

How to REALLY Avoid Con Crud: Illness Prevention for Every Furry

October 15, 2024
Biggest Little Fur Con

Presented by: **Yatchi & Juni**
covid safefurs.org/blfc2024





Welcome to Covid Safe Furs!

- Thank you for coming! We're so glad you're here! ❤️
- Feel free to grab some **masks** - hopefully you find your perfect fit! But if you're already wearing one, please **keep that one on** until after you leave.
- You can take one box of **rapid tests** (you may take more for your friends). If you need another box, ask on Thursday.
- Join our **Telegram** chat: covidsafefurs.org/telegram

Who are we?

- **Yatchi** (he/him, rhymes with “catchy”)
- Spotted hyena
- No special credentials, no con affiliation, just care a lot about Covid
- I’m a DJ (Tuesday night at the pool) and I made my own fursuit!



Who are we?

- **Juni!** (he/him or they/them)
- Telegram/Twitter/Discord: @JUNIUS_64
- Striped skunk
- Bachelors in Microbiology, Rutgers University, 2019
- 7 years of lab research experience in microbio & molecular bio. Worked on RT-qPCR COVID-19 test development in 2020
- I'm high risk for Covid and I have high risk loved ones
- I wear an N95 all day every day at work & other crowded indoor settings; P100 for travel



Art by CosmindArt on Twitter



Preliminaries

- We are **not doctors** and this is **not medical advice**.
- But we believe there is lots of information about Covid and other respiratory diseases that regular people **can** and **should** learn. We're here to share the most important things we've picked up over the past years.
- You don't need a scientific background to learn all of this stuff. You can help share it too!



What are we gonna talk about today?

- You will learn **why Covid still matters, how Covid works,** and **what you can do** to protect yourself and others.
- Most of what you learn about preventing Covid also applies to preventing **other kinds of airborne illness** (“con crud”).
- Our focus is on **practical information** that can help you every single day, including here at the con so you can have fun!
- We are **not** here to judge or dictate your behavior or plans! We just want you to be equipped to make **informed decisions.**

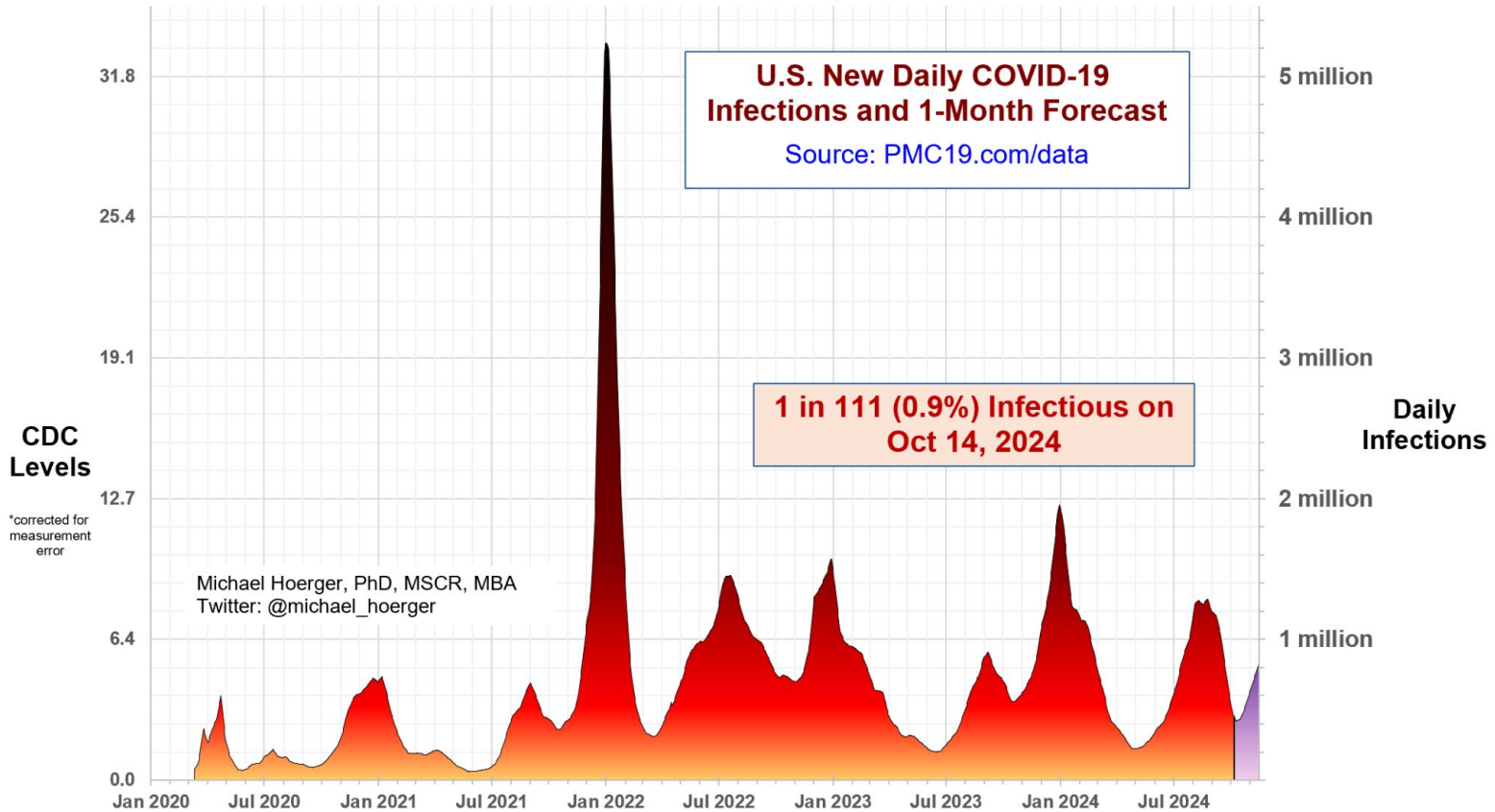
The current situation, and why you should care

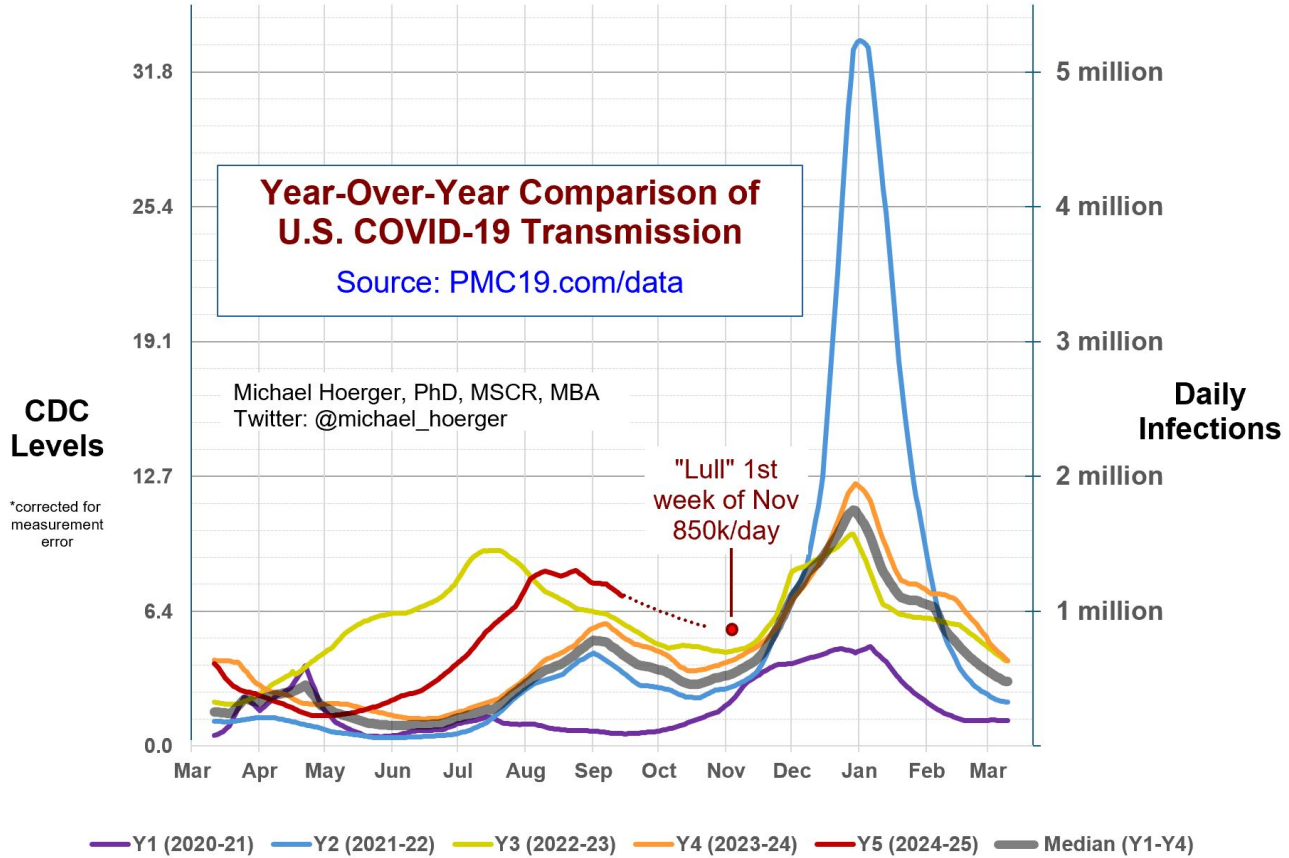




Is Covid still a thing? I look around and see...

- There are **essentially no more restrictions anywhere**, not even in hospital cancer wards or NICUs.
- Most people have gone **back to regular life**. Some have gone months or years without incident.
- Authorities have **declared the emergency over**.
- **And yet...** every week in the US, about 1,000 people still die from Covid¹ and over 10,000 are hospitalized.²
- In January 2024, average Covid concentrations in US wastewater reached the **second highest level of all time**.^{3,4}







Is Covid still serious? People keep saying...

- “Covid is mild/like the flu.”
- “You have to get it over with.”
- “You have to train your immune system.”
- “It’s endemic, that means preventing infection is pointless.”
- “Only vulnerable people need to worry.”

None of these are supported by scientific evidence.



Do we still have to worry? People keep telling me...

- “We have to learn to live with the virus.”
- “We’ve done all we can. This is just how it’s going to be.”
- “We have to move on. We have to go back to normal.”
- “You have to live your life.”

We don’t believe these are good excuses to give up.

% of U.S. adults who say they are *very/somewhat concerned* that they ...

Will get COVID-19 and require hospitalization

Might unknowingly spread COVID-19 to others



Survey of U.S. adults conducted Feb. 7-11, 2024.

Pew Research Center ⁸



The majority of Americans supported Covid mitigations (in the past)

- A Harvard Public Health survey ⁹ conducted from March - May 2024 found that, when questioned **in hindsight** about government pandemic policies:
 - 70% of Americans supported mask requirements in stores.
 - 65% supported vaccination requirements for healthcare workers.
 - 63% supported indoor dining closures.
- Would more of these Americans consider taking steps to protect themselves now, if they knew that **Covid still poses a threat** in 2024?



Is infection still harmful?

- Yes, **even if you're young and healthy.**
- Yes, **even if you're up-to-date on vaccines & boosters.**
- Yes, **even if you've had it before.**
- Yes, **even if you have a mild case.**
- The dangers of Covid are not limited to **death**, **hospitalization**, or **missed time** at work or school (though these are all still real.) Why is this?



Acute and chronic illness

- The acute phase of **HIV** infection is flu-like. Symptoms of **AIDS** can take many years to appear.
- Mild **polio** infections (ones that are neither asymptomatic nor paralytic) cause sore throat and fever. **Post-polio syndrome**, which can cause declining muscle function, can appear decades later.
- You're probably already familiar with **acute Covid**. What can happen after? What might happen decades later?



Long Covid

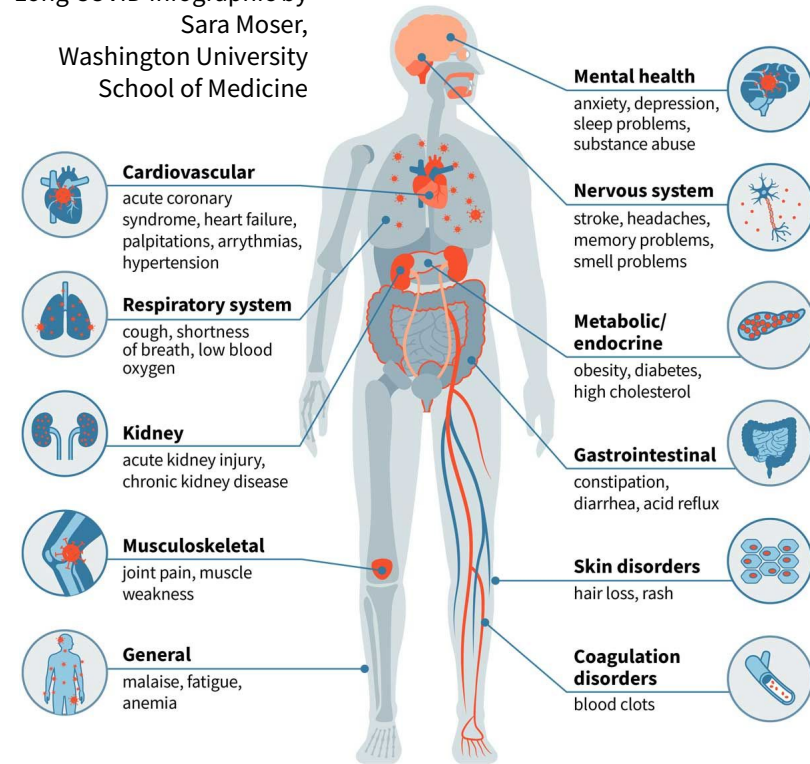
- Large-scale studies have estimated that approximately **10% of all COVID infections** result in long Covid. **Reinfections increase risk.** [29,30,31](#)
- Vaccination lowers the risk of long Covid, but does not eliminate it. [32](#)
- Mild or asymptomatic infections can cause long Covid. [33](#)
- Even the young, healthy, and vaccinated can get long Covid. [34](#) Kids can get long Covid. [35](#)
- Long Covid is likely to become one of the largest labor and disability justice issues of our era. CDC has publicly acknowledged long Covid's contribution to labor shortages. [38](#)

Long Covid

- Broad range of lingering post-viral symptoms, can affect nearly all organ systems. [10](#)
 - Overlaps with POTS [11](#) and ME-CFS [12](#)
 - Full recovery is rare for severe cases [13](#)
- **Covid also increases risk** of: heart attack [14](#), heart disease [28](#), stroke [15](#), blood clots [16](#), T2 diabetes [17](#), high cholesterol [18](#), kidney disease [19](#), autoimmune & autoinflammatory disease [20,21,22,23](#), erectile dysfunction [24,25](#), mental illness [26,27](#)
- Long Covid can involve **dysregulation of the immune system**, making it harder to fight Covid and other illnesses in the future. [36,37](#)

covidsafefurs.org/blfc2024

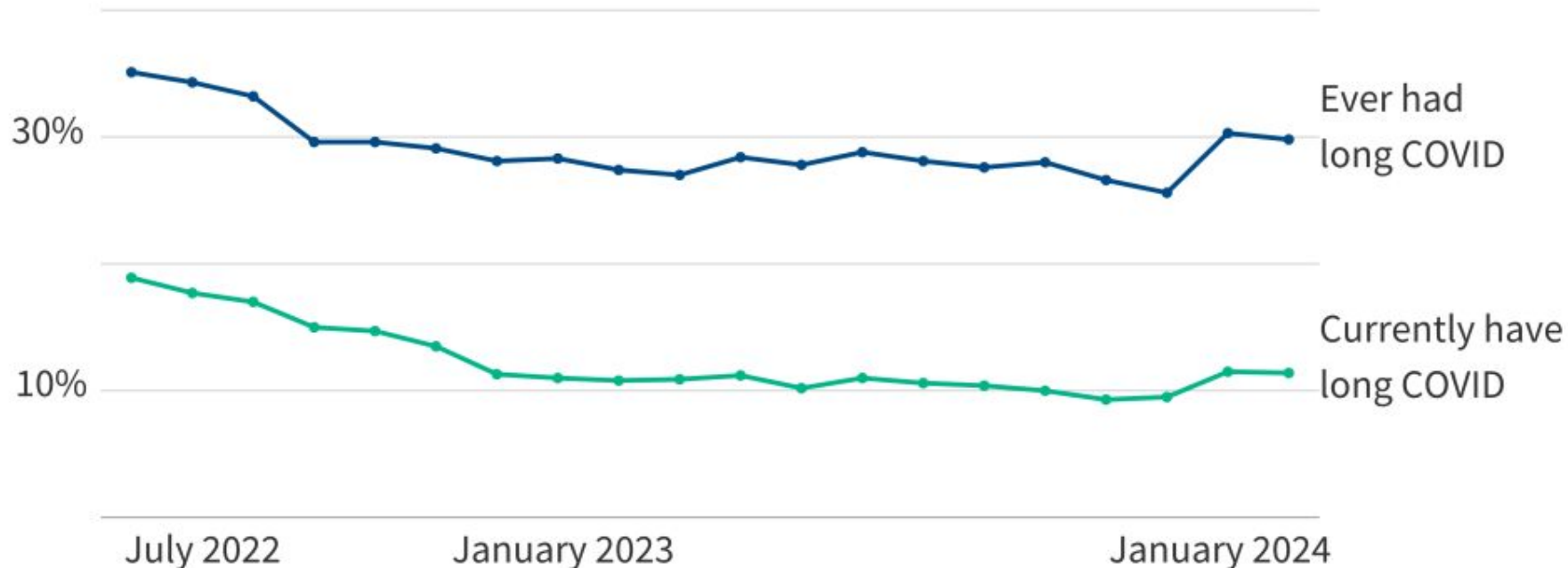
Long COVID Infographic by
Sara Moser,
Washington University
School of Medicine



Telegram: @yatchi

About 1 in 10 Adults with COVID Have Reported Having Long COVID Since Rates Fell in 2023

Percentage of adults reporting they currently or ever had long COVID, among those who have had COVID



Source: National Center for Health Statistics. Post-COVID Conditions. Data accessed March 28, 2024.



Endemicity and immunity

- “Endemic” means that a disease is **constantly or usually found** in a population, in a geographic area.³⁹
- “Endemic” does NOT mean “mild” or “harmless”.
- **Malaria** is endemic to much of the world. Precautions & medications for malaria save lives & improve quality of life, especially for pregnant women & children.⁴⁰
 - Mosquito nets covering beds increase child survival rates by 27% in malaria-impacted areas.⁴¹ That’s “living with a disease”.
- Immunity from infection **fades over time**, and is **non-sterilizing**, for COVID and malaria. COVID vaccine immunity also fades with time.^{42,43}



Protecting the vulnerable

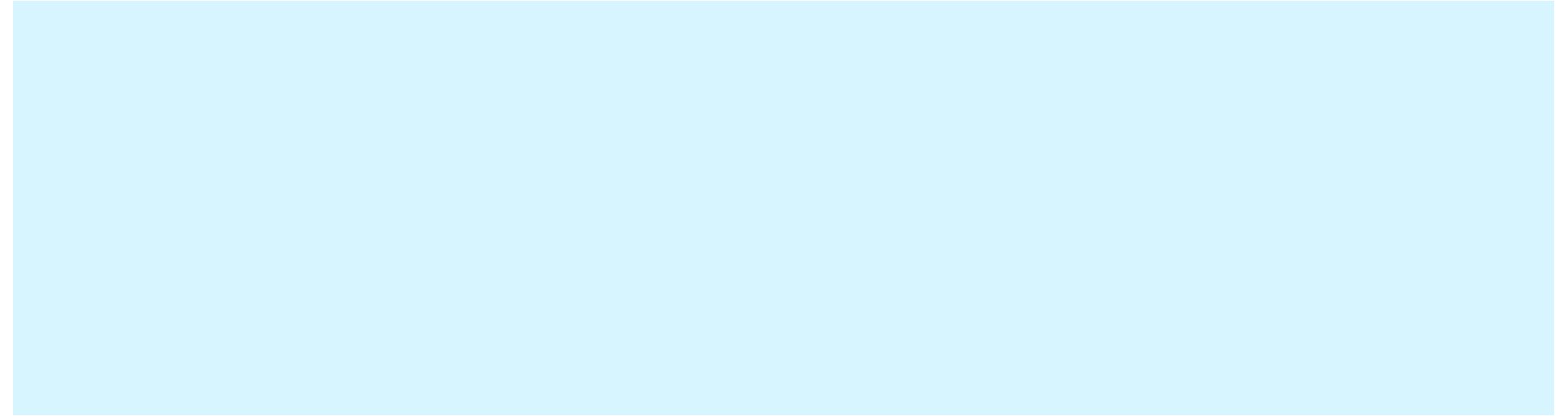
- Some people know that getting infected could **end or ruin their lives**. What does “living with the virus” mean for them?
- Ignoring the rampant spread of COVID means **excluding the vulnerable** from society, especially from **places where everyone has to go**.
- Everyone has the **right** to participate in society without endangering their health. If we have tools to protect people, using them is the right thing to do.



And don't forget...

- There are **a lot** of conditions that could qualify you as vulnerable.
- You might be **unaware** that you have such a condition.
- Even if you don't think you're vulnerable now, long Covid can **make** you vulnerable.
- **Being young, abled & healthy is temporary.** Our actions will have consequences for everyone.

Fundamentals of Covid transmission





Airborne vs. droplet transmission

- Viruses do not travel “naked” but in **particles of water and mucus**. (Masks and air filters can capture these particles.)
- Sneezing and coughing produce **large droplets** that only travel a short distance before falling to the ground.
- Breathing and speaking produce **small airborne particles** which are light enough to hang in the air and persist. [44,45](#)





True or false? Covid can only be spread when you're within six feet of someone.

FALSE!



Airborne transmission

- Airborne transmission is **the main way** COVID spreads.⁴⁶
- Droplet transmission is **less likely**. Eyes, noses, and mouths are vulnerable. Hands can also spread droplets to these places.⁴⁷
- Spread by other routes (e.g. touching surfaces) is **unlikely**.
- If you **breathe the same air**, “6 feet” is not a good rule.⁴⁸ Infection risk is mostly determined by **time, distance, and ventilation**.⁴⁹
- **Cigarette test**: if someone lit a cigarette near you, how far away could you smell it from? How quickly would it go away?

True or false? Washing and sanitizing hands is a good way to prevent Covid.

DEAD WRONG!

Hand (or paw) washing

- Covid is **airborne**. Washing and sanitizing your hands does **close to nothing!**
- To prevent COVID at gatherings, focus on **cleaning the air**, not cleaning hands.
- Please **still wash your hands!** It prevents other respiratory and GI infections. 50
- The same applies to sanitizing surfaces - do it for other reasons, not for Covid.



True or false? If you don't feel sick, you can't spread Covid.

FALSE.

You can be infected and spread Covid without symptoms, or before your symptoms start.



Presymptomatic/asymptomatic transmission

- You are infectious **before** symptoms start.⁵¹ Some people have no symptoms with COVID. They can still spread COVID.⁵²
- CDC models estimate that **over half of all COVID infections were passed on by someone without symptoms.**⁵³
- If you test positive, you should inform the people you were in contact with, up to **2 days prior.**⁵⁴
- If you feel sick, stay home, and please test for COVID!

True or false? An infection is an infection. If you come into contact with an infectious person, there are only two possible outcomes - getting infected or not.

FALSE.

Some infections are worse than others.



Infectious dose

- The **infectious dose** is the minimum number of virus particles required to cause an infection.⁵⁵ Covid has a very low infectious dose, and spreads within minutes between unmasked people.⁵⁶
- The dose-response relationship for Covid is still poorly understood, but some early case reports suggest that dose might affect infection severity.^{57,58} Your body may be able to fight off a small amount of virus better than a large amount.
- Even if you can't stop every virus particle, you can try to lower the number that make it through. **Imperfect efforts still count!**

True or false? What we know today about how harmful Covid is and how easily it spreads will remain correct in the future.

FALSE.

As Covid mutates, its properties can change.



Mutation and new variants

- **Infections create opportunities for mutation and recombination.**⁵⁹ A virus can't copy itself without a host.
- **New variants are new mutants, or new recombinants**⁶⁰. Scientists find new variants by tracking changes in the genetic code over time.
- **COVID variants “compete” for hosts.** Mutations can change competitiveness.
- Viruses don't naturally become less harmful over time. They can become more harmful. The “winners” are most effective at infecting hosts.⁶¹
- Infection prevention is the only strategy we have for slowing the evolution of COVID.



Review: Fundamentals of Covid transmission

- Covid is **airborne**. Sharing the air is enough for transmission.
- Handwashing is **ineffective** against Covid.
- You can spread Covid **without symptoms**.
- **Mutations** make the fight against Covid harder.
- All efforts to reduce infections and reduce their severity matter, **even if imperfect**.

Tools



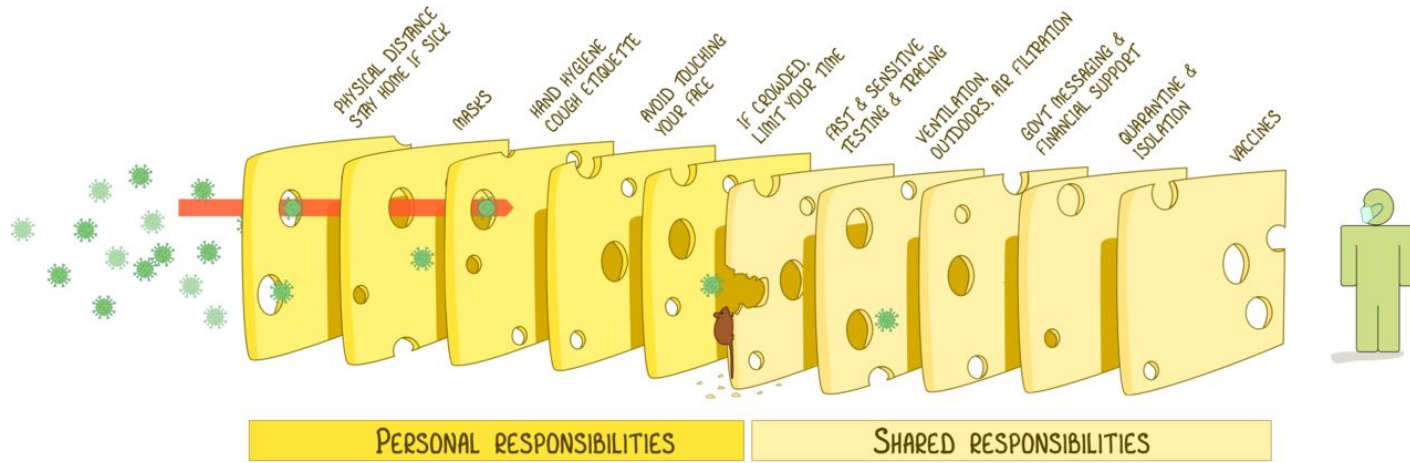


Principles

- No tool can do every single job perfectly. We need to be precise about what we're asking our tools to do.
- **Swiss cheese model:** every tool can fail, but multiple layers of protection make bad outcomes less likely.
- There is no way to guarantee 100% you will not get Covid, but we can try to evaluate the risk and how our tools can lower it.

THE SWISS CHEESE RESPIRATORY VIRUS PANDEMIC DEFENCE

RECOGNISING THAT NO SINGLE INTERVENTION IS PERFECT AT PREVENTING SPREAD



EACH INTERVENTION (LAYER) HAS IMPERFECTIONS (HOLES).
MULTIPLE LAYERS IMPROVE SUCCESS.

IAN M MACKAY
VIROLOGYDOWNUNDER.COM
WITH THANKS TO JODY LANARD, KATHERINE ARDEN & THE UNI OF GLD
BASED ON THE SWISS CHEESE MODEL OF ACCIDENT CAUSATION, BY JAMES T REASON, 1990
VERSION 3.0
UPDATE: 24OCT2020

- Tools reduce risk, but cannot eliminate it. Any tool can fail.
- **Multiple layers of protection** make bad outcomes less likely.

True or false? A mask can give you effective protection against infection.

Yes...

*if it's an **N95**, and if it fits you and forms a good seal.*



Masks

- Your mask is your **first line of defense** and your **most effective and reliable tool**. It is often the only tool you have full control over.
- You must wear a high-quality **N95** (or KN95, KF94, etc.) mask for real protection.⁶² These filter particles & trap them using static.⁶³
- **Cloth and surgical masks** are better than nothing (and much cheaper than N95s), but protection against COVID is poor.⁶⁴



How to wear an N95 mask

- Your mask must form an **airtight seal** around your nose and mouth. (Facial hair compromises the seal.) The metal strip must be **pressed and molded** to the bridge of your nose.
- **Basic fit test:** feel for **air leaks** when you inhale and exhale. Note: masks do not block most smells.
- Shop around for the mask that **fits your face** best!
- Keep out of the rain, and replace when dirty, wet, hard to breathe through, loose, or before high-risk situations.



Chris Wolfson



Masking guidelines

- “My mask is for you, your mask is for me.” Two-way masking is **significantly** more protective than one-way masking.⁶⁵
- “Feel free to wear a mask if you're worried!” puts all the burden on the vulnerable. Safety should be **everyone’s shared responsibility**.
- If you approach someone who is wearing a mask, consider putting your own on **preemptively**. They will appreciate it!
- **Don’t pressure people** to unmask. **Make everyone feel included!**



Masks are great for other things too!

- Masks work for other respiratory diseases like **colds, flu, and RSV**.
- They can help retain heat and moisture in cold or dry environments.
- If you are affected by **wildfire smoke**, wear an N95!⁶⁶
- Try wearing a mask while doing dusty housework.
- When **shaving fur**, a mask will help keep the fibers out of your lungs!



Can you fursuit with a mask?

- Difficult, but not impossible!
- **CAUTION:** a fursuit may compromise the seal of your mask.
- Practice getting it on and off!
- Body-safe mask tape can also improve the fit.
- Consider using other tools, like going outside, filtering air, and avoiding crowds.



This may look like a cat, but there's actually a hyena with an N95 under there!

Activity:
Fit testing!



Fit testing: disclaimer

Due to equipment, time, and logistical constraints, we will use a simplified procedure, which will **not** meet the requirements of OSHA Standard 1910.134(F) and will **not** certify your mask to protect you against exposure to respiratory hazards in a workplace. The results of this testing are for informational purposes only. I express or imply no guarantee that your mask will provide adequate protection against Covid or other respiratory hazards.

Fit test procedure

- Keep your mask on.
- Place the hood over your head.
- Bitter or sweet solution will be injected.
- Open your mouth slightly, extend your tongue slightly, and breathe deeply. You may also try moving your head or jaw or talking.
- If you taste bitter/sweet within 30 seconds, the test has failed.

You can read this passage aloud:



When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

True or false? If you test negative, you can be sure that you don't have Covid.

FALSE, sadly.



Test types

- **Rapid tests** are affordable & can be done at home. They work best when testing **with symptoms**. They are **less reliable** for detecting asymptomatic or presymptomatic infection.
- **PCR tests** (& other nucleic acid tests) cost more, are **more sensitive, reliable with or without symptoms.**⁶⁷ Usually performed in labs, clinics, pharmacies. Home versions exist (Metrix, Lucira, etc).
 - They can stay positive for an extended period of time after infection.



Testing usage cases

- **Screening:** Testing with no symptoms and no known exposure.
- **Post-exposure:** Testing after a known exposure to someone with Covid.
- **Exit testing:** Testing when you already know you have Covid, to determine when to leave isolation.
- When using rapid tests for any of these reasons, testing multiple times with 48 hours in between greatly improves sensitivity.^{[68](#)}



Why aren't tests perfect? What can I do about it?

- Sometimes people don't test positive until long after symptoms start.
- A negative test is a sign you haven't been infected, but it is not a **guarantee**. There is always the risk of a **false negative**.
 - User error, expired test, or low viral load in the nostrils can cause false negatives. **Swabbing throat + nose improves detection.**⁶⁹
- **False positives** are very rare- 0.26% FP vs. 12.4% FN for Binax tests in one study. 5% of people who tested positive mistook their result for negative, until it was rechecked by a clinician.⁷⁰



What if I test positive?

- **Isolate** immediately. If you must be around others, wear a well-fitting N95 mask, open windows, and run air purifiers.
- Recall where you were **2 days before your first positive test OR first symptom** (whichever is earlier) and **inform your contacts**.
- Consider getting a **PCR test** for documentation.
- Consider seeking **Paxlovid** from a doctor or clinic. Reduces infection severity & risk of death, hospitalization, and long Covid. [71](#)
- Get lots and lots of **rest!**

True or false? If you're vaccinated, you don't have to worry about Covid anymore.

FALSE, sadly.



Vaccines - a last line of defense

- **Vaccination is not enough to prevent COVID.** It works best as a last line of defense, in combination with tools to decrease infectious dose.
- COVID vaccines greatly reduce the risk of **death & severe acute illness.**⁷²
- Fully vaccinated people can still **be infected** and **infect others.**⁷³
- Immunity from vaccination & infection **wanes** over time, so it's important to **stay up-to-date** with boosters!⁷⁴
- **mRNA vaccines are safe & effective.** A traditional protein vaccine (Novavax) is also available in the US, equally safe & effective.⁷⁵

True or false? You can't get infected outdoors.

You can, but it's a heck of a lot harder!



What can I do about air quality?

- **Go outside** - it's dramatically safer!⁷⁶
- Not all outdoor conditions are the same. Examine your surroundings, use the cigarette test, and be careful around crowds.
- If you're inside, **ventilate** by opening windows and using fans.
- Air purifiers can **filter** Covid & other germs out of the air.
 - When purifiers with HEPA filters were tested in grade school classrooms, sick days decreased by over 20%!⁷⁷



CO₂ monitoring

- Since people exhale CO₂, you can use it as a **proxy measure of ventilation**.
- Outside CO₂: 420 ppm. Generally **>1000 ppm** is considered bad.⁷⁸
- CO₂ itself isn't healthy either!
- Watch out if CO₂ sources are present or if air purifiers are used.



Aranet4, a common CO₂ monitor. A lot cheaper now (~\$160) than it used to be.



Commercial air purifiers

- High-filtration **HEPA** filters are designed to clean the air very thoroughly in **one pass**.
- Full effectiveness is at **full fan speed**, which is usually **noisy!**
- If people turn it off because it's too loud, it's useless!
- Must buy proprietary filters; difficult to repair.





Corsi-Rosenthal boxes

- By using a bigger, more permeable filter, but pushing more air through it, we can clean the air faster!
- A **Corsi-Rosenthal box** is made from a box fan, 20" furnace filters (MERV-13), duct tape, and cardboard - cheap parts available at the hardware store.
- Box fans can still be loud.





PC fan Corsi-Rosenthal boxes

- PC fans are designed to push lots of air **quietly** and using **little power**. (And some of them come with RGB lights.)
- You can 3D print or laser-cut your own cases! You can also buy DIY kits or assembled units.
- Efficient, quiet, customizable, and repairable.





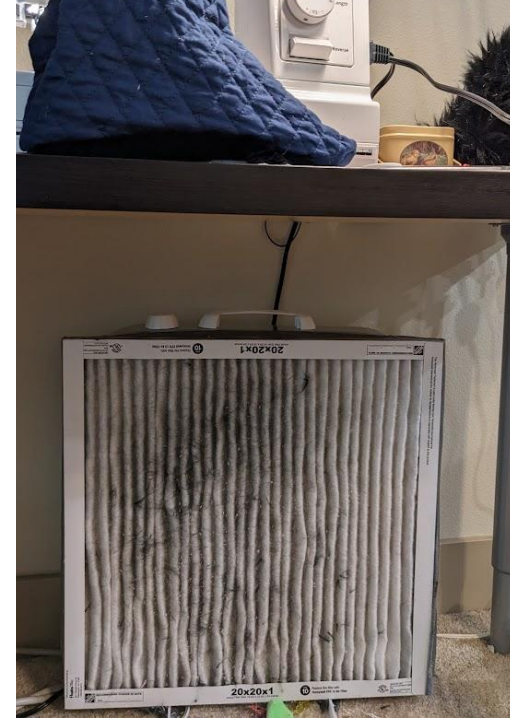
How to choose an air purifier

- Compare air purifiers based on **price** (including filter replacement), **CADR** (clean air delivery rate) relative to **room size**, and **noise**.
- **Commercial air purifiers** look nice, but are expensive and may not be quiet at full speed.
- **Traditional CR boxes** are cheap and quick to build, but noisy.
- **PC fan CR boxes** cost a little more and take more work to assemble, but are efficient and quiet.



Air purifiers are great for other things too!

- Air purifiers remove dust, pollen, pet dander, mold, car exhaust, and smoke, all of which impact your health and comfort.
- You might not need to vacuum as often!
- Help control fur when making fursuits!



True or false? If you look up Covid cases, that's how many people in your area have Covid right now.

FALSE. Only people who test positive on laboratory tests are counted.



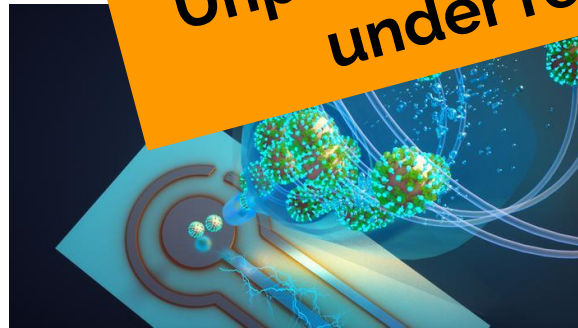
Community monitoring

- Official case numbers do not paint the whole picture, especially when testing infrastructure has been reduced.
- Deaths and hospitalizations are **lagging indicators**.⁷⁹
- **Wastewater monitoring** is a reliable **leading indicator**. It catches surges before they show up in case numbers!⁸⁰
- See [BioBot](#), [CDC NWSS](#), [WasteWaterScan](#), [Verily](#). Use [CovidPoops19](#) to find your local monitoring dashboard.

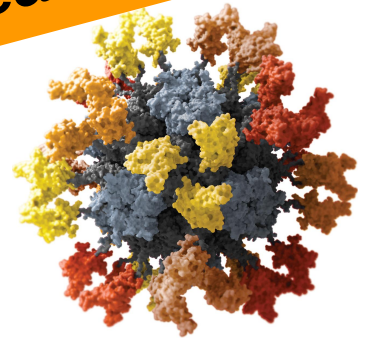


Potential future tools

- Nasal sprays
- Far-UV sterilization
- Airborne detection
- Sterilizing vaccines



**Unproven/speculative/
under research**



Review: Tools

- Masks
- Tests
- Symptom monitoring
- Vaccines
- Outdoor gatherings
- Ventilation
- Air purifiers
- CO₂ monitoring
- Wastewater monitoring

Putting it all together



True or false? Caring about Covid means wearing a mask 24/7 and never leaving the house.

FALSE!

This is not all-or-nothing. You don't have to be perfect to make a difference.



Risk management

- Risk management is about **managing unknowns**. Your risk in a given situation is always somewhere between 0% and 100%. In the face of uncertainty, you must decide what your **risk tolerance** is.
- You can also vary your own risk tolerance in **different situations**, varying your level of caution accordingly. Ask when it's worth it to be more careful or less careful.



Risk evaluation

- **What are the chances that an infectious person is near me?**
Wastewater monitoring, crowdedness, tests, symptoms
- **If an infectious person is near me, what are the chances that they will infect me?**
Indoors/outdoors, ventilation, air filtration, masks
- **What choices can I make to change these odds?**



Good places to consider masking

- Places that **aren't fun** (e.g. grocery store, work), where people might not have a choice about going to
- Places that are **high-risk**, i.e. crowded or poorly-ventilated (e.g. public transportation, airports and airplanes)
- Places where there are **many vulnerable people** (e.g. hospitals, nursing homes)



Good times to consider masking

- The days **before** you go do something fun - so you can feel more confident that you're not bringing Covid in with you
- The days **after** you did something fun/risky - so that you avoid infecting people who didn't take that risk
- The weeks before and after getting a **vaccine**
- Whenever **community levels** are high



Good situations to consider masking

- In **crowded areas** (including when outdoors)
- When **ventilation** seems poor
- When **CO₂ levels** are high
- When you have any kind of **symptoms**, no matter how slight, even if you're "pretty sure" they're just allergies
- When you see **others** wearing masks - they will appreciate you joining them!



When you really can't wear a mask

- **Eating out:** instead of eating inside a restaurant, try outdoor dining, picnics, or delivery/takeout.
- **Room parties:** consider running air filters, asking people to test, and asking people to be up-to-date on vaccines. Make sure that people feel comfortable and included if they choose to wear masks.
- **You don't have to be perfect to make a difference.** Masking some of the time is better than never!



How to talk about it: be honest and respectful

- Instead of saying “**Don't worry about it, just relax!**”, ask what you can do to help others feel safe and comfortable.
- Instead of “**It's not Covid, I promise!**”, give specifics about your symptoms and past behavior, and offer to take precautions.
- Instead of “**It's not a big deal, you'll be fine!**”, acknowledge that others’ circumstances may differ from yours, and respect their feelings and the decisions they make about their own safety.



Conclusion: inclusivity means Covid safety!

- Furry should be an **inclusive** place.
- Many furs are vulnerable. Others may just be concerned. But we **all** deserve to have our health and safety prioritized.
- Covid can be difficult to talk about, but communicating **honestly and respectfully** is the best policy.
- **Let's protect each other so we can all be here together!**



What can I do to help?

- Join our **Telegram** group at covidsafefurs.org/telegram!
- **Spread the word** and reach out to those in need.
- Implement **safety measures** at your furmeets and cons: we have a special [guide](#) for organizers.
- Send us **feedback/testimonials**!
- **Host** your own version of this panel - we'll help!