

A Handy Scientific Guide To Surviving COVID-19 Together

Why's everyone sick all the time?
Well, it's not "just a cold", and it's definitely not "mild"...
It's SARS-CoV-2, and it can change your life forever.

Whether you've been too burned out to keep up
with COVID-19 news, or if you're still masking and
sick of explaining why, this zine is for you!

WHY WE MASK cuts through 5 years of COVID chaos with
simple, non-judgemental language and fun science illustrations
featuring masked-up queer & trans disabled people.
Plus resources for protecting you and your loved ones!



WHY WE MASK: IT'S NOT 'JUST A COLD'



This comic would not exist without my partner Kimball Anderson's digital editing, emotional support and COVID know-how. Thank you!

I'm grateful to everyone who gave me feedback, with an extra big thank you to Dupe & Caitlin for copy edits.

Thank you to everyone making SARS-CoV-2 resources accessible online, & to everyone fighting to keep each other alive out there.

Laurel Lynn Leake



...is a white, queer, and disabled artist who believes in the subversive power of empathy. They graduated from the Center for Cartoon Studies in 2013 with their MFA, and live in "Providence, RI." She's taking care of herself even though it's hard!

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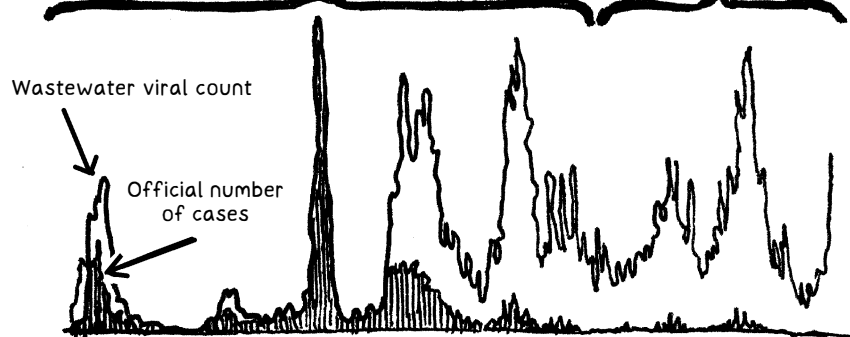
THANK YOU FOR READING

If you stopped masking, let this be the excuse to start again!
And if you never stopped - thank you, thank you, thank you.

Updating COVID Trackers

"DURING THE PANDEMIC"

"POST-PANDEMIC"



Source: Santa Clara County Public Health Dept, inspired by Lee Altenberg, PhD.

Wastewater trackers test sewage at processing plants for viral debris (including HSN1, influenza, etc). They're far more accurate than government or corporate numbers. "Official" trackers for COVID-19 cases, hospitalizations, and deaths are almost always SIGNIFICANTLY UNDERCOUNTED.

Wastewater trackers still SKEW LOW, and run at a 2 week delay. Also, since they depend on gov access, they can get forced into removing their public datas (RIP Biobot Tracker :C).

TURTLE ISLAND

WastewaterScan Dashboard
data.wastewaterscan.org/

Canadian Tracker
COVID19Tracker.ca

"Weather Reports"
on the PeoplesCDC.org/

Iowa COVID Tracker
iowacovid19tracker.org
(Covers the whole USA)

Pandemic Mitigation Collaborative - PMC19.com/
Weekly COVID-19 forecasts, plus research on respirators & air quality

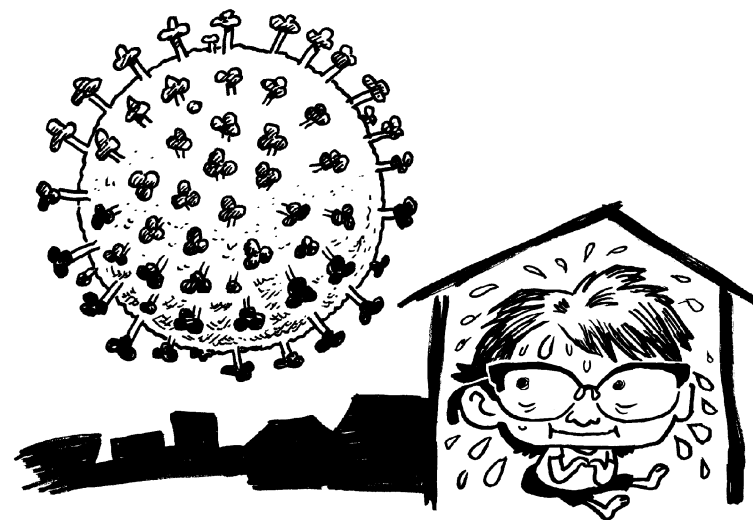
GLOBAL

KFF Global Tracker
<https://t.co/7fmeb93fYI>

Worldometer
worldometers.info/coronavirus/

WHY WE MASK: IT'S NOT "JUST A COLD"

A Handy Scientific Guide To Surviving COVID-19 Together



featuring ME! ↗

Guides & Tools

For currently sick &/or chronically ill people:
END VIRAL EUGENICS Database - tinyurl.com/currentlysick
Find COVID-19 Medications (USA) - treatments.hhs.gov/
Drug Interaction Checker - Covid19-DrugInteractions.org/checker
COVID Safe Providers - covidSAFEproviders.com/
Treatment Research - C19early.org/
Long COVID Physio - LongCovid.physio/pacing/

Mask buying/fitting resources:
Mask Database - tinyurl.com/maskdb
Respirator Repository - tinyurl.com/PDXMaskLibrary
Buy Lower Cost Masks (USA) - linktr.ee/buymasks
reddit.com/r/Masks4All/ - (caution: advice very white cis man centric)



Other resources:
CleanAirCrew.org/ - Recommendations & DIY guides for air filtration
What's Up With COVID & How To Protect Yourself, 2024 Ed
newlevant.com/COVIDzine - Hazel Newlevant's excellent free printable
COVID minicomic! Includes advanced safety tips (ex: nasal sprays,
CPC mouthwash, air circulation/filtration). (English/Español)

We Keep Each Other Safe - ForwardTogether.org/tools/we-keep-each-other-safe/
A Guide By & For Black, Indigenous, Latinx, POC & LGBTQ
Communities. From 2020 but still very relevant (English/Español)

How To Get On - howtogeton.wordpress.com/
Lily Silver's self-advocacy guide for homebound/bedbound people,
ME/CFS focused but helpful for all disabilities. Covers financial aid,
affordable housing, medical care, mobility devices, etc. (USA)

Mutual aid databases ("global", always updating):
COVID Action Map - t.co/DvrGjRPzhm
MASK Bloc Org - <https://maskbloc.org/>
COVID Meetups - COVIDMeetups.com

Online communities/support groups/events:
COVID Isn't Over - <https://linktr.ee/covidisntover>
Long COVID Justice - <https://longcovidjustice.org/Support>
Disability Visibility Project - DisabilityVisibilityProject.com

DISCLAIMER:

I am not a doctor or scientist, and this
zine is not intended as a replacement for
medical care. The illustrations aren't 100%
to scale because I've cartoonified things
for clarity. However, I based my work on
free peer-reviewed scientific papers, cited
in the Endnotes (pg 22) and online here:

laurellynnleake.com/whywemask



- 38 Cai M, Xie Y, Topol EJ, Al-Aly Z. Three-year outcomes of post-acute sequelae of COVID-19. *Nature Medicine*. Pub online May 30, 2024:1-10.
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PAGE 15: LONG COVID SYMPTOMS THROUGH THE BODY

- 43 Jiao T, Huang Y, Sun H, Yang L. Research progress of post-acute sequelae after SARS-CoV-2 infection. *Cell Death & Disease*. 2024;15(4):1-16.
- 44 Nicolai L, Kaiser R, Stark K. Thromboinflammation in long COVID - the elusive key to post-infection sequelae? *Journal of Thrombosis & Haemostasis*. Pub online May 1, 2023.
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PAGE 16: THE DAMAGE GETS WORSE W/ EVERY INFECTION

- 49 Bowe B, Xie Y, Al-Aly Z. Acute & postacute sequelae associated w/ SARS-CoV-2 reinfection. *Nature Medicine*. 2022;28:1-8.
- 50 Boufidou F, Medić S, Lampropoulou V, et al. SARS-CoV-2 Reinfections & Long COVID in the Post-Omicron Phase of the Pandemic. *Intl Jnl of Molecular Sciences*. 2023;24(16):12962.
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PAGE 17: IMMUNE DYSREGULATION

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PAGE 18: STOPPING THE SPREAD (SWISS CHEESE MODEL)

- 59 Mackay AM, PhD. The Swiss cheese infographic that went viral. *Virology Down Under*. Pub Dec 26, 2020.

THE BASICS:

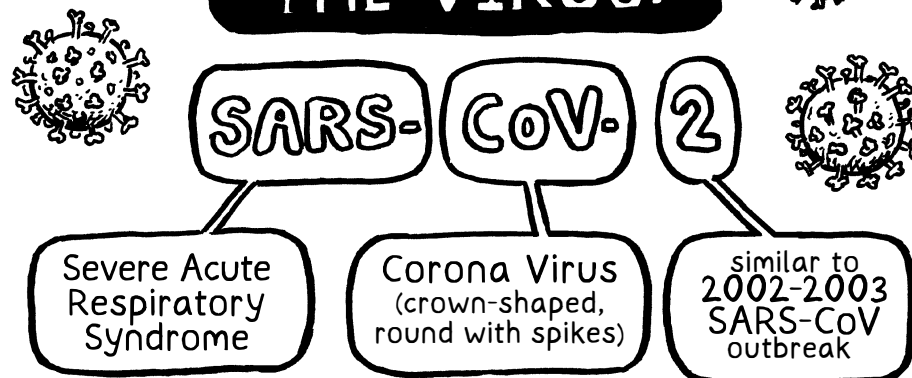
COVID-19 is a viral illness caused by SARS-CoV-2, and it spreads primarily through the air.¹

A single infection (even a "mild" one) can damage nearly every organ system in your body. Repeat infections risk further harm to your immune system, heart, brain, & more, and can cause years of debilitating new disabilities.²

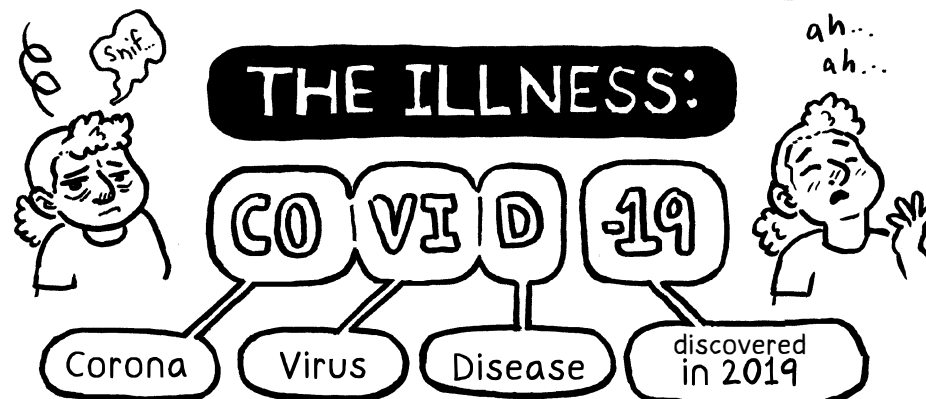
At least 75% of all adults are "high risk" for severe COVID-19 infections, which can leave you hospitalized, disabled for life, or dead.³

Also, since nearly half of COVID-19 cases are asymptomatic, you could be infected and contagious without ever realizing you're sick.⁴

THE VIRUS:

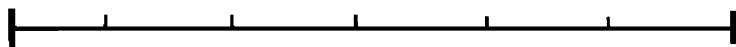


THE ILLNESS:



COVID-19 is an AIRBORNE ILLNESS.⁵

Kachoo!



It spreads when infected people exhale, cough, or sneeze plumes of tiny **RESPIRATORY PARTICLES**. You can shed hundreds of viruses in a single minute, just by breathing.⁶

And sneezing can send viral gunk flying up to **6m (20ft)**! Once they're in the air, the tiniest RPs can linger in poorly ventilated spaces for **HOURS**...invisible to the naked eye.^{7,8}

PAGE 6: HOW COVID SPREADS (1: INHALATION)

- 18 Malin Alsved, Nygren D, Thuresson S, Fraenkel CJ, Patrik Medstrand, Jakob Löndahl. Size distribution of exhaled aerosol particles containing SARS-CoV-2 RNA. *Infectious Diseases*. 2022;55(2):158-163.
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PAGE 7: HOW COVID SPREADS (2: DIRECT 3: INDIRECT)

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PAGE 8: WHEN YOU BREATHE IN...(CILIA & BRONCHIOLES)

- 23 Kuek LE, Lee RJ. First contact: the role of respiratory cilia in host-pathogen interactions in the airways. *American Journal of Physiology-Lung Cellular and Molecular Physiology*. 2020;319(4):L603-L619.

PAGE 9: VACCINES

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PAGE 11: HEALTHY ALVEOLI

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- 31 O'Sullivan JM, Gonagle DM, Ward SE, Preston RJS, O'Donnell JS. Endothelial cells orchestrate COVID-19 coagulopathy. *The Lancet Haematology*. 2020;7(8):e553-e555.

PAGE 13: VASCULAR DAMAGE

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PAGE 14: LASTING EFFECTS (AKA LONG COVID)

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PAGE 1: THE BASICS

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PAGE 2: COVID-19 IS AN AIRBORNE ILLNESS

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PAGE 3: WHAT'S INSIDE A RESPIRATORY PARTICLE?

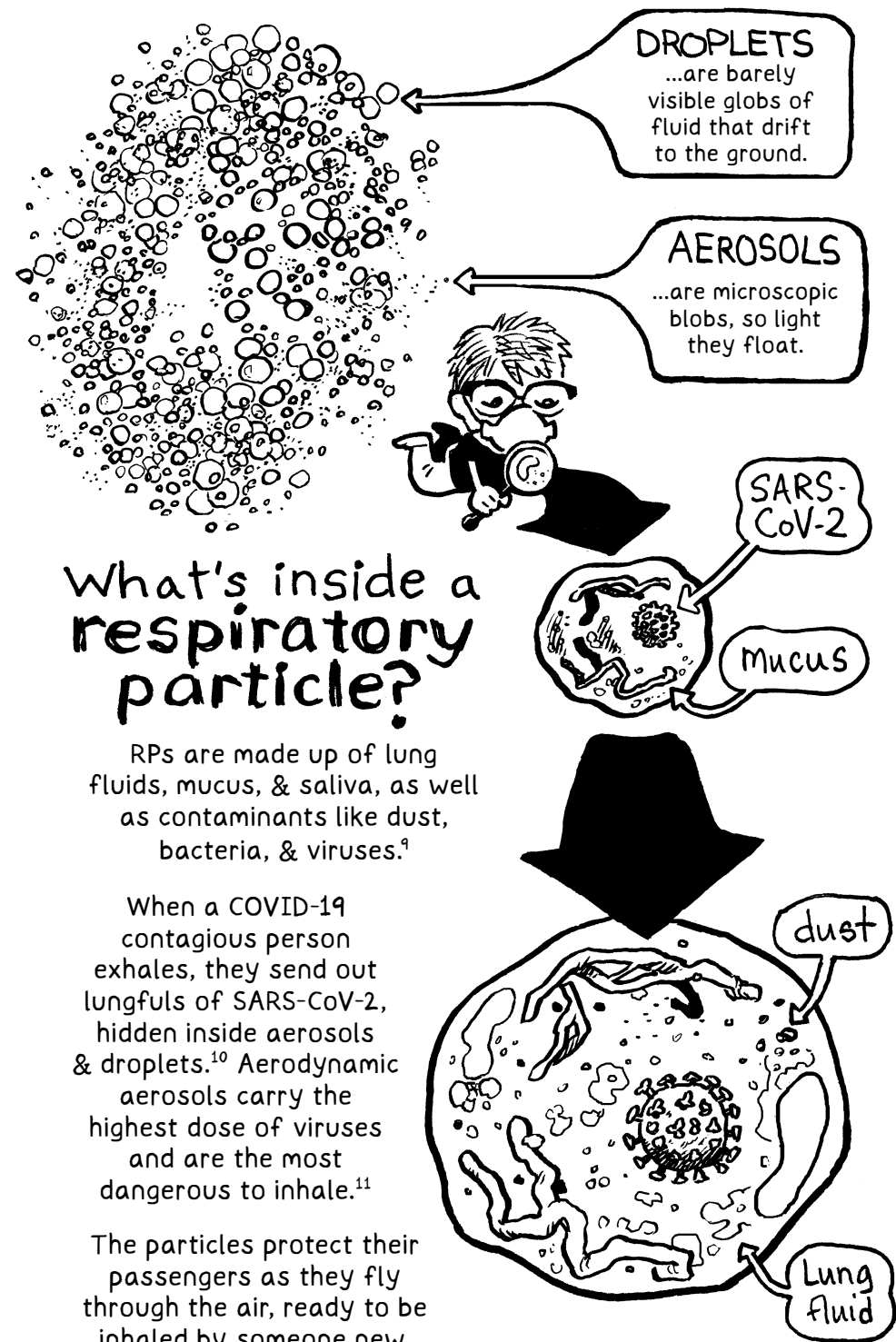
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PAGE 4: SYMPTOMS

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PAGE 5: SEVERE SYMPTOMS

- 16 Howard J. People with darker skin are 32% more likely to have pulse oximeter readings overestimate oxygen levels, report says. CNN. Pub March 20, 2024. Pusey-Reid E, Quinn L, Samost ME, Reidy PA. Skin Assessment in Patients with Dark Skin Tone. *AJN, American Journal of Nursing*. 2023;123(3):36-43.



SYMPTOMS

COVID-19's ACUTE PHASE symptoms start about 3-6 days after infection, & last about 12-14 days.¹² Symptoms & periods of contagiousness can differ by variant, but include...¹³



Then again, you could be one of the 32-50% of people with COVID-19 who are...^{14, 15}

CONTAGIOUS
WITH NO
SYMPTOMS



RESOURCES

ENDNOTES with all works cited,
plus useful GUIDES & TOOLS,
For a web version with working URLs,
use the link or scan the QR code:

laurellynnleake.com/whywemask

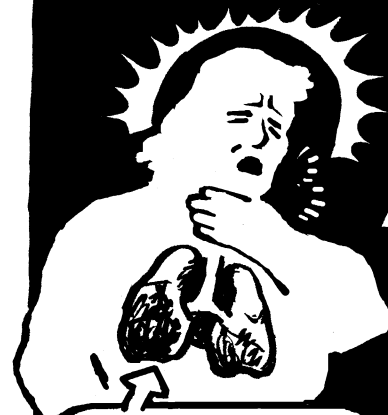


So why do we mask?
Because we refuse to accept
a world where any one
of us is disposable.

We fight for a future
where we all survive -
together.



! SEVERE SYMPTOMS !



STRAINED AND/OR
RAPID BREATHING,
WHEEZING

CHEST PAIN
AND/OR PRESSURE

PNEUMONIA
(fluid in the lungs)

HYPOXEMIA

COVID-19 can impair O_2
flow to your blood, even w/o
obvious breathing issues.

Measure BLOOD OXYGEN LEVELS
at home with a PULSE OXIMETER:



LOW BLOOD OXYGEN symptoms
can cause organ failure and
even death w/o treatment.

91-94% = concerning
90% and under = emergency!!

WARNING:

Oximeters may give FALSELY HIGH READINGS
to people with dark skin &/or painted nails.¹⁶

Hypoxemia symptoms include:

CONFUSION OR
DISORIENTATION

INABILITY TO
WAKE UP OR STAY AWAKE

CYANOSIS

PALE, GREY, or BLUE-TINTED
TONGUE, LIPS, &/or NAILBEDS,
depending on skintone.¹⁷



RACING HEART

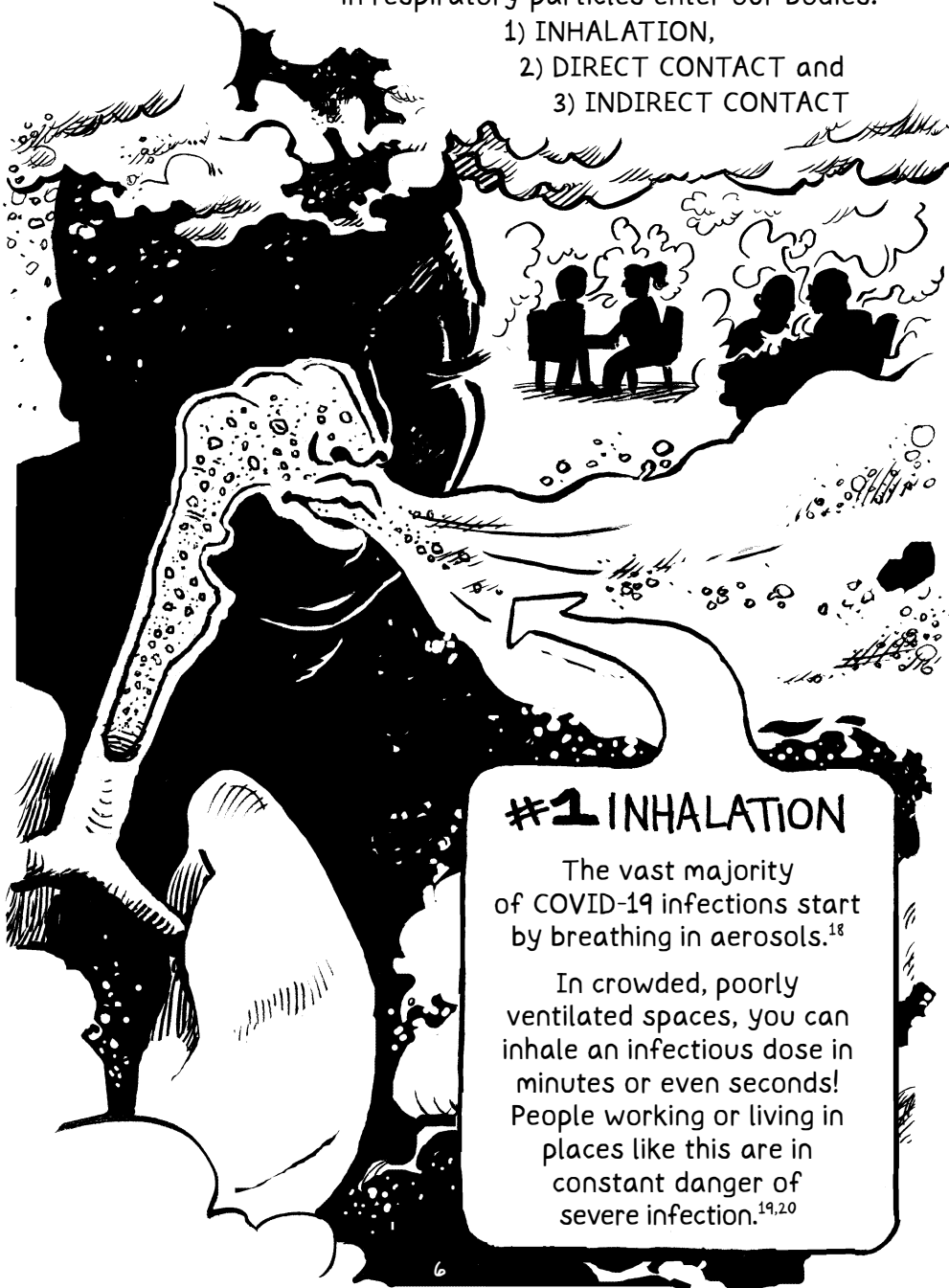


ALL THESE REQUIRE EMERGENCY HOSPITALIZATION!

HOW COVID SPREADS

There are 3 main ways that viruses hiding in respiratory particles enter our bodies:

- 1) INHALATION,
- 2) DIRECT CONTACT and
- 3) INDIRECT CONTACT



#1 INHALATION

The vast majority of COVID-19 infections start by breathing in aerosols.¹⁸

In crowded, poorly ventilated spaces, you can inhale an infectious dose in minutes or even seconds! People working or living in places like this are in constant danger of severe infection.^{19,20}



COMMUNITY CARE

To survive this pandemic, we must follow the lead of Disability Justice and survive TOGETHER.

That means all of us - the infants and toddlers too young to mask, the disabled and the neurodiverse, Black and Indigenous people, all people of color, queer and trans people, sex workers, pregnant people, immunocompromised people, the undocumented, the unhoused, the incarcerated and institutionalized...

People forced into constant exposure at home, work, and school until they've lost count of infections, people forced into indefinite isolation because one infection could kill them or permanently change their life for the worse, people who get fired when they run out of sick days and evicted when they run out of money...

Everyone abused by our medical industry and abandoned by our governments.

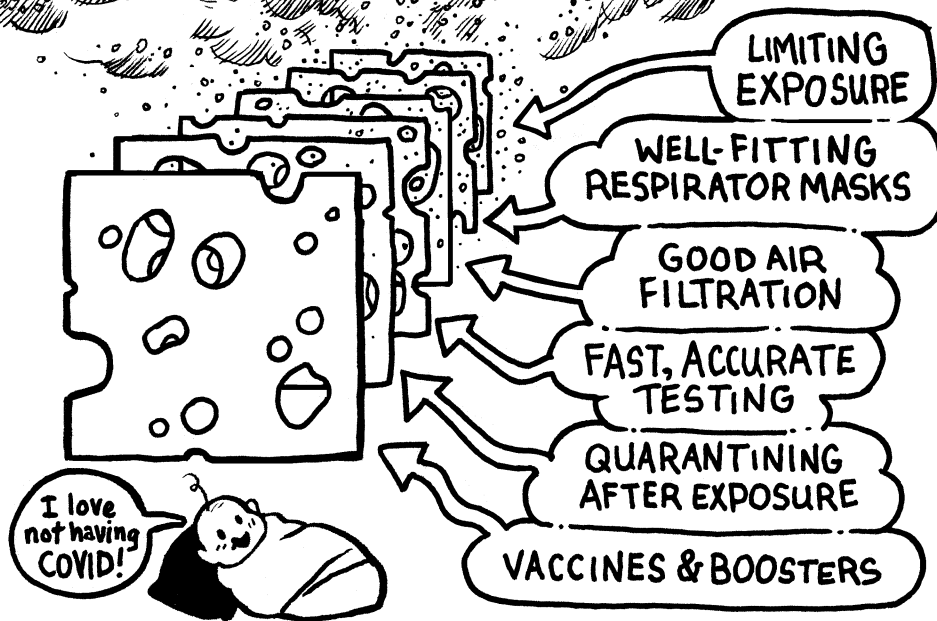
All of us.

STOPPING THE SPREAD

So obviously we want to stop getting sick, but how? We can't end pandemics through individual action alone.

So we work together! And we combine many strategies, both individual and systemic.

The SWISS CHEESE MODEL OF INFECTION PREVENTION is an easy, cheesy way to visualize this tactic.⁵⁹



Just like how each Swiss cheese slice has holes, no single protection method against SARS-CoV-2 works 100% perfectly. So we stack together methods until we've covered up all the holes, and maximized protection!

#2 DIRECT CONTACT

Viral aerosols/droplets can also collide directly with your MUCOUS MEMBRANES.²¹ Those are the layers of soft, wet cells lining your nose, mouth, eyes, respiratory tract, etc.

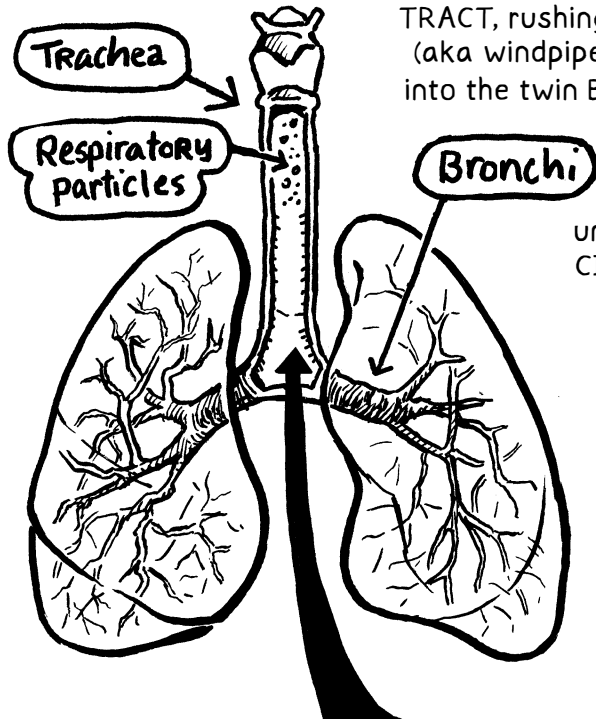


#3 INDIRECT CONTACT

Much less likely to infect, but still possible: You get respiratory particles on your hands, & then transfer them to your mouth/nose/eyes.²²

When you breathe in...

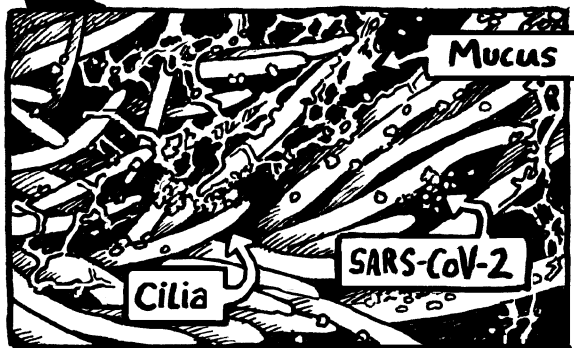
...air enters your RESPIRATORY TRACT, rushing down your TRACHEA (aka windpipe) before splitting off into the twin BRONCHI of the lungs.



Most of the tract is lined with undulating "hairs" called CILIA, which are coated with a slimy layer of protective MUCUS.

They work together to capture pathogens (bacteria, viruses, mold) and irritating particles (pollen, dust) in clumps of gunk you then eject by coughing &/or sneezing.

But even if these defenses manage to snag the particles, they haven't neutralized the real threat hidden inside.



The droplets and aerosols start to dissolve in the warm, wet environment of the respiratory tract...and the SARS-CoV-2 viruses break free! They kick off the initial COVID-19 infection by attacking any nearby cells.²³



Immune Dysregulation

COVID-19 infections can leave your immune system depleted and unable to fight off much of anything.⁵⁵

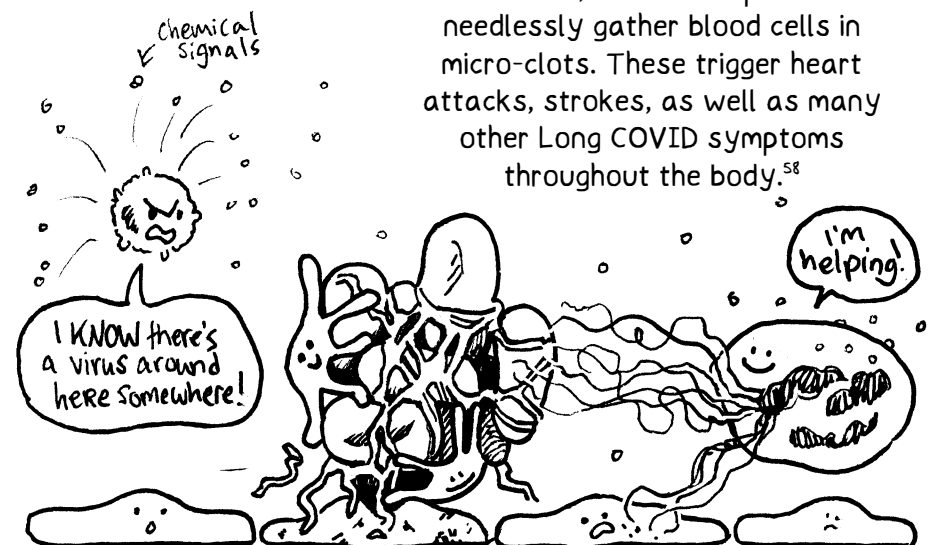
Exhausted T-cells can miss invading pathogens like bacteria or other viruses.

They might even "reset" and forget how to handle infections they've fought off before.⁵⁶



COVID-19 infections can also leave you with a fired up immune system in constant high alert (aka AUTOIMMUNITY). Your T-cells and neutrophils may attack healthy cells causing systemic inflammation, especially when triggered by old virus debris.⁵⁷

Meanwhile, overactive platelets needlessly gather blood cells in micro-clots. These trigger heart attacks, strokes, as well as many other Long COVID symptoms throughout the body.⁵⁸

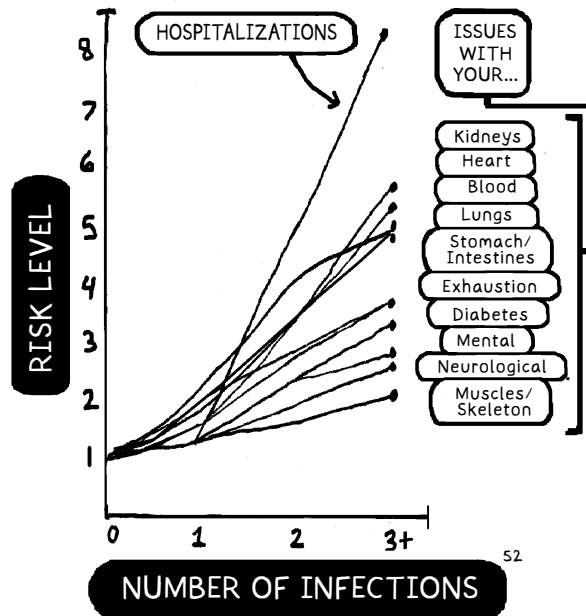


THE DAMAGE GETS WORSE WITH EVERY NEW INFECTION

Most people don't know that SARS-CoV-2 damage is CUMULATIVE.

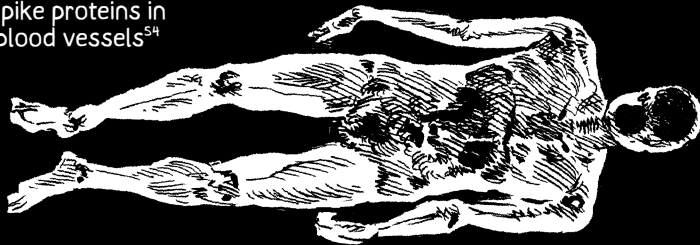
So every new infection raises the odds you'll be hit by horrible new health complications that may become permanent.^{49,50}

Even infections that feel like "just a cold" or "allergies" can cause trouble down the line.⁵¹

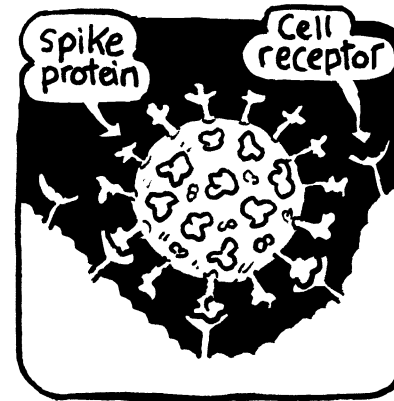


An easy or entirely asymptomatic initial infection may mean your immune system barely even activated to fight off the virus. Long after you recover from the "mild" symptoms, inactive viral debris can remain throughout your body.⁵³

FDG-PET scan showing spike proteins in joints & blood vessels⁵⁴



These are VIRAL RESERVOIRS: Leftover viruses & spike proteins that collect in your muscles, bones, & organs, ready to reinfect you whenever your immune system gets stressed.



SARS-CoV-2 uses SPIKE PROTEINS like lockpicks to trick cells into "unlocking" their outer membranes.

Once inside, the viruses re-program the cells to pump out more viruses. They swell until they burst, spreading viruses everywhere.²⁴



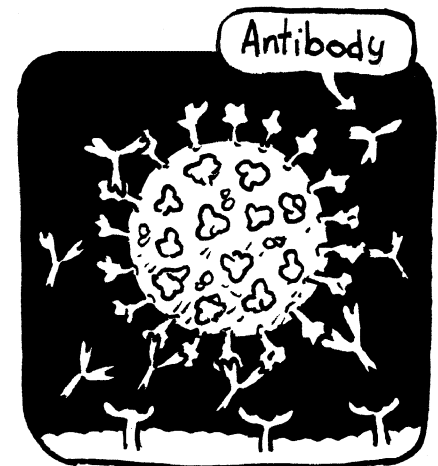
VACCINES



Most COVID-19 vaccines teach our immune systems to create defensive ANTIBODIES that lock onto the spikes, rendering them useless.

Antibodies don't stop every single virus, but they make a difference! Vaccinated people have much better chances of surviving initial infections.²⁵

But now we're dealing with 5 years worth of dangerously mutated VIRAL VARIANTS like Delta, Omicron, Pirola, & FLiRT! Our outdated antibodies can't lock onto all the newfangled spike proteins anymore...²⁶



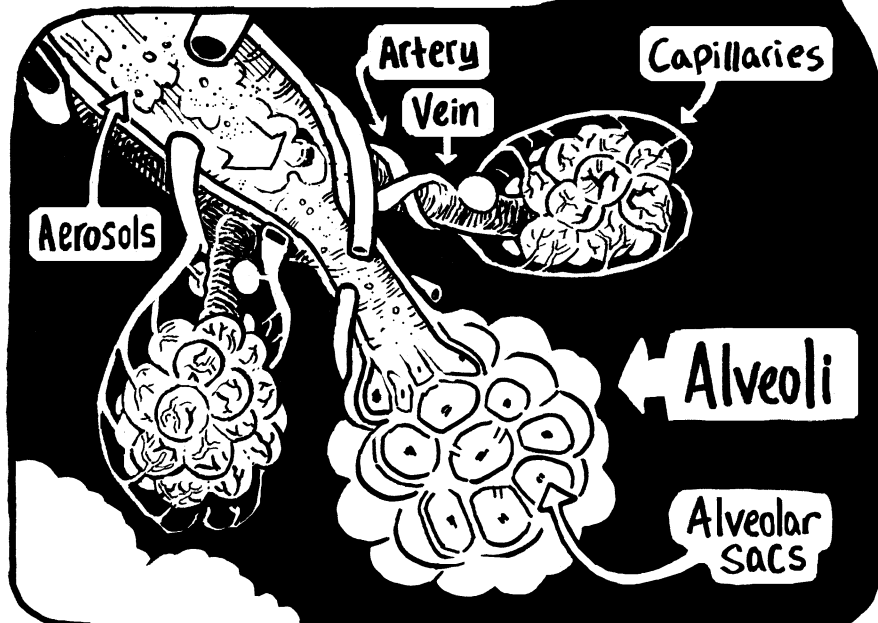
...So infections keep spreading, and scientist race to keep up with booster vaccines that can handle the latest variants.



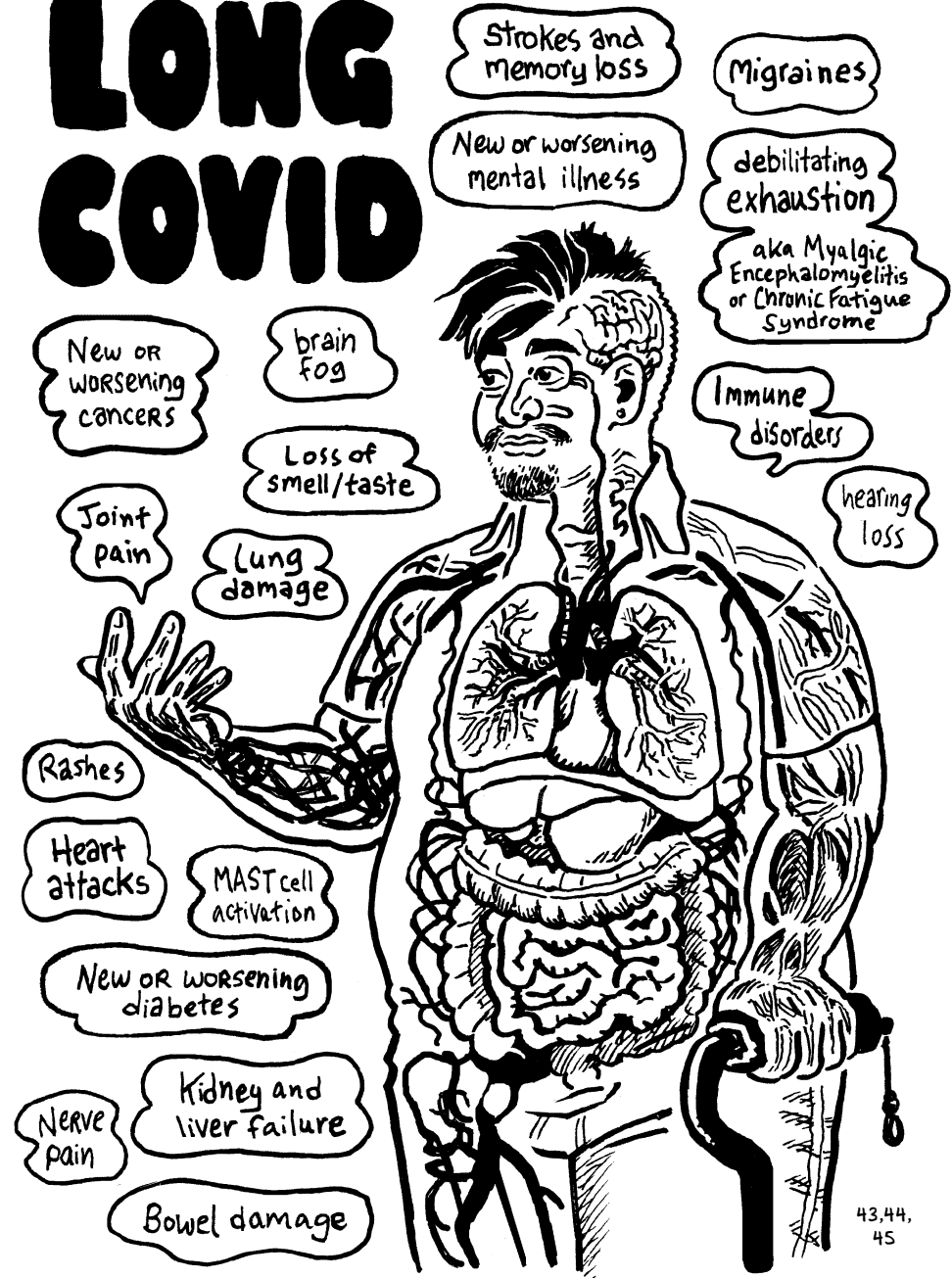
BRONCHIOLES

Once air reaches the lungs, it disperses through the BRONCHIAL TREE, where airways split into smaller and smaller BRONCHIOLES.

Each bronchiole is tipped with ALVEOLI, clusters of flexible, interconnected ALVEOLAR SACS. Delicate capillaries wind between them, bringing blood to and fro.



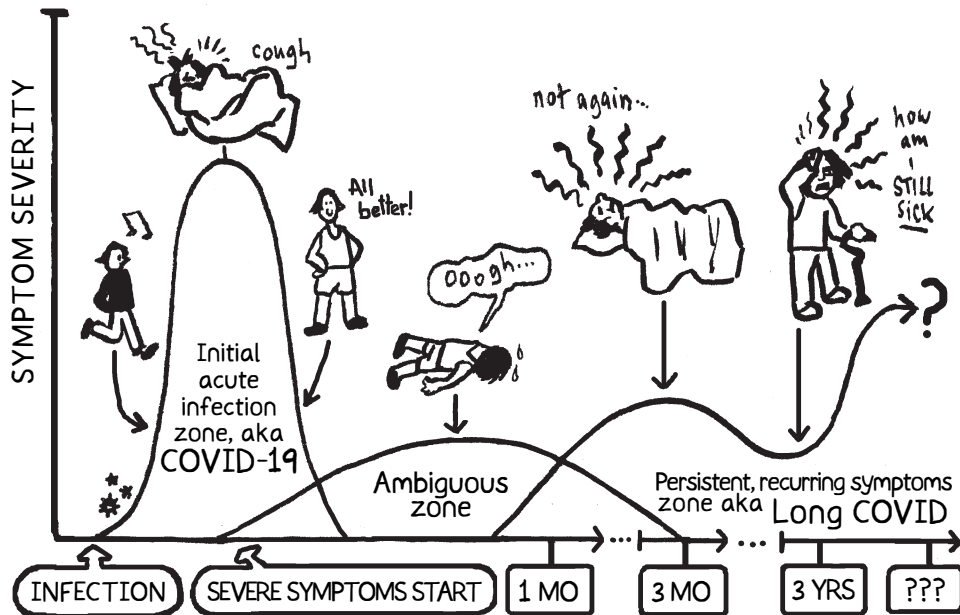
LONG COVID



43,44,
45

As of 2024, we keep discovering new ways Long COVID damages the body, but we still don't have a "cure". There are many ways to treat the symptoms (primarily serious, extended REST^{46,47,48}), but no silver bullet to reverse damage.

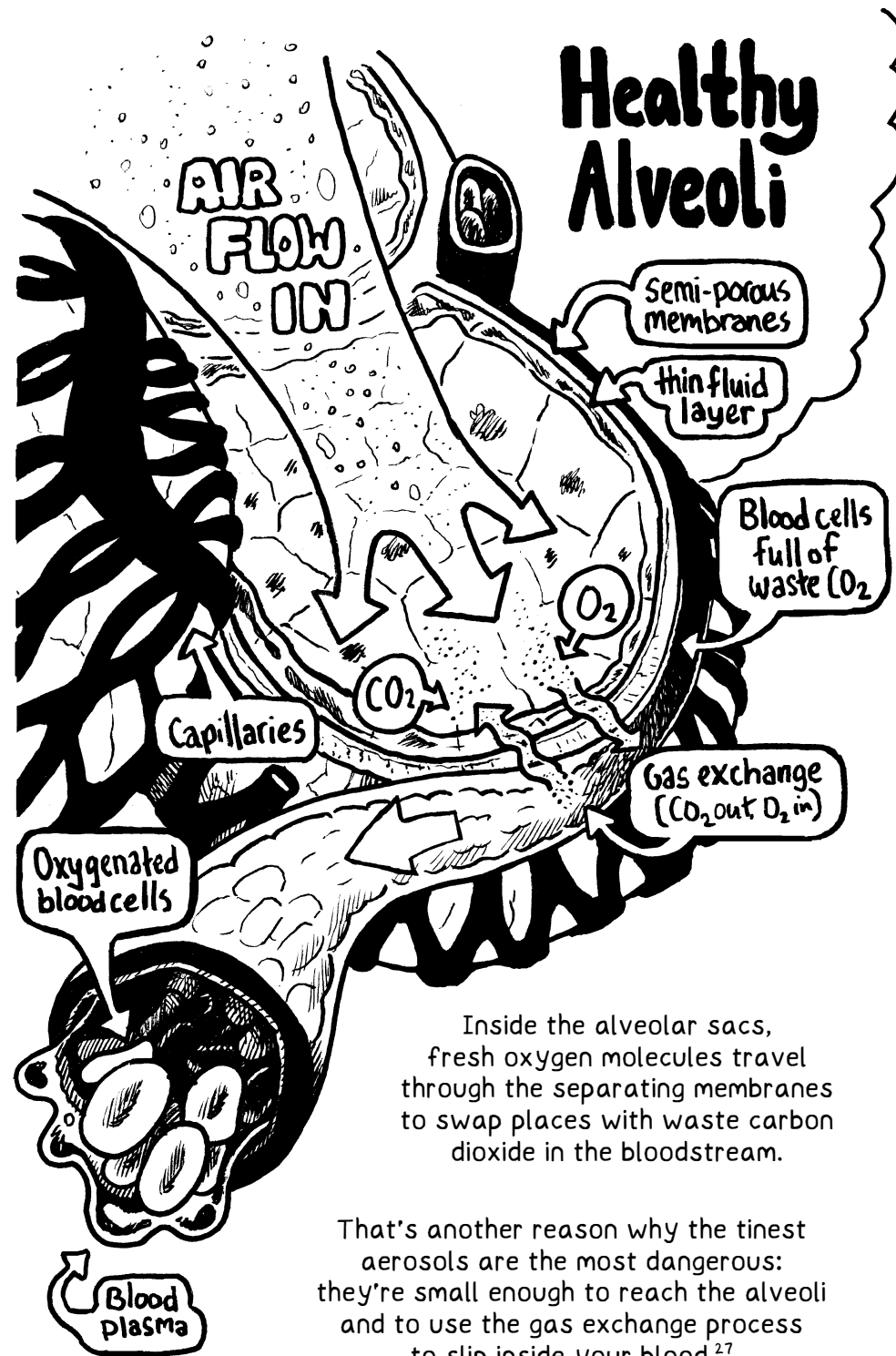
LASTING EFFECTS



At least 10-30% of people who survive COVID-19 report symptoms reappearing months or even YEARS later, regardless of their age or health. Many have had their lives changed for the worse...maybe permanently.^{36,37,38}

Long COVID (aka POST-COVID SYNDROME or POST-ACUTE SEQUELAE OF SARS-COV-2) varies wildly from person to person, but common symptoms are lung damage, strokes, heart attacks, immune dysfunction, and debilitating exhaustion. We're only just beginning to understand it as a POST-VIRAL ILLNESS like Shingles (caused by the Chickenpox virus) & AIDS (caused by HIV).

Vaccines lower the likelihood of long-term damage, but don't eliminate it.³⁹ Long COVID hits marginalized people the hardest, and we often go undiagnosed & untreated due to systemic bigotry in healthcare.^{40,41,42}



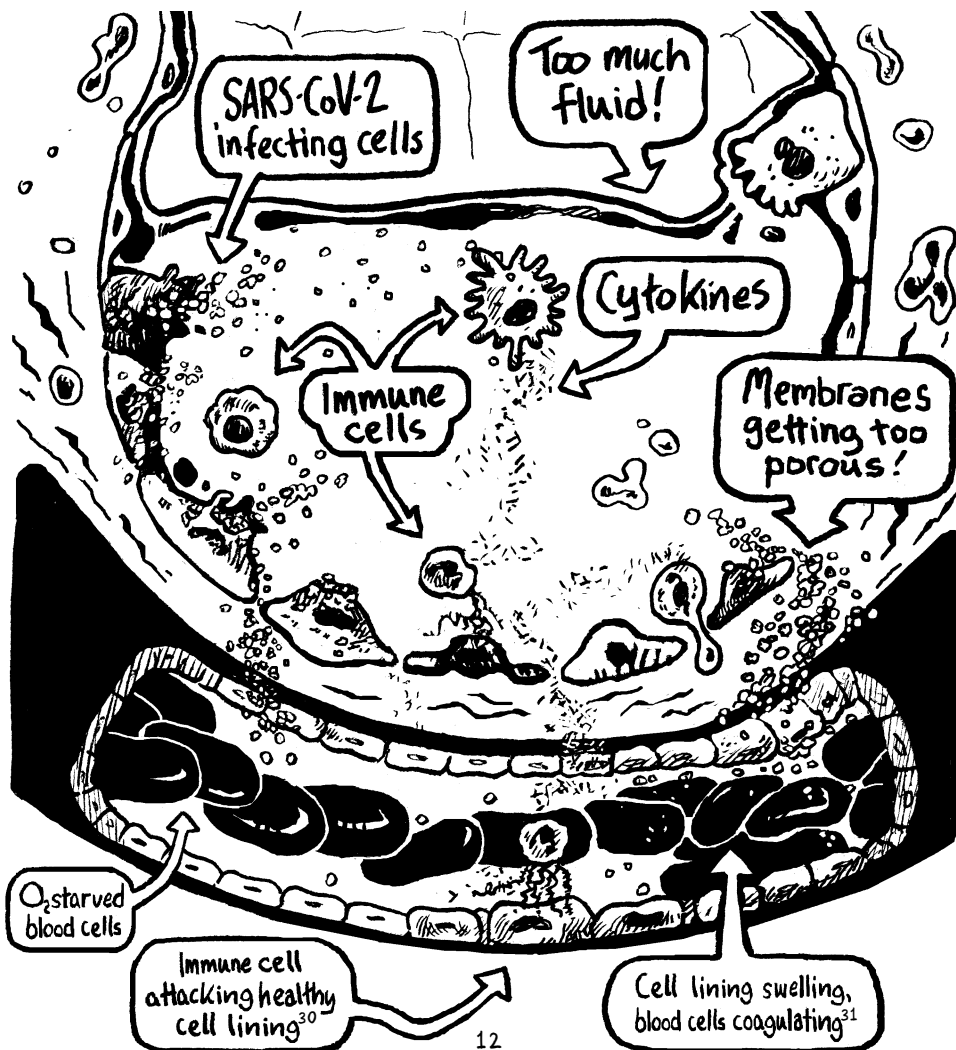
Inside the alveolar sacs, fresh oxygen molecules travel through the separating membranes to swap places with waste carbon dioxide in the bloodstream.

That's another reason why the tiniest aerosols are the most dangerous: they're small enough to reach the alveoli and to use the gas exchange process to slip inside your blood.²⁷

Our body launches into defensive action, but variants excel at turning our IMMUNE CELLS against themselves in an escalating CYTOKINE STORM.²⁸

Infected, dying cells release CYTOKINES (chemical signals) that summon immune cells...which get attacked by viruses, so they summon even MORE immune cells....!²⁹

The inflamed alveoli try to flush the invaders out with fluids, but that results in a suffocating state called PNEUMONIA. The swollen, pus-filled alveolar sacs struggle to continue exchanging O_2 - CO_2 through their damaged walls. Without treatment, this can end in death.



Meanwhile...

...SARS-CoV-2 spreads into the CIRCULATORY SYSTEM, triggering dangerous MICRO CLOTS & attacking the ENDOTHELIAL LINING.³²

That's the thin layer of cells lining every artery, vein, and capillary that normally keeps all your blood and tissues functioning.

Vascular damage like this damages EVERY part of you.

Even "mild" initial COVID-19 infections travel through the bloodstream to injure your BRAIN, HEART, & other critical organs - whether you notice that damage or not.³³

