/standardized mean differences < 0.1 (Table 1)

Table 1. Baseline characteristics in the unmatched and propensity-score-matched cohorts.

Characteristic	Unmatched			Matched		
	NSAID users (n = 248)	Non-users (n = 8,988)	SMD	NSAID users (n = 224)	Non-users (n = 896)	SMD
Age in years, median (IQR)	55 (43–64)	49 (35–63)	0.24	54 (43–64)	54 (41–66)	0.00
Sex male	99 (39.9)	3,793 (42.2)	0.05	90 (40.2)	375 (41.9)	0.03
Prescription drugs*						
Antihypertensive	72 (29.0)	2,221 (24.7)	0.10	62 (27.7)	233 (26.0)	0.04
Antidiabetic drug	26 (10.5)	680 (7.6)	0.10	21 (9.4)	78 (8.7)	0.02
Low-dose aspirin	16 (6.5)	532 (5.9)	0.02	15 (6.7)	47 (5.2)	0.06
Immunosuppressant	(n < 5)	63 (0.7)	0.05	(n < 5)	6 (0.7)	0.07
Opioid	59 (23.8)	950 (10.6)	0.36	46 (20.5)	172 (19.2)	0.03
Z-drug	8 (3.2)	279 (3.1)	0.01	7 (3.1)	28 (3.1)	0.00
Benzodiazepine	10 (4.0)	378 (4.2)	0.01	10 (4.5)	38 (4.2)	0.01
First generation antipsychotic	(n < 5)	58 (0.6)	0.03	(n < 5)	(n < 5)	0.02
Second generation antipsychotic	(n < 5)	224 (2.5)	0.10	(n < 5)	11 (1.2)	0.03
Systemic glucocorticoid	19 (7.7)	431 (4.8)	0.12	15 (6.7)	65 (7.3)	0.02
Inhaled corticosteroid	27 (10.9)	625 (7.0)	0.14	21 (9.4)	92 (10.3)	0.03
Prior diagnoses**						
Asthma	16 (6.5)	613 (6.8)	0.01	13 (5.8)	47 (5.2)	0.02
COPD	11 (4.4)	368 (4.1)	0.02	9 (4.0)	35 (3.9)	0.01
Cardiovascular disease	28 (11.3)	1,238 (13.8)	0.08	23 (10.3)	91 (10.2)	0.00
Ischemic stroke	9 (3.6)	376 (4.2)	0.03	8 (3.6)	30 (3.3)	0.01
Chronic kidney failure	(n < 5)	126 (1.4)	0.11	(n < 5)	(n < 5)	0.06
Liver disease	(n < 5)	125 (1.4)	0.02	(n < 5)	10 (1.1)	0.06
Alcohol-related disorders	5 (2.0)	239 (2.7)	0.04	(n < 5)	12 (1.3)	0.04
Dementia	(n < 5)	154 (1.7)	0.08	(n < 5)	10 (1.1)	0.02
Cancer	21 (8.5)	646 (7.2)	0.05	16 (7.1)	64 (7.1)	0.00
Overweight or obesity	33 (13.3)	765 (8.5)	0.15	29 (12.9)	111 (12.4)	0.02
Hemiplegia and paraplegia	(n < 5)	35 (0.4)	0.00	(n < 5)	(n < 5)	0.02
Osteoarthritis	47 (19.0)	1,054 (11.7)	0.20	37 (16.5)	143 (16.0)	0.02
Rheumatoid arthritis	17 (6.9)	308 (3.4)	0.16	13 (5.8)	51 (5.7)	0.00
Dysmenorrhea	7 (2.8)	62 (0.7)	0.16	(n < 5)	8 (0.9)	0.00

Table 2. Association between current NSAID use and 30-day mortality, hospitalization, ICU admission, mechanical ventilation, and renal replacement therapy in unmatched and propensity-score-matched cohorts.

Outcome	NSAID users		Non-users		Comparison			
	Number of events/ sample size	Risk (%) (95% CI)	Number of events/ sample size	Risk (%) (95% CI)	Risk difference (%) (95% CI)	<i>p</i> - Value	Risk ratio (95% CI)	<i>p</i> - Value
Unmatched cohort								
Death	14/248	5.6 (2.8, 8.5)	521/8,988	5.8 (5.3, 6.3)	-0.2 (-3.1, 2.8)	0.92	0.97 (0.58, 1.63)	0.92
Hospitalization*	56/228	24.6 (19.0, 30.2)	1,456/8,414	17.3 (16.5, 18.1)	7.3 (1.6, 12.9)	0.01	1.42 (1.13, 1.79)	<0.01
ICU admission*	11/247	4.5 (1.9, 7.0)	279/8,956	3.1 (2.8, 3.5)	1.3 (-1.3, 3.9)	0.31	1.43 (0.79, 2.58)	0.23
Mechanical ventilation*	10/248	4.0 (1.6, 6.5)	225/8,970	2.5 (2.2, 2.8)	1.5 (-0.9, 4.0)	0.23	1.61 (0.86, 2.99)	0.13
Renal replacement therapy*	<i>n</i> < 5/248	—**	—**	—**	0.6 (-0.8, 1.9)	0.42	1.87 (0.59, 5.94)	0.29
Matched cohort								
Death	14/224	6.3 (3.1, 9.4)	55/896	6.1 (4.4, 7.8)	0.1 (-3.5, 3.7)	0.95	1.02 (0.57, 1.82)	0.95
Hospitalization*	50/204	24.5 (18.6, 30.4)	175/826	21.2 (18.1, 24.3)	3.3 (-3.4, 10.0)	0.33	1.16 (0.87, 1.53)	0.31
ICU admission*	11/223	4.9 (2.1, 7.8)	42/889	4.7 (3.2, 6.2)	0.2 (-3.0, 3.4)	0.90	1.04 (0.54, 2.02)	0.90
Mechanical ventilation*	10/224	4.5 (1.8, 7.2)	35/891	3.9 (2.5, 5.3)	0.5 (-2.5, 3.6)	0.73	1.14 (0.56, 2.30)	0.72
Renal replacement therapy*	<i>n</i> < 5/224	—**	—**	—**	-0.2 (-2.0, 1.6)	0.81	0.86 (0.24, 3.09)	0.81

Test-Negative Individuals

- Identified 204,920 individuals with negative SARS-CoV-2 PCR test in study period
 - Excluded 3,506 due to migration within 1 year prior to cohort entry
 - Population of 201,414 individuals followed up for a total of 15,840 person-years
- Use of NSAIDs was associated with:
 - decreased risk of death (RR 0.64, 95% CI 0.49 to 0.84, $p < 0.01$)
 - increased risk of hospitalization (RR 1.18, 95% CI 1.08 to 1.28, $p < 0.001$)
 - ICU admission (RR 1.39, 95% CI 1.00–1.95, $p = 0.05$)

Strengths and Limitations

- Danish nationwide registries
 - all individuals who had been tested for SARS-CoV-2 (positive and negative) – negative control analysis
 - data on prescription drug use, medical history, migration, hospital admissions, and death through individual-level linkage between health and administrative registries
 - Data on those managed in the hospital and in the community
- Primary limitations:
 - potential misclassification of non-users as NSAID users
 - NSAID prescription may be considered an indicator of availability of NSAIDs rather than of actual use
 - unmeasured confounding due to a lack of information on study participants' bodyweight
 - confounding by indication due to NSAIDs possibly being prescribed due to early symptoms of severe COVID-19

Final Thoughts

- NSAIDs may not increase angiotensin converting enzyme 2 in humans
 - Original hypothesis stems from experiments conducted in diabetic rats
 - Data on those managed in the hospital and in the community
- Increased angiotensin converting enzyme 2 expression may not affect the risk of severe COVID-19
 - Studies w/ use of ACE inhibitors and ARBs with COVID-19 (risk of contraction and severity) have so far not shown associations
- Adverse effects of NSAIDs on the course of pneumonia may be specific to bacterial infections
 - Recent study of NSAID users hospitalized for influenza found no association between use of NSAIDs and ICU admission or death

**No reason to withdraw well-indicated use of NSAIDs during the SARS-CoV-2 pandemic
well-established adverse effects of NSAIDs should always be considered
Lowest effective dose for the shortest possible duration**

Let's Take a Step Back



**Where do we get high quality information
and how do we use it for decision making**



Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

[All A-Z Topics](#)

Search

Coronavirus ▾



[Español](#)

[繁體中文](#)

[Tiếng Việt](#)

[한국어](#)

Coronavirus (COVID-19)

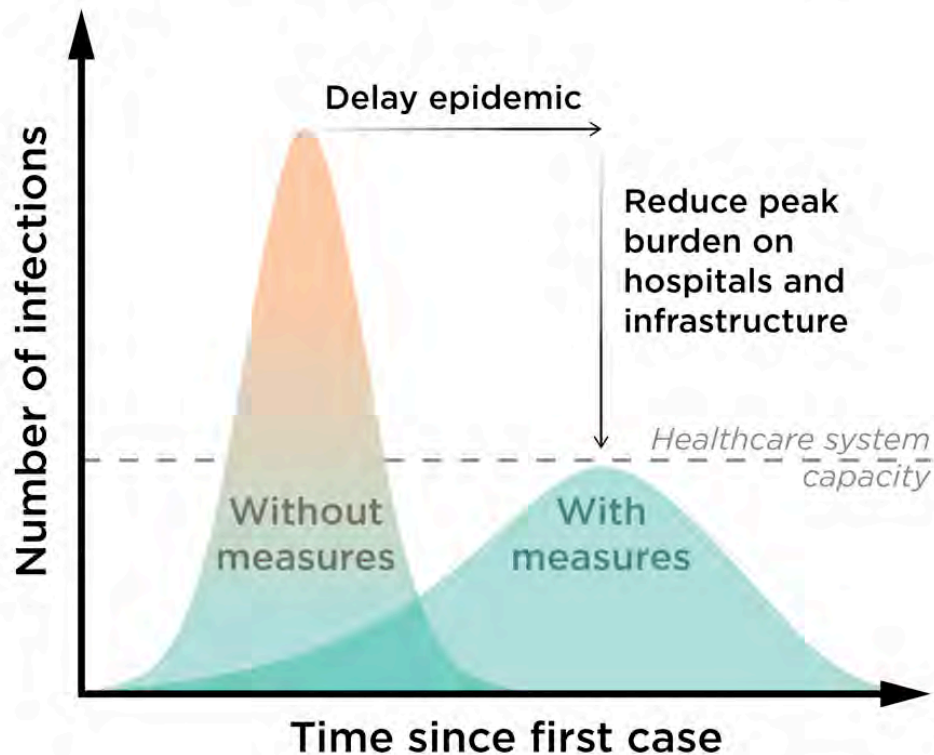
[How to protect yourself](#) >

[What to do if you are sick](#) >

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

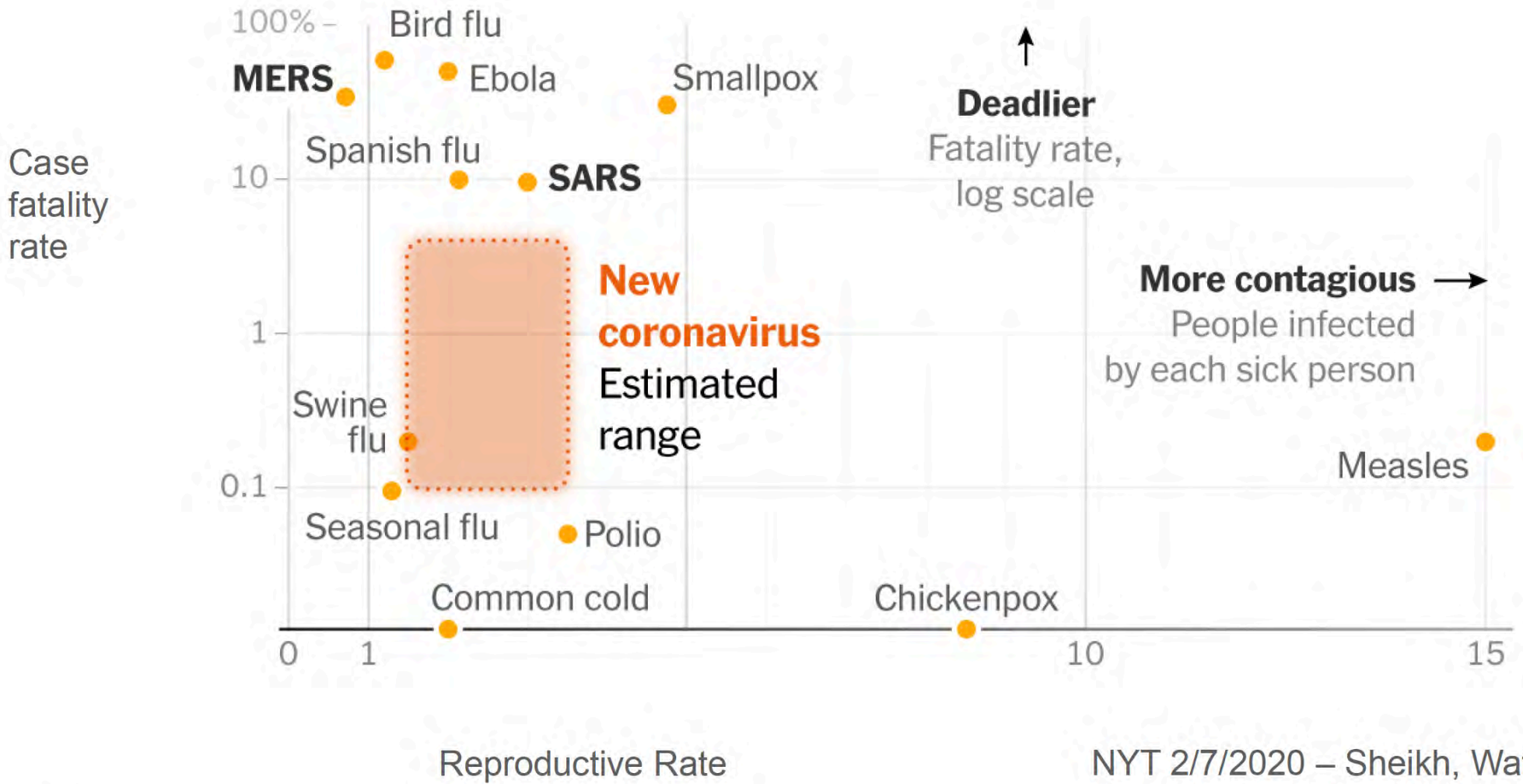
Mitigation Phase

Impact of protective measures



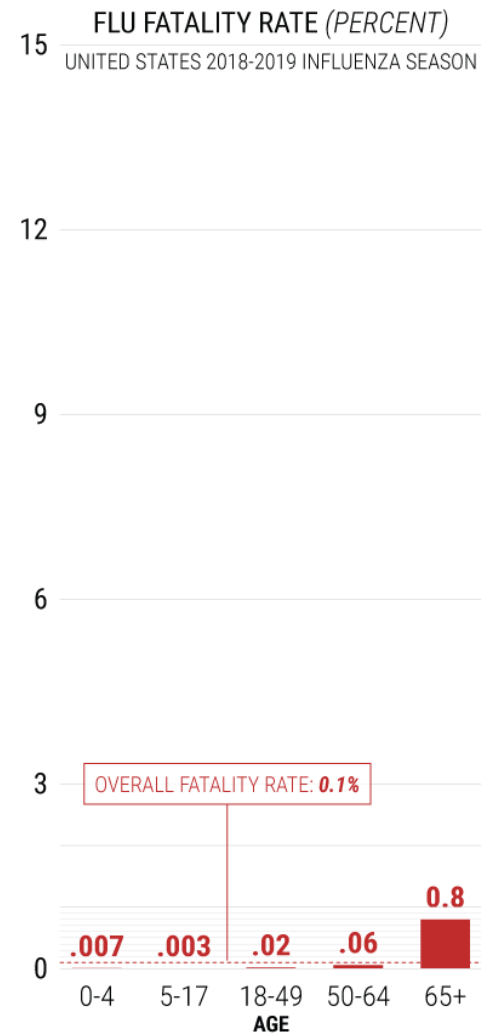
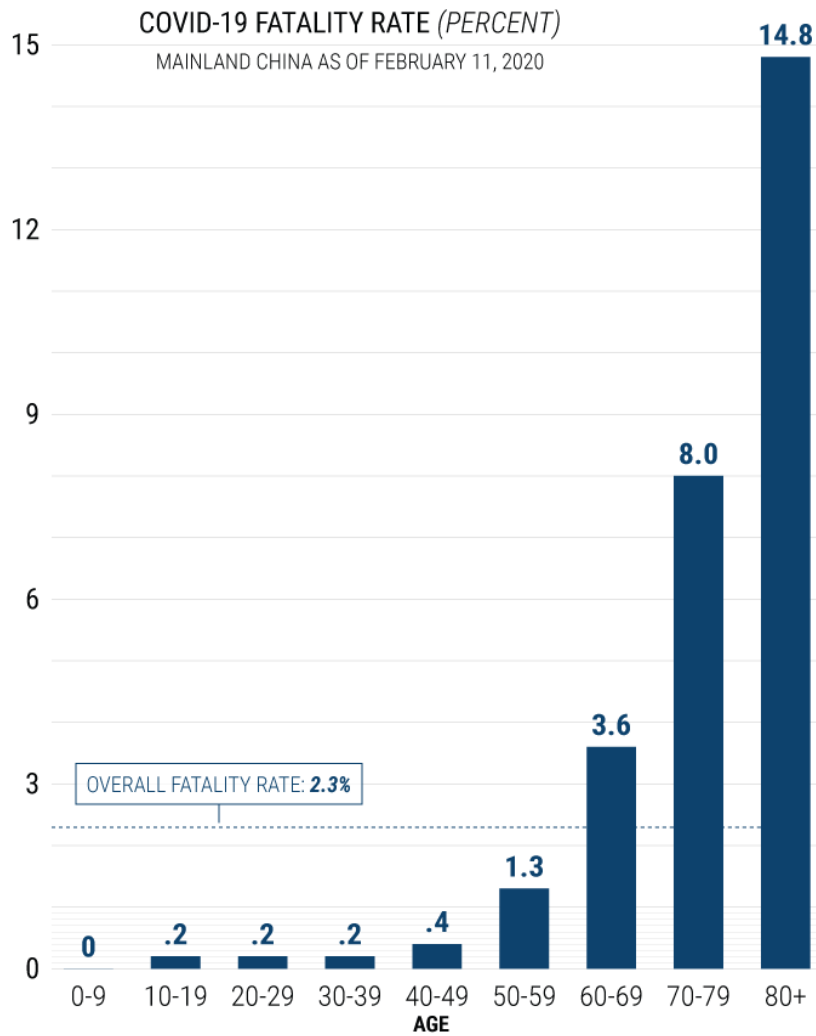
Adapted from CDC

- Avoid close contact
- Cover coughs/sneezes with a tissue
 - If you don't have a tissue, cough and sneeze into the inside of your elbow, not your hands
- Stay home when sick
- Clean and disinfect frequently touched surfaces following CDC guidance for cleaning and disinfection
- Wash hands often with soap/water
 - If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol
- **Stay at home orders**



NYT 2/7/2020 – Sheikh, Watkins, Wu and Grondahl

COVID-19 vs. Seasonal Flu



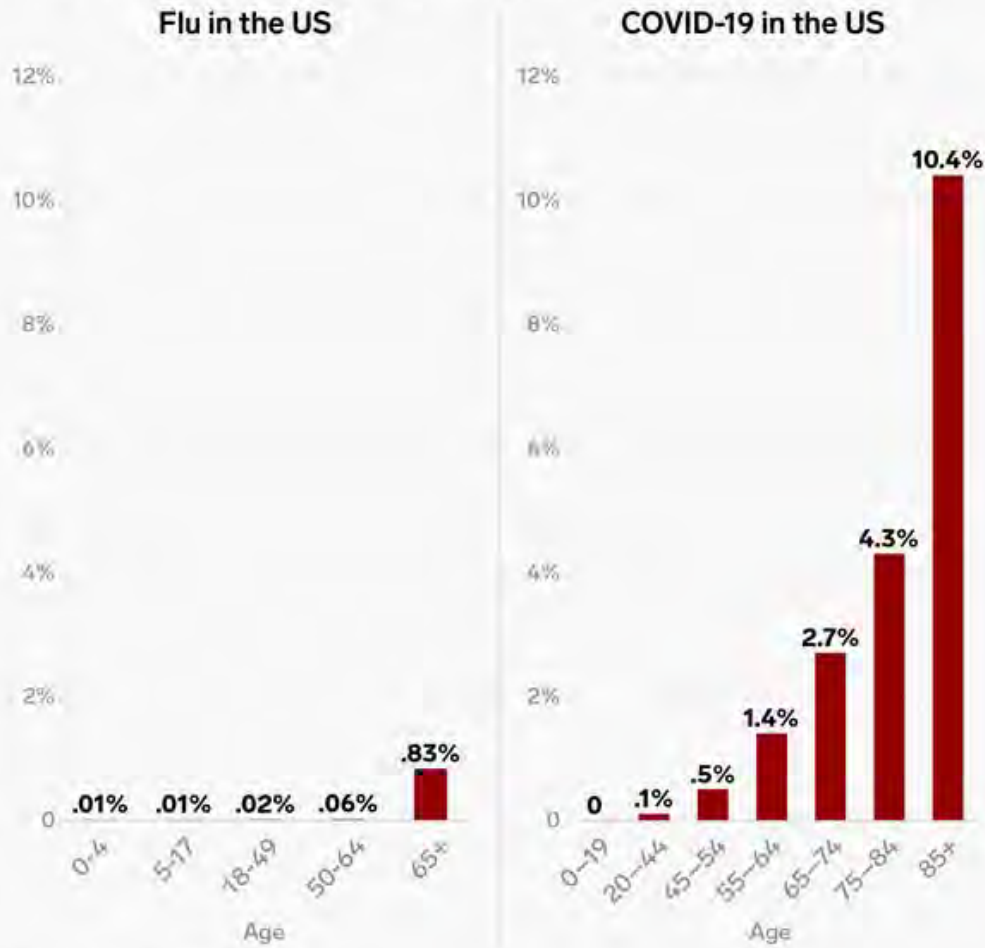
Source: United States Center for Disease Control and Prevention, Chinese Center for Disease Control and Prevention

© 2020 Geopolitical Futures

$$\text{Fatality Rate} = \frac{\text{Number of Fatalities}}{\text{Number of Cases}} \times 100$$

- Vast majority of initial cases were in the China
 - lower-quality health care than U.S.?
 - Initially upsurge in cases overwhelmed their system (Wuhan province)
 - Smoking rates in China >> America – respiratory complications
- Initial deaths in U.S. were concentrated in a nursing facility
 - Deaths may be under-reported during the crisis
- Number of mild or asymptomatic cases is unknown - likely substantial
- Limited access of test kits in U.S.
 - Reserved for testing patients w/most severe presentation (highest mortality)
 - South Korea had much better testing – mortality rates currently estimated at 1.8%*

Flu vs COVID-19 death rate in the US, by age



Note: US data as of March 18, 2020.

Source: CDC, CDC COVID-19 Response Team

INSIDER

Characteristics of SARS-CoV-2 and COVID-19

Ben Hu, Hua Guo, Peng Zhou & Zheng-Li Shi ✉

Nature Reviews Microbiology (2020) | [Cite this article](#)

Age as major risk factor



COVID-19 cases (percentage of all cases)

Asymptomatic...	and mild disease (81%)	Severe (14%)	Critical and deceased (5%)
Incubation period	<ul style="list-style-type: none">• Fever, fatigue and dry cough• Ground-glass opacities• Pneumonia	<ul style="list-style-type: none">• Dyspnea• Coexisting illness• ICU needed	<ul style="list-style-type: none">• ARDS• Acute cardiac injury• Multi-organ failure
~5 days (1–14)	~8 days (7–14)		~16 days (12–20)

Disease onset

Estimating Transmissibility and Mortality

- It is generally accepted that SARS- CoV-2 is more transmissible than SARS- CoV and MERS- CoV
- Determination of an accurate reproduction number (R0) for COVID-19 is not possible yet
- An estimated R0 of 2.5 (ranging from 1.8 to 3.6) has been proposed for SARS- CoV-2 recently, compared with 2.0–3.0 for SARS- CoV

Case fatality ratio (CFR) is the proportion of individuals diagnosed with a disease who die from that disease and is therefore a measure of severity among detected cases:

$$\text{Case Fatality ratio (CFR, in\%)} = \frac{\text{Number of deaths from disease}}{\text{Number of confirmed cases of disease}} \times 100$$

Calculating CFR during an ongoing epidemic

- One simple solution to mitigating the bias due to delays to case resolution during an ongoing outbreak is to restrict the analysis to resolved cases


$$\text{Case Fatality ratio (CFR, in\%)} = \frac{\text{Number of deaths from disease}}{\text{Number of deaths from disease} + \text{Number of recovered from disease}} \times 100$$

RESEARCH

Open Access



Estimation of the basic reproduction number (R_0) for the novel coronavirus disease in Sri Lanka

Samath Dharmaratne^{1,2}, Supun Sudaraka¹, Ishanya Abeyagunawardena^{1*} , Kasun Manchanayake³, Mahen Kothalawala⁴ and Wasantha Gunathunga⁵

Conclusion:

Estimated R_0 for COVID-19 in Sri Lanka, calculated by three different methods, falls between 0.93 and 1.23, and the transmissibility R has reduced, indicating that measures implemented have achieved a good control of disease

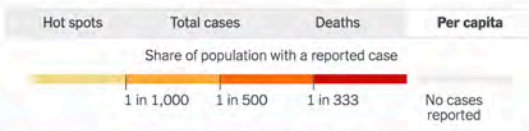


NEWS / ASIA

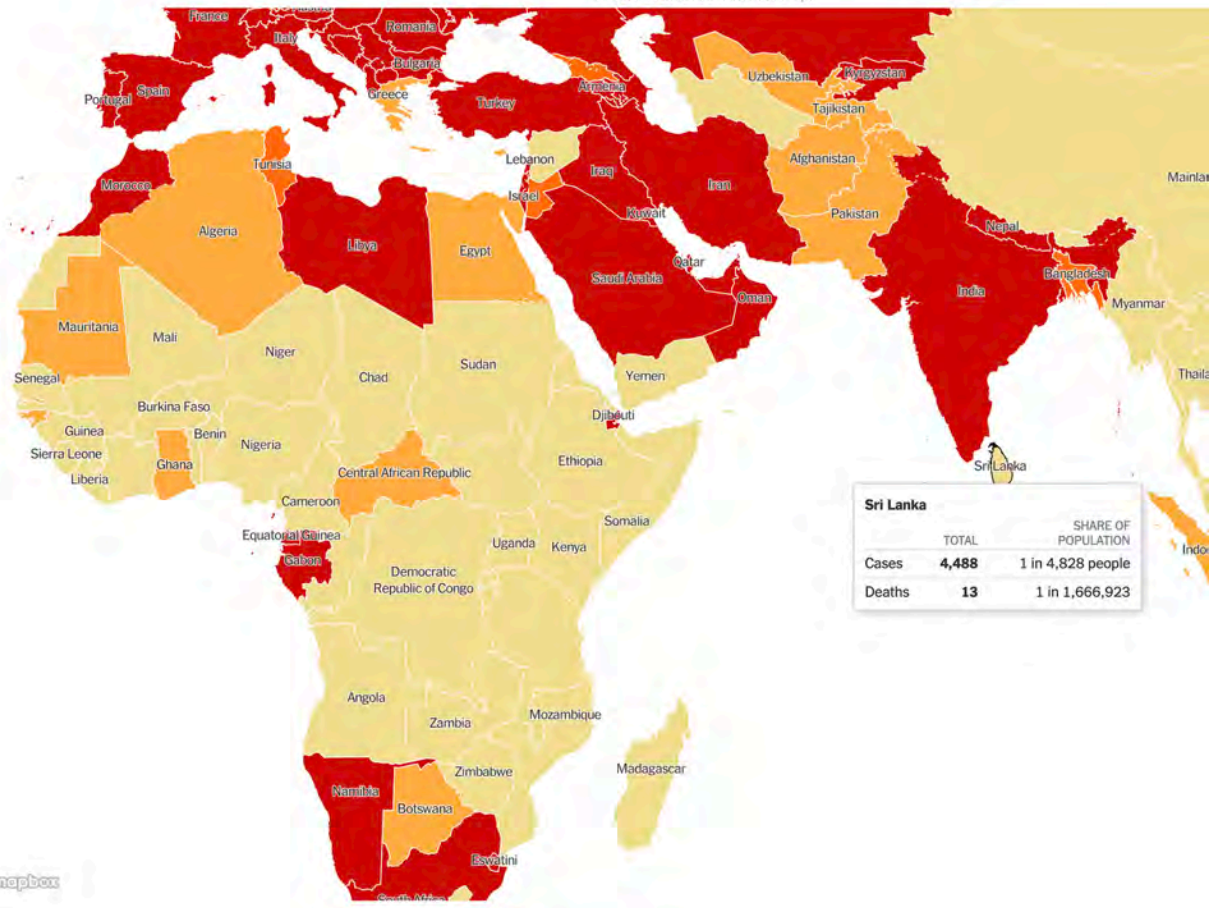
Why Sri Lanka's response to Covid-19 is the most successful in South Asia

18 AUG 2020

Early lockdown, fast tracking of Covid-19 suspects and financial intervention in key areas, are the most significant highlights of their success story.



Double-click to zoom into the map.



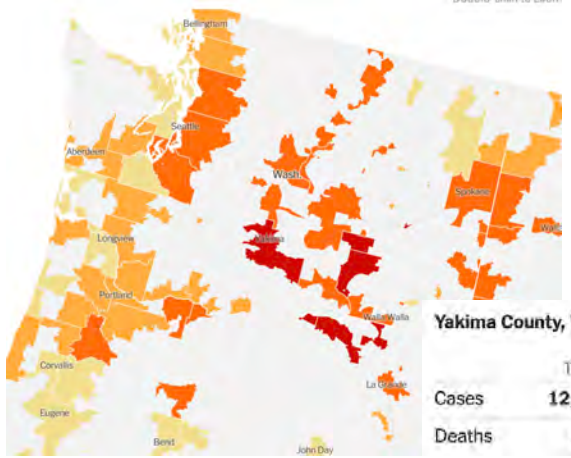
Sri Lanka

	TOTAL	SHARE OF POPULATION
Cases	4,488	1 in 4,828 people
Deaths	13	1 in 1,666,923



United States

	TOTAL	SHARE OF POPULATION
Cases	7,639,636	1 in 43 people
Deaths	212,778	1 in 1,559



Yakima County, Wash.

	TOTAL	SHARE OF POPULATION
Cases	12,484	1 in 20 people
Deaths	276	1 in 909

Impact of COVID on Treatment of Substance Use Disorders and Chronic Pain

Addiction Treatment Facilities: Are They Prepared For The COVID-19 Coronavirus Outbreak?



Lipi Roy, MD, MPH Contributor ©

[Healthcare](#)

I write about addiction, nutrition, mindfulness...and some COVID-19.





The Opioid Crisis, Already Serious, Has Intensified During Coronavirus Pandemic

Overdose deaths rise as job losses and stress from Covid-19 destabilize people struggling with addiction

THE WALL STREET JOURNAL

English Edition • Print Edition • Video • Podcasts • Latest Headlines

By [Jon Kamp](#) and [Arian Campo-Flores](#)

Updated Sept. 8, 2020 10:28 am ET

Home World U.S. Politics Economy Business Tech Markets Opinion Life & Arts Real Estate WSJ Magazine

When Covid-19 struck, the U.S. was already in the grip of an expanding drug-overdose crisis. It has only gotten worse since then.

Counties in states spanning the country, from Washington to Arizona and Florida, are reporting rising drug fatalities this year, according to data collected by The Wall Street Journal. This follows a likely record number of [deadly overdoses in the U.S. last year](#), with more than 72,000 people killed, according to federal projections.

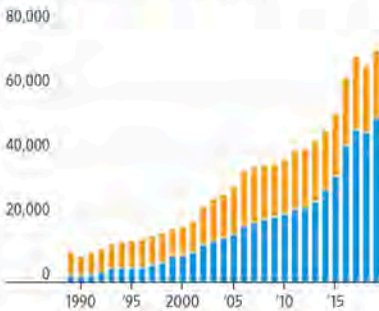
The pandemic has destabilized people trying to maintain sobriety or who are struggling with addiction during a time of increased social isolation and stress, according to treatment providers and public-health authorities. In a survey of U.S. adults released by the Centers for Disease Control and Prevention, 13% of respondents in June said they had started or increased substance use to deal with stress or emotions related to Covid-19.

Fatalities Climb

Drug deaths have risen in the past three decades, in large part due to opioids.

Number of drug deaths per year

■ Opioid-related ■ Non-opioid



Note: Numbers for 2019 are provisional and include projections.

Source: Centers for Disease Control and Prevention

The drug deaths are adding to [the pandemic's toll](#), which includes more than 188,000 infection-related fatalities, but also other deaths linked to factors such as disruptions in health care and economic dislocation.

"It's a pretty stark reality here," said David Sternberg, clinical-services manager at the nonprofit group HIPS in Washington, D.C., which helps keep drug users safe and find treatment. "We've lost a lot of clients, a lot of patients."

Moreover, social-distancing limitations are [complicating treatment](#) for people who struggle with addiction and for the organizations that provide services to them.

Trends in Emergency Department Visits and Hospital Admissions in Health Care Systems in 5 States in the First Months of the COVID-19 Pandemic in the US

Molly M. Jeffery, PhD; Gail D'Onofrio, MD, MS; Hyung Paek, MD; Timothy F. Platts-Mills, MD, MSc; William E. Soares III, MD, MS; Jason A. Hoppe, DO; Nicholas Genes, MD, PHD; Bidisha Nath, MD, MPH; Edward R. Melnick, MD, MHS

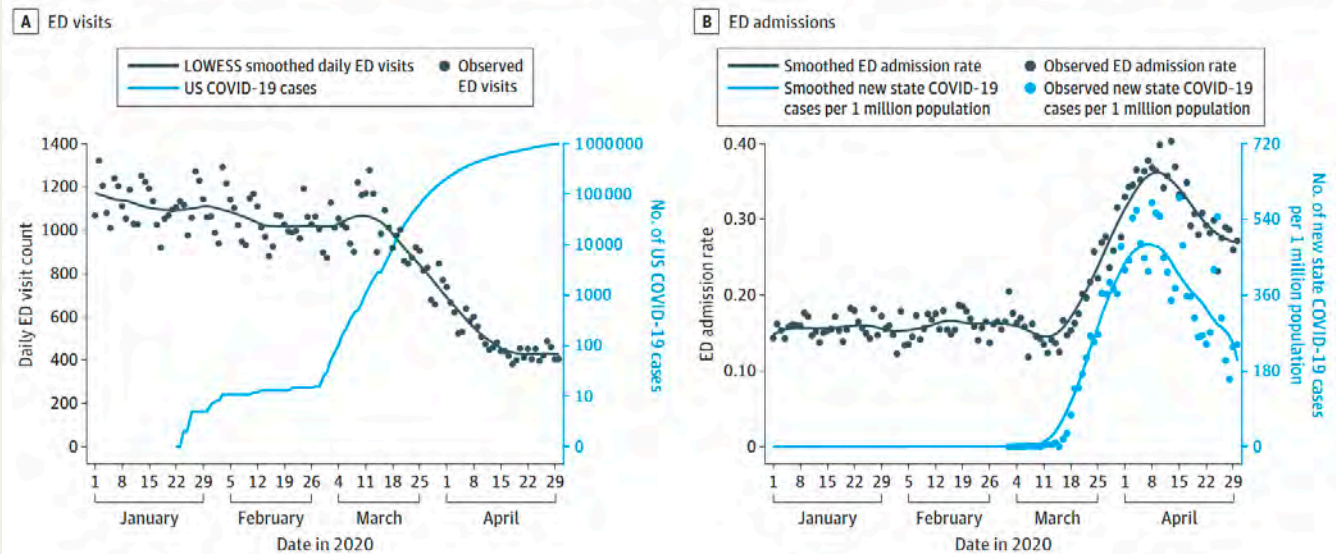
Key Points

Question How did emergency department visits and hospitalizations change as the coronavirus disease 2019 (COVID-19) pandemic intensified in the US?

Findings In this cross-sectional study of 24 emergency departments in 5 health care systems in Colorado, Connecticut, Massachusetts, New York, and North Carolina, decreases in emergency department visits ranged from 41.5% in Colorado to 63.5% in New York, with the most rapid rates of decrease in visits occurring in early March 2020. Rates of hospital admissions from the ED were stable until new COVID-19 case rates began to increase locally, at which point relative increases in hospital admission rates ranged from 22.0% to 149.0%.

Meaning The findings suggest that clinicians and public health officials should emphasize to patients the importance of continuing to visit the emergency department for serious symptoms, illnesses, and injuries that cannot be managed in other clinical settings.

Figure 1. Daily Emergency Department (ED) Visits and Admissions to the Mount Sinai Health System from January 1 through April 30, 2020





ELSEVIER

Contents lists available at [ScienceDirect](#)

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep



Full length article

Signal of increased opioid overdose during COVID-19 from emergency medical services data

Svetla Slavova^{a,b,*}, Peter Rock^b, Heather M. Bush^a, Dana Quesinberry^{b,c}, Sharon L. Walsh^{d,e}

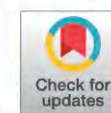
^a Department of Biostatistics, University of Kentucky, Lexington, KY, United States

^b Kentucky Injury Prevention and Research Center, University of Kentucky, Lexington, KY, United States

^c Department of Health Management and Policy, University of Kentucky, Lexington, KY, United States

^d Department of Behavioral Science, University of Kentucky, Lexington, KY, United States

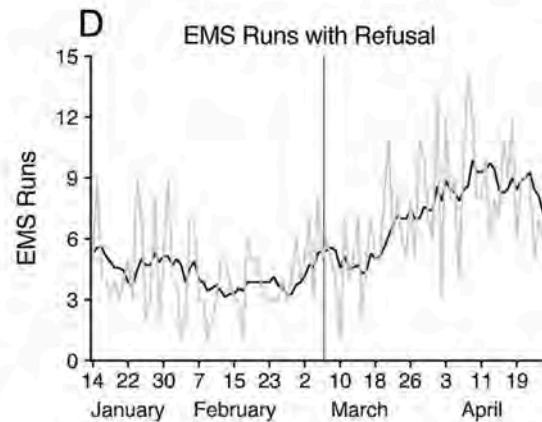
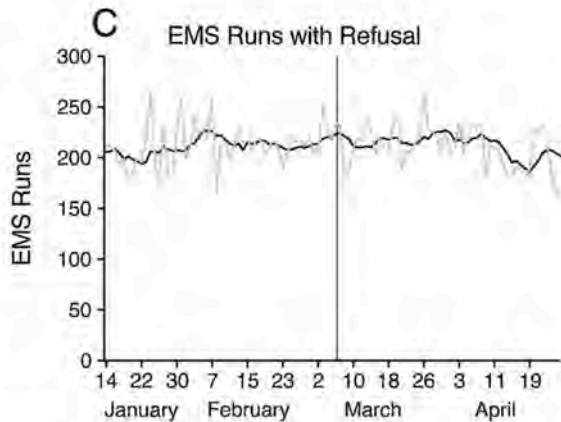
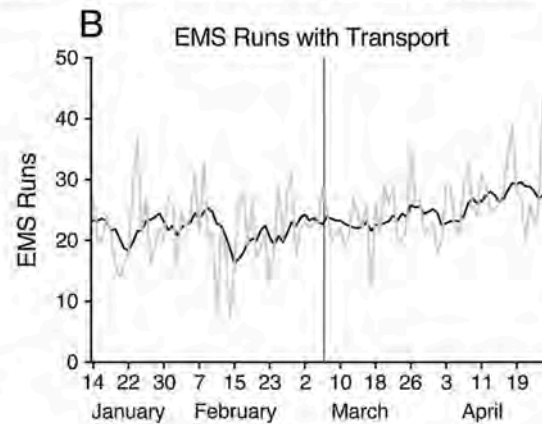
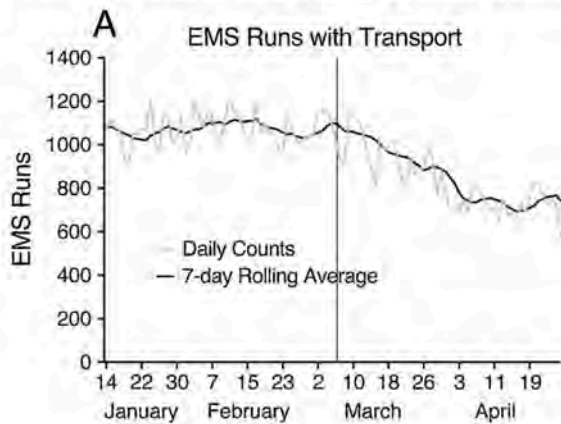
^e Center on Drug and Alcohol Research, University of Kentucky, Lexington, KY, United States



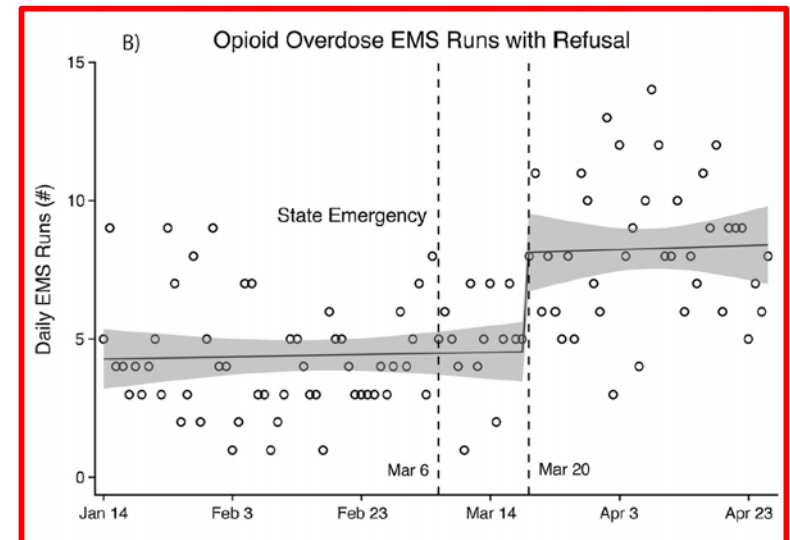
Signal of increased opioid overdose during COVID-19 from emergency medical services data

All EMS Runs Excluding Opioid Overdose

EMS Runs for Opioid Overdose



- **EMS OOR Transport:** **17% Increase**
 - **EMS OOR Refusal:** **71% Increase**
 - **All EMS Runs*:** **22% Decrease**
 - **Seasonal changes not seen in 2019**
- * Excludes OOR transport



Potential Causes:

- **People actively using may be social distancing -- > increase chance of a serious overdose**
- **Increased release of incarcerated users -- > less likely to have care plan in place**
- **Individuals in treatment face disruptions in access to care**
- **In person support groups suspended**
- **Dramatic increase in transport refusals may be due to fear of contracting SARS-CoV-2**
- **Cause of Death data may lag 6 months, EMS runs may provide earlier indicators of impact**
- **Limitations include only data from a single state (Kentucky)**

September 18, 2020

Nonfatal Opioid Overdoses at an Urban Emergency Department During the COVID-19 Pandemic

Taylor A. Ochalek, PhD¹; Kirk L. Cumpston, DO²; Brandon K. Wills, DO²; Tamas S. Gal, PhD³; F. Gerard Moeller, MD⁴

✂ Author Affiliations | Article Information

¹Department of Pharmacology and Toxicology, Virginia Commonwealth University, Richmond

²Department of Emergency Medicine, Virginia Commonwealth University, Richmond

³Department of Biostatistics, Virginia Commonwealth University, Richmond

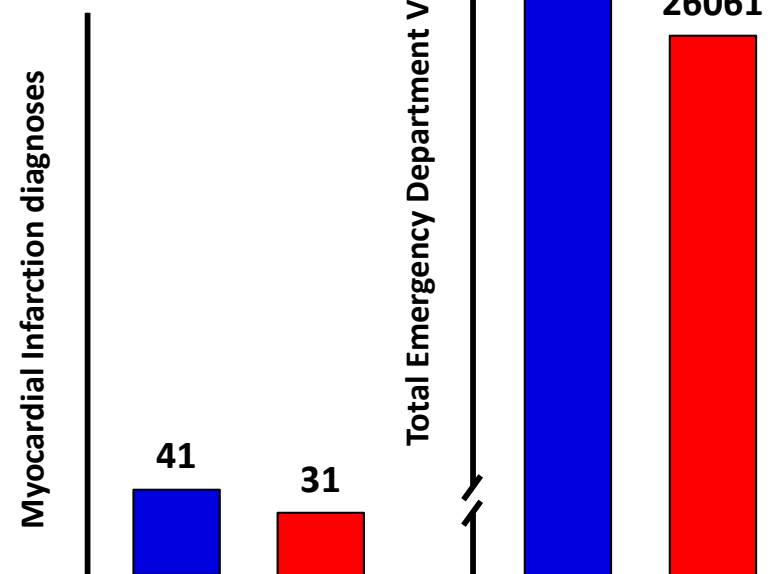
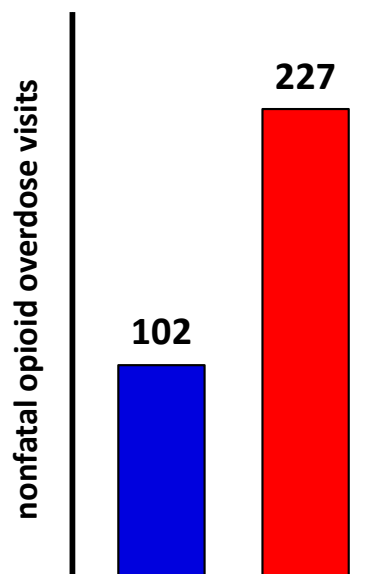
⁴Department of Psychiatry, Virginia Commonwealth University, Richmond

JAMA. Published online September 18, 2020. doi:10.1001/jama.2020.17477

Summary:

- Opioid overdoses identified in EMR
 - **March 1 to June 30, 2019** and **March 1 to June 30, 2020**
 - Intentional opioid overdoses excluded
- Comparisons included number of:
 - acute myocardial infarctions
 - total emergency department visits

Characteristic	No. (%) ^a	
	March-June 2019 (n = 102)	March-June 2020 (n = 227)
Age, mean (SD), y	42.2 (14.2)	44.0 (13.3)
Sex		
Female	31 (30)	62 (27)
Male	71 (70)	165 (73)
Race/ethnicity ^b		
Black or African American	64 (63)	181 (80)
White	29 (28)	32 (14)
Hispanic	4 (4)	6 (3)



RESEARCH LETTER

Nonfatal Opioid Overdoses at an Urban Emergency Department During the COVID-19 Pandemic

September 18, 2020

Analysis of Drug Test Results Before and After the US Declaration of a National Emergency Concerning the COVID-19 Outbreak

Jacob J. Wainwright, MPH¹; Meriam Mikre, MPH¹; Penn Whitley, BA²; [et al](#)

» [Author Affiliations](#) | [Article Information](#)

JAMA. Published online September 18, 2020. doi:10.1001/jama.2020.17694

- Cross-sectional study of urine drug test results from patients diagnosed with or at risk of substance use disorders
- Drug tests were ordered as part of a comprehensive treatment plan
- Period before COVID-19 (November 14, 2019, to March 12, 2020) and the period during COVID-19 (March 13, 2020, to July 10, 2020).
- The total sample included urine drug test results for 150,000 patients with a 50/50 split

Summary:

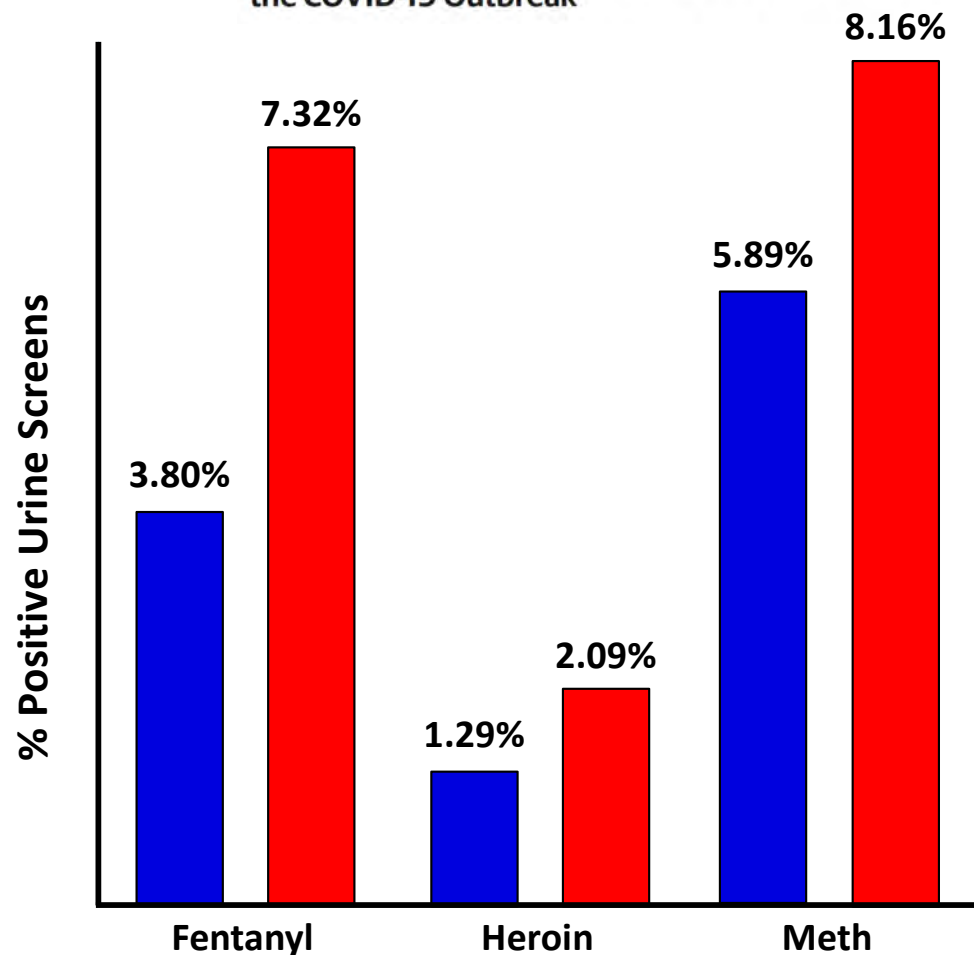
- Urine Screens testing positive
 - Pre-COVID (~ 4-month period)
 - Post-COVID (~ 4-month period)
 - Individuals with prescriptions for drug excluded
- Drugs screened for included:
 - Fentanyl
 - Heroin
 - Methamphetamine
 - Cocaine

Table 1. Characteristics of Urine Drug Test Specimens Tested Between November 14, 2019, and July 10, 2020

Characteristics	Specimens tested in population by COVID-19 pandemic status		P value ^a
	Before	During	
Unique patient specimens, No. (%)	75 000 (100.00)	75 000 (100.00)	
Sex, No. (%)			
Female	40 457 (53.94)	38 640 (51.52)	<.001
Male	34 543 (46.06)	36 360 (48.48)	<.001
Age, median (IQR), y	49 (23-75)	46 (20-72)	<.001 ^b

RESEARCH LETTER

Analysis of Drug Test Results Before and After the US Declaration of a National Emergency Concerning the COVID-19 Outbreak



Summary:

RESEARCH LETTER

Analysis of Drug Test Results Before and After the US Declaration of a National Emergency Concerning the COVID-19 Outbreak

Table 2. Logistic Regression Analysis for Populations With Positive Test Results for Selected Drugs Before vs During the COVID-19 Pandemic

US Census region	Cocaine		Fentanyl		Heroin		Methamphetamine	
	Adjusted OR (95% CI) ^a	P value ^b	Adjusted OR (95% CI) ^a	P value ^b	Adjusted OR (95% CI) ^a	P value ^b	Adjusted OR (95% CI) ^a	P value ^b
East North Central ^c	1.31 (1.14-1.51)	<.001	1.93 (1.70-2.20)	<.001	1.59 (1.18-2.14)	<.001	1.34 (1.16-1.56)	<.001
East South Central ^d	1.20 (0.91-1.58)	.07	1.99 (1.62-2.45)	<.001	1.58 (1.01-2.48)	.04	1.26 (1.05-1.53)	.002
Mid-Atlantic ^e	1.40 (0.97-2.03)	.12	2.04 (1.22-3.39)	<.001	2.36 (0.71-7.81)	.53	1.42 (0.87-2.32)	.55
Mountain ^f	1.31 (0.92-1.86)	.42	1.65 (1.25-2.19)	<.001	1.50 (1.04-2.15)	.01	1.51 (1.25-1.82)	<.001
New England ^g	1.27 (0.71-2.27)	.99	1.86 (1.02-3.39)	.03	0.89 (0.10-8.00)	>.99	1.14 (0.52-2.51)	>.99
Pacific ^h	1.22 (0.85-1.77)	.90	1.68 (1.21-2.33)	<.001	1.44 (1.12-1.85)	<.001	1.18 (1.00-1.37)	.04
South Atlantic ⁱ	1.08 (0.84-1.38)	>.99	1.33 (1.00-1.77)	.06	0.63 (0.31-1.27)	.68	0.92 (0.68-1.24)	>.99
West North Central ^j	0.84 (0.49-1.42)	>.99	1.11 (0.77-1.62)	>.99	0.94 (0.49-1.81)	>.99	0.96 (0.74-1.25)	>.99
West South Central ^k	1.23 (0.73-2.06)	>.99	1.69 (0.87-3.30)	.34	1.99 (0.67-5.93)	.76	1.46 (1.02-2.08)	.03
Total	1.19 (1.11-1.29)	<.001	1.67 (1.55-1.81)	<.001	1.33 (1.11-1.61)	.002	1.23 (1.14-1.32)	<.001



Advocacy Resource Center

Advocating on behalf of physicians
and patients at the state level

Issue brief: Reports of increases in opioid-related overdose and other concerns during COVID pandemic

***Updated September 8, 2020**

As the COVID-19 global pandemic continues, so does the nation's opioid epidemic. The AMA is greatly concerned by an increasing number of reports from national, state and local media suggesting increases in opioid-related mortality—particularly from illicitly manufactured fentanyl and fentanyl analogs. More than 40 states have reported increases in opioid-related mortality as well as ongoing concerns for those with a mental illness or substance use disorder in counties and other areas within the state. This also includes new reports about the need for evidence-based harm reduction services, including sterile needle and syringe services and naloxone.

The AMA is pleased that the U.S. Substance Abuse and Mental Health Services Administration and U.S. Drug Enforcement Administration (DEA) have provided increased flexibility for providing buprenorphine and methadone to patients with opioid use disorder. The AMA is further pleased at increased flexibility provided by the DEA to help patients with pain obtain necessary medications.



Advocacy Resource Center

Advocating on behalf of physicians
and patients at the state level

The AMA urges governors and state legislatures to take action

- Governors must adopt the new SAMHSA and DEA rules and guidance in-full for the duration of the national emergency—this includes flexibility for evaluation and prescribing requirements using telemedicine;
- States must enact as part of their own Emergency Orders and other actions a complete removal of prior authorization, step therapy and other administrative barriers for medications used to treat opioid use disorder;
- States must remove existing barriers for patients with pain to obtain necessary medications. This includes removing arbitrary dose, quantity and refill restrictions on controlled substances; and
- States must enact, implement and support harm reduction strategies, including removing barriers to sterile needle and syringe services programs.

Editorial

For reprint orders, please contact: reprints@futuremedicine.com

Pain Management



Impact of COVID-19 on chronic pain patients: a pain physician's perspective

Saba Javed^{*1}, Joey Hung¹ & Billy K Huh²

¹Department of Anesthesiology, University of Texas Health Science Center at Houston, Houston, TX 77030, USA

²Department of Anesthesiology, University of Texas MD Anderson Cancer Center, Houston, TX 77030, USA

*Author for correspondence: sabajaved23@gmail.com

“the field of chronic pain is one of the hardest hit from the COVID-19 pandemic leaving many patients over burdened with their chronic pain and their on-going treatment delayed.”

First draft submitted: 19 May 2020; Accepted for publication: 29 June 2020; Published online: 10 August 2020

Keywords: chronic pain • opioids • pain management

26 October 2017 and 1 March 2020, two important dates that will be remembered for years to come, former signifying the declaration of opioid crisis as a public health emergency in the USA and latter when coronavirus disease 2019 (COVID-19) was declared a pandemic in the USA [1]. Since 1999, more than 750,000 have people died due to the opioid crisis and, as of May 2020, over 90,000 Americans' lives have succumbed to the COVID-19 pandemic [2]. Two inherently distinct crises but ultimately unified with the commonality of creating suffering and death. It is obvious that COVID-19 has impacted all aspects of the human existence, particularly the healthcare arena including the patients, and more so the chronic pain patients. The full impact of the pandemic on this sub-population and ultimately the opioid crisis will reveal itself in the years to come, however at this juncture, it is critical to manage the needs of our patients and continue to provide physicians and other therapeutic access in traditional and nontraditional ways.



US Pain Foundation

4 hrs · 🌐

FYI! Tonight's event is also available as 1 hour of #CME. Learn more: <https://bit.ly/3dTOGCq>

CHRONIC PAIN AND COVID-19: NAVIGATING UNCHARTED WATERS

APRIL 7 AT 7 PM ET

With pain and infectious disease researchers

Ed Bilsky, PhD, & Meghan May, PhD



USPAINFOUNDATION.ORG

Webinar featuring two researchers on COVID-19 and chronic pain - U.S. Pain Foundation



Meghan May ✓

7,657 Tweets



Following

Meghan May ✓

@DrMay5 Follows you

Mom, spouse, UNE med school professor of Micro & ID, amateur chef, taco enthusiast, #speaker #SciComm #VaccinesWork #COVID19 #SARSCoV2 #EmergingViruses She/Her

📍 Maine, USA 🔗 une.edu/people/meghan-... 📅 Joined October 2014

960 Following 2,580 Followers

<https://www.une.edu/people/meghan-may>



Vulnerability of Patients with Chronic Pain

- Concerns with increased risk with age

Age band	Females		Males	
	CFR (%)	95% CI	CFR (%)	95% CI
30-39	0.26	0.16 to 0.42	0.43	0.27 to 0.69
40-49	0.55	0.43 to 0.70	0.91	0.72 to 1.16
50-59	1.23	1.08 to 1.40	2.05	1.81 to 2.33
60-69	4.02	3.71 to 4.34	6.67	6.22 to 7.15
70-79	11.86	11.26 to 12.50	19.71	18.98 to 20.47
80-89	17.94	17.11 to 18.80	29.81	28.78 to 30.87
>=90	19.41	18.05 to 20.88	32.26	30.01 to 34.68

Marginal estimates of the case-fatality rate by age.

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

Additional information adapted from Dr. David Tauben (University of Washington)



Vulnerability of Patients with Chronic Pain

- Concerns with increased risk with age
- **Pre-existing conditions**
 - Immunocompromised (co-morbid diseases, drug therapy, other treatments)
 - Diabetes, heart disease, etc.



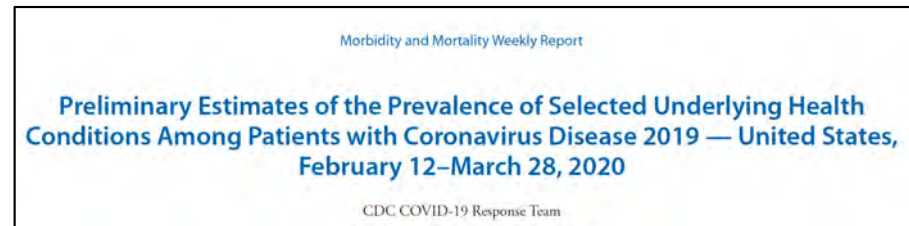
LAUREN GELMAN

LIVING WITH ARTHRITIS

Coronavirus Questions from Immunocompromised Patients (and the Best Expert Answers We Have Right Now)

There are still many unknowns about how the COVID-19 pandemic may affect those with chronic illnesses, suppressed immune systems, and underlying health issues. We're committed to talking with medical experts to get you answers.

[Learn more about our FREE COVID-19 Patient Support Program for chronic illness patients and their loved ones.](#)



Morbidity and Mortality Weekly Report

Preliminary Estimates of the Prevalence of Selected Underlying Health Conditions Among Patients with Coronavirus Disease 2019 — United States, February 12–March 28, 2020

CDC COVID-19 Response Team

<https://creakyjoints.org/living-with-arthritis/coronavirus-questions-immunocompromised-patients/>

Additional information adapted from Dr. David Tauben (University of Washington)



TABLE 1. Reported outcomes among COVID-19 patients of all ages, by hospitalization status, underlying health condition, and risk factor for severe outcome from respiratory infection — United States, February 12–March 28, 2020

Underlying health condition/Risk factor for severe outcomes from respiratory infection (no., % with condition)	No. (%)			
	Not hospitalized	Hospitalized, non-ICU	ICU admission	Hospitalization status unknown
Total with case report form (N = 74,439)	12,217	5,285	1,069	55,868
Missing or unknown status for all conditions (67,277)	7,074	4,248	612	55,343
Total with completed information (7,162)	5,143	1,037	457	525
One or more conditions (2,692, 37.6%)	1,388 (27)	732 (71)	358 (78)	214 (41)
Diabetes mellitus (784, 10.9%)	331 (6)	251 (24)	148 (32)	54 (10)
Chronic lung disease* (656, 9.2%)	363 (7)	152 (15)	94 (21)	47 (9)
Cardiovascular disease (647, 9.0%)	239 (5)	242 (23)	132 (29)	34 (6)
Immunocompromised condition (264, 3.7%)	141 (3)	63 (6)	41 (9)	19 (4)
Chronic renal disease (213, 3.0%)	51 (1)	95 (9)	56 (12)	11 (2)
Pregnancy (143, 2.0%)	72 (1)	31 (3)	4 (1)	36 (7)
Neurologic disorder, neurodevelopmental, intellectual disability (52, 0.7%) [†]	17 (0.3)	25 (2)	7 (2)	3 (1)
Chronic liver disease (41, 0.6%)	24 (1)	9 (1)	7 (2)	1 (0.2)
Other chronic disease (1,182, 16.5%) [§]	583 (11)	359 (35)	170 (37)	70 (13)
Former smoker (165, 2.3%)	80 (2)	45 (4)	33 (7)	7 (1)
Current smoker (96, 1.3%)	61 (1)	22 (2)	5 (1)	8 (2)
None of the above conditions[¶] (4,470, 62.4%)	3,755 (73)	305 (29)	99 (22)	311 (59)



- **Among COVID-19 patients with complete information on underlying conditions/risk factors, 184 deaths occurred**
- **173 deaths (94%) were reported among patients with at least one underlying condition**
- **Hospitalization rates and admission to ICU were also higher in this patient population**



Vulnerability of Patients with Chronic Pain

- Concerns with increased risk with age
- Pre-existing conditions
 - Immunocompromised (co-morbid diseases, drug therapy, other treatments)
 - Diabetes, heart disease, etc.
- **Mental Health**
 - Higher risk of depression, anxiety, etc.
 - Mobility issues/Social isolation
 - Multiple medications w/side-effects



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

Additional data adapted from Dr. David Tauben (University of Washington)
<https://www.etsy.com/listing/590660409/pain-downloadable-fine-art-print>

Social Distancing for Non-Opioid Treatments

Non-opioid treatments such as physical therapy, acupuncture, and behavioral therapy play a crucial role in managing chronic pain. Consider what social distancing measures have been recommended in your community and individually work with patients to determine if the benefits of the treatment outweigh the risk of exposure to COVID-19. Many resources are available online for managing pain including yoga, books, and meditation. Some apps recommended in the [Chronic Pain Self-Management Resources](#) document include:

- **PTSD Coach:** PTSD Coach assists individuals with chronic pain who experienced trauma to learn about, track, and manage symptoms. <https://www.ptsd.va.gov/public/materials/apps/ptsdcoach.asp>
- **Breathe2Relax:** This stress management app trains on the “belly breathing” technique. It provides breathing exercises to learn and practice the breathing technique. <http://t2health.dcoe.mil/apps/breathe2relax>
- **Headspace:** Meditation app. The Basics course of this app is free and teaches the fundamental techniques of meditation and mindfulness. <https://www.headspace.com/headspace-meditation-app>
- **Stop Breathe Think:** This app supports you with checking in with your emotions, and then recommends short, guided meditations, yoga, and acupressure videos. <https://www.stopbreathethink.com/>
- **The Three Minute Breathing Space:** This 3-minute practice is great to use in the middle of the day, with stressful situations as they arise. Available as a handout, app, and recording. <http://franticworld.com/the-three-minute-breathing-space-meditation-is-now-free-to-download/>



Telehealth for Chronic Pain *circa March 2020*



- ✓ Fills **crucial gap in non-urgent care** delivery during Covid-19 crisis
- ✓ Decreases risk of COVID-19 exposure to an already high-risk population
- ✓ Allows clinical interactions without need for travel
 - **Transportation limitations**
 - **Specialty access for remote populations**
 - **Tele-Behavioral Health**
 - **Technology limitations?**

- ✓ **2-factor authentication allows:**
*Medication management via Electronic-Prescribing**

*2010 Electronic Prescriptions for Controlled Substances (EPCS)

Prescription Drug Monitoring Programs

- ✓ EHRs enable access to problem lists, medication lists, imaging reports, etc...
- ✓ Patient reported outcome measures can be delivered remotely

Medicare Beneficiaries COVID-19: Expanded Telehealth Benefits

www.cms.gov/newsroom/fact-sheets/medicare-telemedicine-health-care-provider-fact-sheet

Before Medicare only pays for Telehealth services if beneficiary:

- Lived in a rural area
- Traveled to local medical facility for telehealth services from a doctor in a remote location (*could not get telehealth services in their home*)

After March 6th, 2020:

- All E/M visits covered for MD/DO, ARNP, Psychologists, Social Workers
- Services in any health care facility (eg office, hospital, nursing home or rural health clinic, *as well as from their homes.*)



UW Medicine
PAIN MEDICINE

TELEPAIN

A Few Recent HHS Recommendations to State Governors

- Allow health professionals **licensed/certified in other states** to practice in their state.
- Waive legal requirements preventing the **treating new patients** via telehealth.
- Temporarily **waive medical malpractice** policy terms that may prevent insurance coverage for work responding to the COVID-19 pandemic in other states.

Telehealth Delivery During Declared Public Health Emergencies

DEA Public Health Emergency **Exceptions:**



- “For practitioners in such states to those provisions of DEA regulations that normally require practitioners to register in each state where they dispense controlled substances”
- Controlled substances when issued via telemedicine will not require an in-person medical evaluation; ordinarily require in-person visit
- DEA-registered practitioners may Rx all controlled substances for whom they have not conducted an in-person medical evaluation

ne

PAIN MEDICINE

TELEPAIN

Presented by Dr. David Tauben (University of Washington)

Case Study





Welcome to
NEW YORK
Experience · Explore · Enjoy
iLoveNY.com · iNY App



Department of Transportation
Office of General Services
Office of Parks, Recreation and Historic Sites

WELCOME TO NEW YORK
Experience · Explore · Enjoy
iLoveNY.com · iNY App





Baystate Medical Center

GERIATRICS, PALLIATIVE CARE & POST-ACUTE MEDICINE

baystatehealth.org



Kathryn Barzilai, GNP-BC, ACHPN

Palliative Care Service & Geriatrics







Thomas Sydenham (1624-1689)

- Significant contributions to clinical medicine and epidemiology

“Among the remedies which it has pleased Almighty God to give to man to relieve his sufferings, none is so universal and so efficacious as opium”

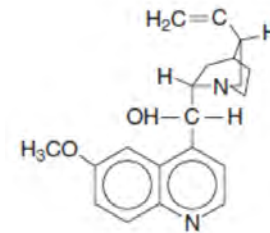
- One of the first physicians to use cinchona bark from South America in treatment of malaria
 - Contains the alkaloid quinine
 - primary treatment for malaria into the 20th century



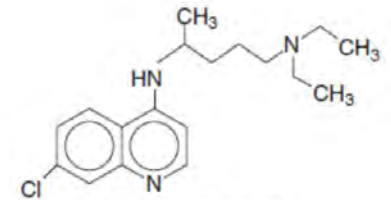
https://en.wikipedia.org/wiki/Thomas_Sydenham

Chloroquine and Hydroxychloroquine

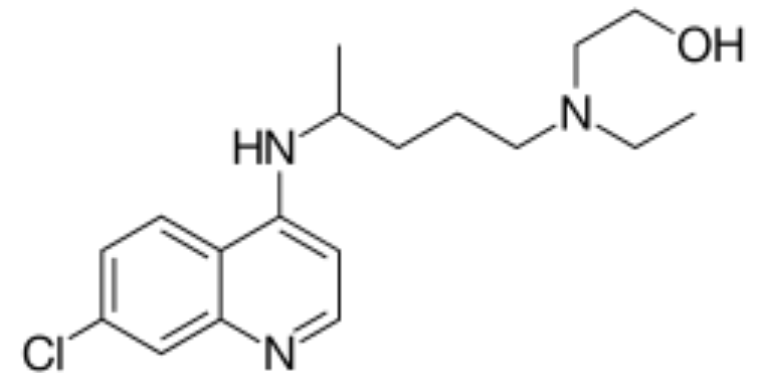
- Structural similarity to quinine with better pharmacological properties
- Used in the prevention and treatment of malaria
- Also used therapeutically for other conditions including lupus and RA
 - WHO essential medicine and in the top-300 prescribed drugs
 - primary treatment for malaria into the 20th century
- Can produce significant side-effects
 - nausea, diarrhea, QT prolongation, retinopathy



QUININE



CHLOROQUINE



Hydroxychloroquine

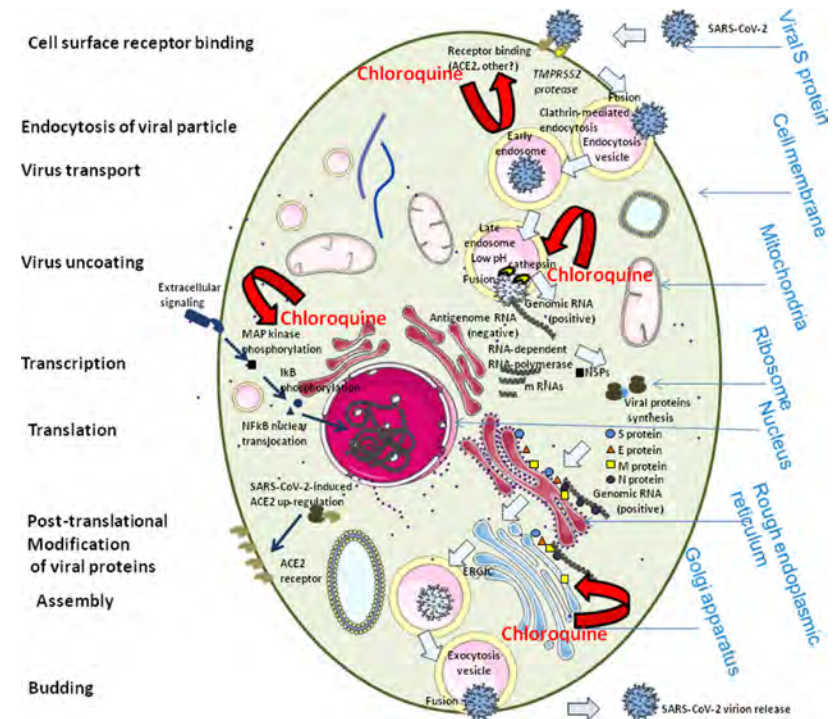
Hydroxychloroquine and COVID-19

- Chloroquine demonstrated antiviral properties in vitro against SARS-CoV in a 2005 study
- Ongoing pre-clinical studies assessing activity against SARS-CoV2
 - differences in test tube versus living beings
 - concentrations of drug, efficacy and toxicity
- Potential mechanisms of action
 - raise pH of endosomes -- > reduce viral entry
 - may interfere with fusion process and stops the virus from entering the cell
 - may block enzymes involved in the fusion between the virus and lung cells or inhibits viral replication process



New insights on the antiviral effects of chloroquine against coronavirus: what to expect for COVID-19?

Christian A. Devaux^{1,2,3,*}, Jean-Marc Rolain^{4,5}, Philippe Colson^{4,6}, Didier Raoult^{4,6}



<https://www.the-scientist.com/news-opinion/is-hype-over-chloroquine-as-a-potential-covid-19-therapy-justified--67301>



SIGN IN

NPR SHOP

DONATE NOW

<https://www.npr.org/2020/04/01/825056946/why-lupus-patients-find-hydroxychloroquine-in-short-supply>



NATIONAL

Why Lupus Patients Find Hydroxychloroquine In Short Supply

April 1, 2020 · 5:04 AM ET
Heard on [Morning Edition](#)

WILL STONE

3-Minute Listen [+ PLAYLIST](#)

A drug being investigated as a possible COVID-19 treatment is being snapped up, and lupus patients who depend on it to stay healthy are having trouble finding it.

India drops export ban on drug being tested for COVID-19 after Trump threat


BY ARSHAD R. ZARGAR

APRIL 7, 2020 / 1:41 PM / CBS NEWS





No Evidence of Rapid Antiviral Clearance or Clinical Benefit with the Combination of Hydroxychloroquine and Azithromycin in Patients with Severe COVID-19 Infection

Jean Michel Molina (Dr)^{1, 3}  , Constance Delaugerre^{2, 4}, Jerome Le Goff^{2, 4}, Breno Mela-Lima¹, Diane Ponscarne¹, Lauriane Goldwirt⁵, Nathalie de Castro¹

 **Show more**

<https://doi.org/10.1016/j.medmal.2020.03.006>

[Get rights and content](#)



Download full text in PDF

- At initiation, 10/11 subjects had fever and needed nasal O₂ therapy
 - Within 5 days, one patient died, two were transferred to the ICU.
 - Hydroxychloroquine and azithromycin discontinued after 4 days in one patient (prolongation of the QT interval)
 - Repeated nasopharyngeal swabs in 10 patients still positive for SARS-CoV2 RNA in 8/10 patients at days 5 to 6 after treatment initiation

Despite a reported antiviral activity of chloroquine against COVID-19 in vitro, we found no evidence of a strong antiviral activity or clinical benefit of the combination of hydroxychloroquine and azithromycin for the treatment of our hospitalized patients with severe COVID-19

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

October 8, 2020

Effect of Hydroxychloroquine in Hospitalized Patients with Covid-19

The RECOVERY Collaborative Group*

CONCLUSIONS

Among patients hospitalized with Covid-19, those who received hydroxychloroquine did not have a lower incidence of death at 28 days than those who received usual care.







FRIDAY
October 25, 2019
Assisted

- 9:00a Group Exercise (WC)
- 9:15a Morning News (KP)
- 10:00a Aquatics
- 10:00a Weight Training with Lisa (WC)
- 11:00a Springfield Republican Books (TH)
- 1:00p Weight a Minute (SL)
- 1:00p Follow Me Art Class (AS)
- 1:30p Longmeadow Shops
- 2:30p Boggle (2nd fl Rec Room)
- 3:00p Coffee Hour (Cafe)
- 3:00p Birthday Celebration (CH)
- 3:30p Manicures with Donnette (Kitchen)
- 3:30p Top Topics (TH)
- 6:30p Fridy Movie "80 Steps" (KP)







