So many viruses everywhere

Helmut Albrecht, MD

Heyward Gibbes Distinguished Professor of Internal Medicine

Medical Director, Center for Infectious Diseases Research & Policy

Prisma Health/University of South Carolina

- No conflicts of interest

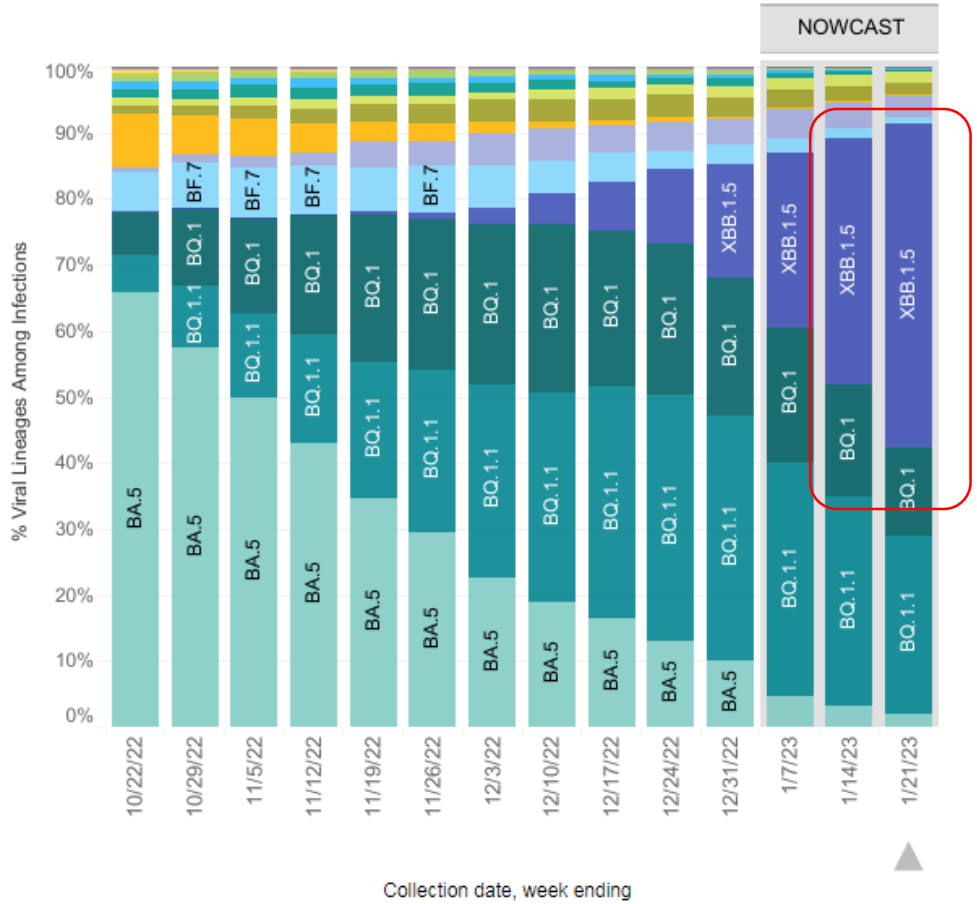
CDC variant tracker 2023 – XBB 1.5 is taking over

United States: 1/15/2023 – 1/21/2023 NOWCAST

USA

WHO label	Lineage #	US Class	%Total	95%PI
Omicron	XBB.1.5	VOC	49.1%	37.5-60.8%
	BQ.1.1	VOC	26.9%	20.9-33.9%
	BQ.1	VOC	13.3%	10.1-17.4%
	XBB	VOC	3.3%	2.7-4.1%
	BA.5	VOC	2.0%	1.5-2.8%
	BN.1	VOC	1.8%	1.4-2.5%
	BA.2.75	VOC	1.6%	1.2-2.2%
	BF.7	VOC	1.0%	0.8-1.4%
	BA.5.2.6	VOC	0.4%	0.3-0.5%
	BA.2	VOC	0.2%	0.1-0.3%
	BF.11	VOC	0.2%	0.1-0.2%
	BA.4.6	VOC	0.1%	0.0-0.1%
	BA.2.75.2	VOC	0.0%	0.0-0.1%
	B.1.1.529	VOC	0.0%	0.0-0.0%
	BA.4	VOC	0.0%	0.0-0.0%
	BA.1.1	VOC	0.0%	0.0-0.0%
	BA.2.12.1	VOC	0.0%	0.0-0.0%
Delta	B.1.617.2	VBM	0.0%	0.0-0.0%
Other	Other*		0.0%	0.0-0.0%

United States: 10/16/2022 – 1/21/2023

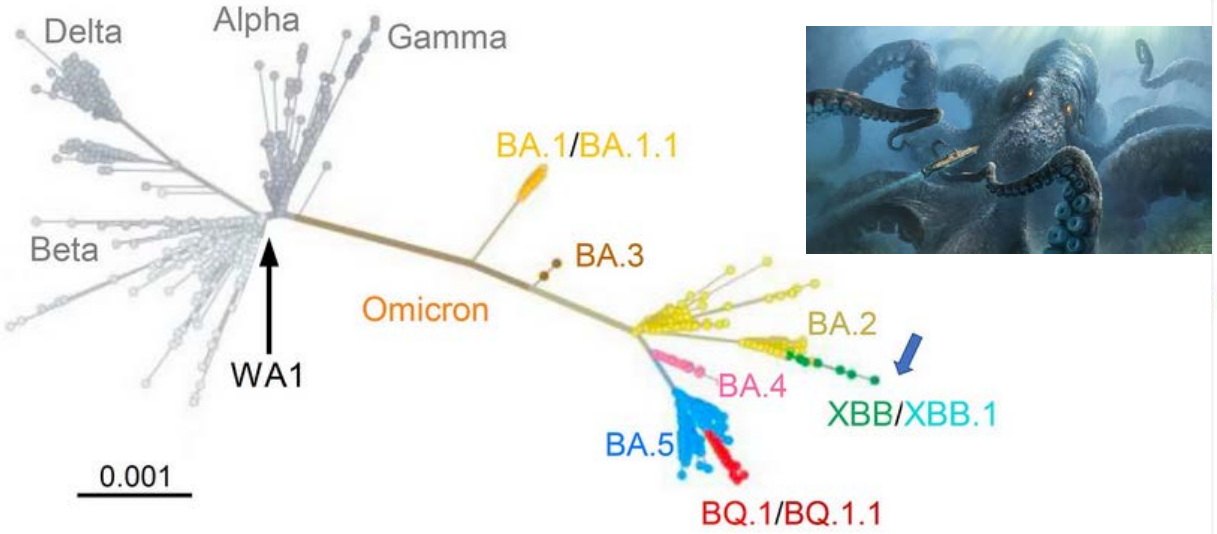


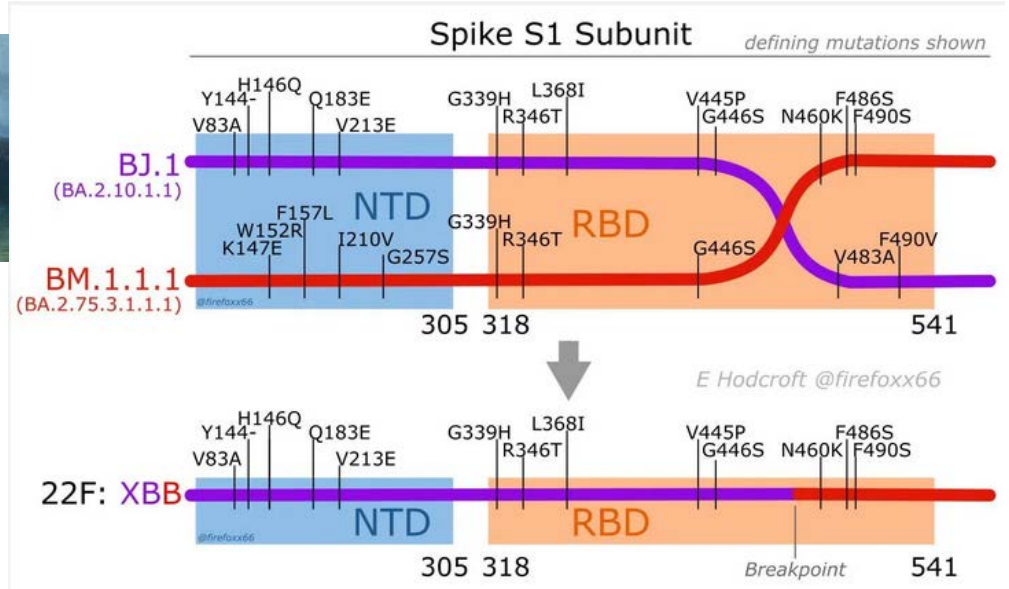
* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks displayed.

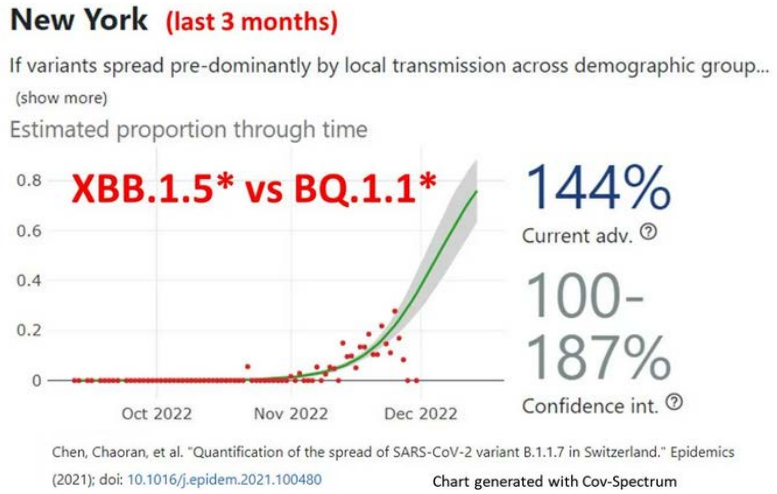
** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

\# BA.1, BA.3 and their sublineages (except BA.1.1 and its sublineages) are aggregated with B.1.1.529. Except BA.2.12.1, BA.2.75, BA.2.75.2, BN.1,XBB and their sublineages, BA.2 sublineages are aggregated with BA.2. Except BA.4.6, sublineages of BA.4 are aggregated to BA.4. Except BF.7, BF.11, BA.5.2.6, BQ.1 and BQ.1.1, sublineages of BA.5 are aggregated to BA.5. Except XBB.1.5, sublineages of XBB are aggregated to XBB. For all the lineages listed in the above table, their sublineages are aggregated to the listed parental lineages respectively. Previously, XBB.1.5 was aggregated to XBB. Lineages BA.2.75.2, XBB, XBB.1.5, BN.1, BA.4.6, BF.7, BF.11, BA.5.2.6 and BQ.1.1 contain the spike substitution R346T.

Omicron 2023, it keeps giving (& changing)





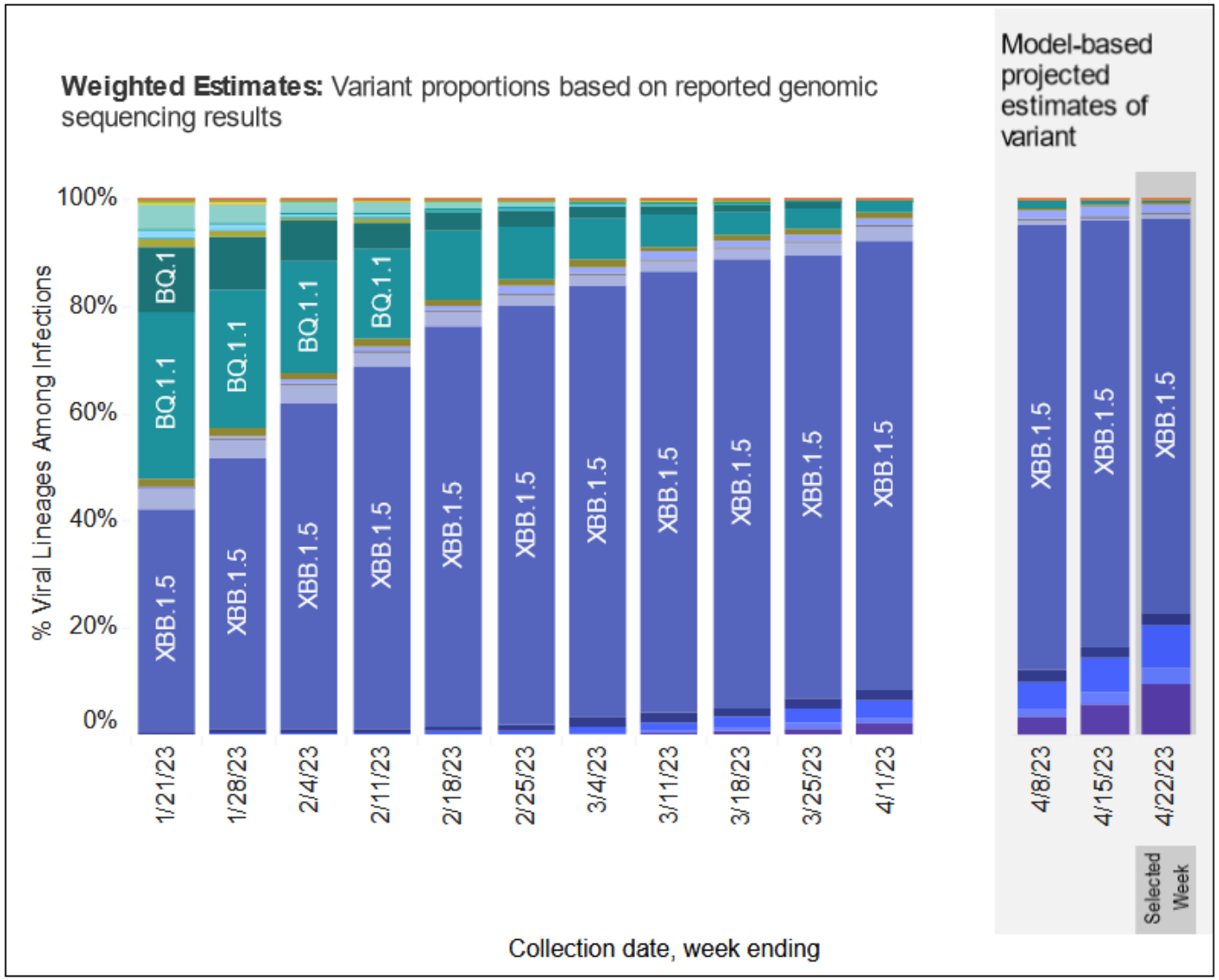


- XBB 1.5 aka KRAKEN is a recombination virus
  - Paradigm shift in pathogenesis
  - XBB 1.5 can, does and will outgrow BA5

1/15/2023 – 4/22/2023

for 4/16/2023 – 4/22/2023

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.



USA

WHO label	Lineage #	US Class	%Total	95%PI	
Omicron	XBB.1.5	VOC	73.6%	69.6-77.3%	
	XBB.1.16	VOC	9.6%	6.7-13.6%	
	XBB.1.9.1	VOC	7.9%	6.1-10.1%	
	XBB.1.9.2	VOC	2.9%	2.1-4.0%	
	XBB.1.5.1	VOC	2.2%	1.7-2.8%	
	FD.2	VOC	1.6%	0.7-3.2%	
	XBB	VOC	1.0%	0.6-1.8%	
	BQ.1.1	VOC	0.7%	0.4-1.1%	
	CH.1.1	VOC	0.4%	0.2-0.5%	
	BQ.1	VOC	0.1%	0.0-0.1%	
	BN.1	VOC	0.0%	0.0-0.0%	
	BA.5	VOC	0.0%	0.0-0.0%	
	BA.2.75	VOC	0.0%	0.0-0.0%	
	BA.2	VOC	0.0%	0.0-0.0%	
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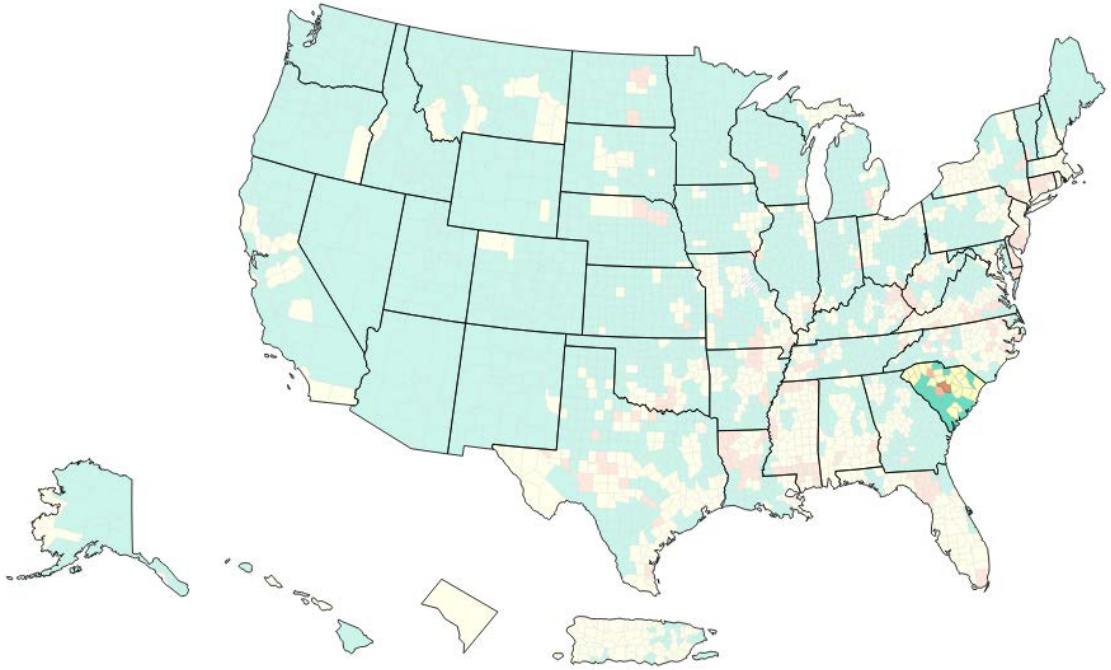
	BF.11	VOC	0.0%	0.0-0.0%	
	BA.4.6	VOC	0.0%	0.0-0.0%	
Other	Other*		0.1%	0.0-0.1%	

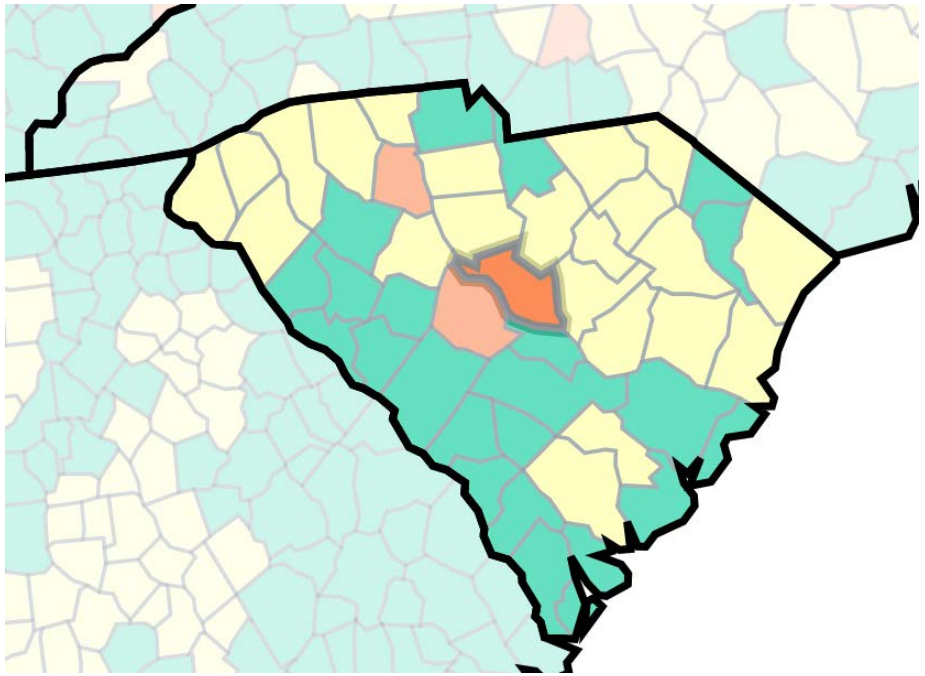
XBB 1.9 and especially XBB 1.16 are taking over

- XBB 1.16 the better, fitter but not more virulent son of XBB 1.5
- Getting further away from variant booster but immunity is holding
- Named Arcturus – Guardian of the bear
- Bright red star – often mistaken for Mars

COVID mitigation

- CDC Recommendations
  - County by county (confusing, bias of small numbers)
  - Based on testing that is not happening
  - 5 day isolation rule that the public does not understand





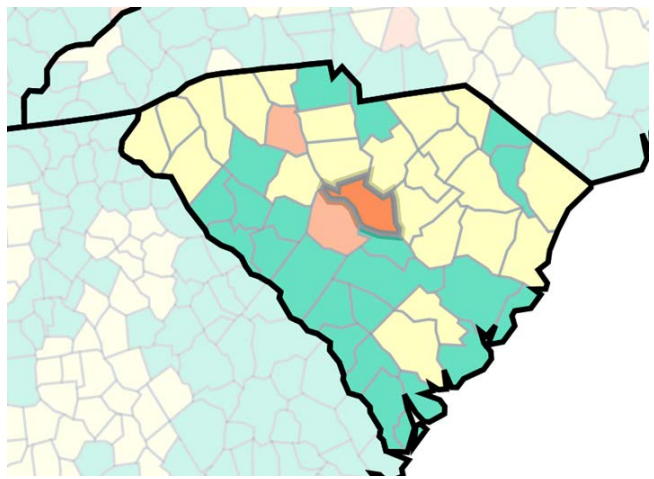
High

In **Richland County, South Carolina**, community level is **High**.

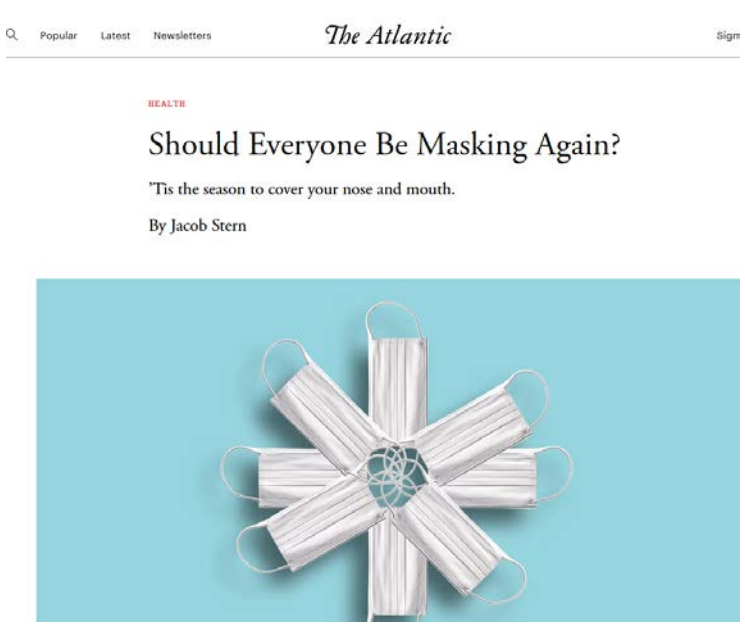
- Wear a high-quality mask or respirator.
- If you are at high risk of getting very sick, consider avoiding non-essential indoor activities in public where you could be exposed.
- If you have household or social contact with someone at high risk for getting very sick, consider self-testing to detect infection before contact, and consider wearing a high-quality mask when indoors with them.
- Stay up to date with COVID-19 vaccines, including recommended booster doses.
- Maintain ventilation improvements.
- Avoid contact with people who have suspected or confirmed COVID-19.
- Follow recommendations for isolation if you have suspected or confirmed COVID-19.
- Follow the recommendations for what to do if you are exposed to someone with COVID-19.

People may choose to mask at any time. People with symptoms, a positive test, or exposure to someone with COVID-19 should wear a high-quality mask or respirator when indoors in public.

If you are immunocompromised, learn more about how to protect yourself.



COVID mitigation



- CDC Recommendations
  - County by county (confusing, bias of small numbers)
  - Based on testing that is not happening
- Personally started using the “Albrecht Index”
  - >5 calls/texts for Paxlovid in the morning indicates a bad surge
- What to do?
  - Identification, isolation, information (Testing, tracking, treating)
  - Vaccination, masking, hand hygiene, isolation, distancing, treatment
- If you do nothing, bad things happen
- We need to be pragmatic and have actionable clear messages
  - “Mask up this winter”, get vaccinated, increase mask availability

Inpatient Adult/Pediatric COVID-19 Treatment Algorithm

No Supplemental O2 | Nasal Cannula | HFNC/NIV/IMV

Baseline COVID-19 Labs (trend only if clinically indicated): CBC, CMP, Mg, Phos, CRP, Ferritin, D-dimer, LDH
Pregnant Patients: Consult OB/GYN

Prophylactic anticoagulation in all adult admitted patients, consider in pediatric admitted patients

Recommend treatment ONLY if (ALL met):
- Patient symptomatic (e.g. cough)
- Early in disease course (symptom onset ≤ 7 days)
- High risk of disease progression defined as at least 1 of the following:
  - Severely immunocompromised
  - Aged ≥ 65 years
  - Completely unvaccinated + at least 1 other clinical risk factor for progression[θ]

Treatment Options (full dosing below^):
Nirmatrelvir/ritonavir (Paxlovid) PO (*preferred*) OR
Remdesivir IV x 3 days OR
Molnupiravir PO

Dexamethasone §
< 40 kg: 0.15 mg/kg IV/PO daily x 10 days
40 kg: 6 mg IV/PO daily x 10 days
OR
Baricitinib
4 mg PO daily x 14 days
(see peds dosing below*)

Consider Remdesivir IV x 5 days[#]

If rapidly declining while on nasal cannula OR within 48 hours of requiring HFNC/NIV/IMV:
Dexamethasone AND Tocilizumab*
OR
Dexamethasone AND Baricitinib*
If unable to receive above regimen, consider higher dose dexamethasone** 12 mg IV/PO daily x 10 days

Legend for Daily Drug Cost	
Baricitinib	$$$$$
Dexamethasone	$
Molnupiravir	¢
Nirmatrelvir/ritonavir	¢
Remdesivir	$$$$$$
Tocilizumab	$$$$$$

Select Abbreviations
HFNC = High flow nasal cannula
NIV = Noninvasive ventilation
IMV = Invasive mechanical ventilation

[θ]Clinical Risk Factors for Progression to Severe COVID-19

BMI ≥ 25 kg/m² or pediatric patient > 85th percentile
Other non-severe immune compromise
DM
CKD with GFR <60 mL/min
Chronic lung disease
Neurodevelopmental disorders (e.g. Down syndrome)
CVA
Chronic liver disease
CAD, heart failure
HTN
Medical-related tech. dep. (e.g. trach/peg)
Mental health disorders
Pregnancy
Sickle cell disease
Smoking, current or former

[#]Remdesivir

See EPIC for all criteria

Inclusion:
1. First positive test within last 7 days

Exclusion:
1. GFR < 30 mL/min
2. ALT > 275 IU/L or AST > 170 IU/L
3. Vasopressor therapy
4. NIV/HFNC/IMV

5-day Dosing:
3 to < 40 kg: 5 mg/kg IV Q24h x 1, then 2.5 mg/kg IV Q24h x 4 doses (or until d/c if sooner)
> 40 kg: 200mg IV Q24h x 1, then 100 mg IV Q24h x 4 doses (or until d/c if sooner)

Monitoring: Daily CMP

Corticosteroids

**Providers *may consider* higher dose dexamethasone 12 mg IV/PO daily if ALL the following criteria are met:
1. ↑ to HFNC or greater within last 48 hr
2. Tocilizumab or baricitinib UNABLE to be given
3. Ongoing evidence of inflammation
4. No contraindication to higher dose corticosteroids (e.g. invasive fungal infection)

Pregnancy Dosing for Fetal Lung Maturation (Consult OB/GYN): Dexamethasone 6 mg IV/PO Q12h x 4 doses, then 6 mg IV/PO daily x 8 days

§ Asthmatic Pediatric Patient: Dexamethasone may be replaced with methylprednisolone 1 mg/kg IV Q12h (max 60 mg/d)

*Immunomodulators

See EPIC for all criteria

Tocilizumab:	Baricitinib:
< 30 kg: 12 mg/kg x 1 dose ≥ 30 kg: 8 mg/kg IV x 1 dose	2 to 8 yo: 2 mg PO daily ≥ 9 yo: 4 mg PO daily x 14 d (or until d/c if sooner)

Inclusion (ALL met):
- Symptoms present for ≤ 14 days
- ↑ to HFNC/NIV/IMV within last 48 hr
- CRP ≥ 75 mg/L (*for tocilizumab only*)

Exclusion:
- Concomitant bacterial or fungal infection
- ALT >275, AST >170, ANC<1000, or Plt <50

^Treatment Options for No Supplemental O2

(For peds pt, consult with Peds ID)

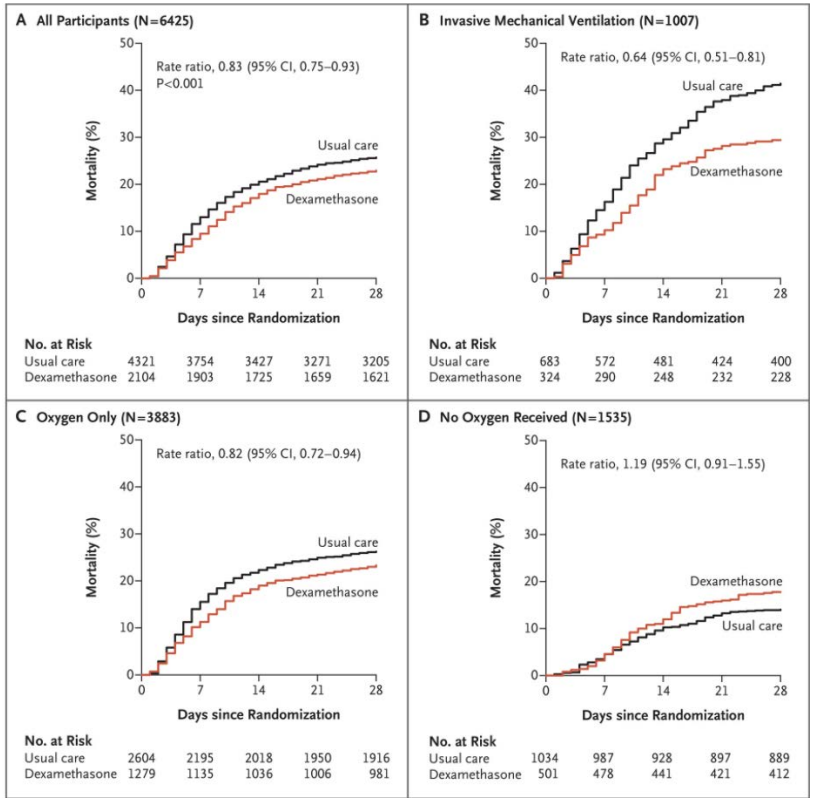
Agent	Nirmatrelvir/Ritonavir (Paxlovid)	Remdesivir	Molnupiravir
Tx Window	Within 5 days	Within 7 days	Within 5 days
Adult Dose	300 mg/100 mg (3 tabs) PO BID x 5 days	200 mg IV x 1 day, then 100 mg daily x 2 days (or until d/c if sooner)	800 mg PO BID x 5 days
Comments	Check drug interactions (e.g. anticoagulants)	Exclude if GFR <30, ALT > 275, or AST > 170	Do not use in pregnancy

Updated 01.20.23: Incorporated recommendations for treatment and dosing in pediatric patients.

PRISMA HEALTH

Corticosteroids- Recommendations based on RECOVERY Trial

- **Yes** in hospitalized, critically ill patients
  - Odds of mortality at 28 days:
  - 34% lower in the dexamethasone group
- **Yes** in hospitalized patients with severe COVID-19
  - 28-day mortality - 17% lower
- **No** in hospitalized patients without hypoxemia
- Dose
  - Dexamethasone 6 mg IV or PO for 10 days (or until discharge if earlier)
    - Or Equivalent total daily doses of alternative glucocorticoids



Use of Anticoagulants

- NIH Panel recommends
  - Use **therapeutic dose of heparin for nonpregnant patients with D-dimer levels above the upper limit of normal who require conventional oxygen** and who do not have an increased bleeding risk (low evidence base).
  - Everyone else: prophylactic heparin, unless contraindicated.

Paxlovid - nirmatrelvir/ritonavir

underutilized and there is plenty of supply in pharmacies

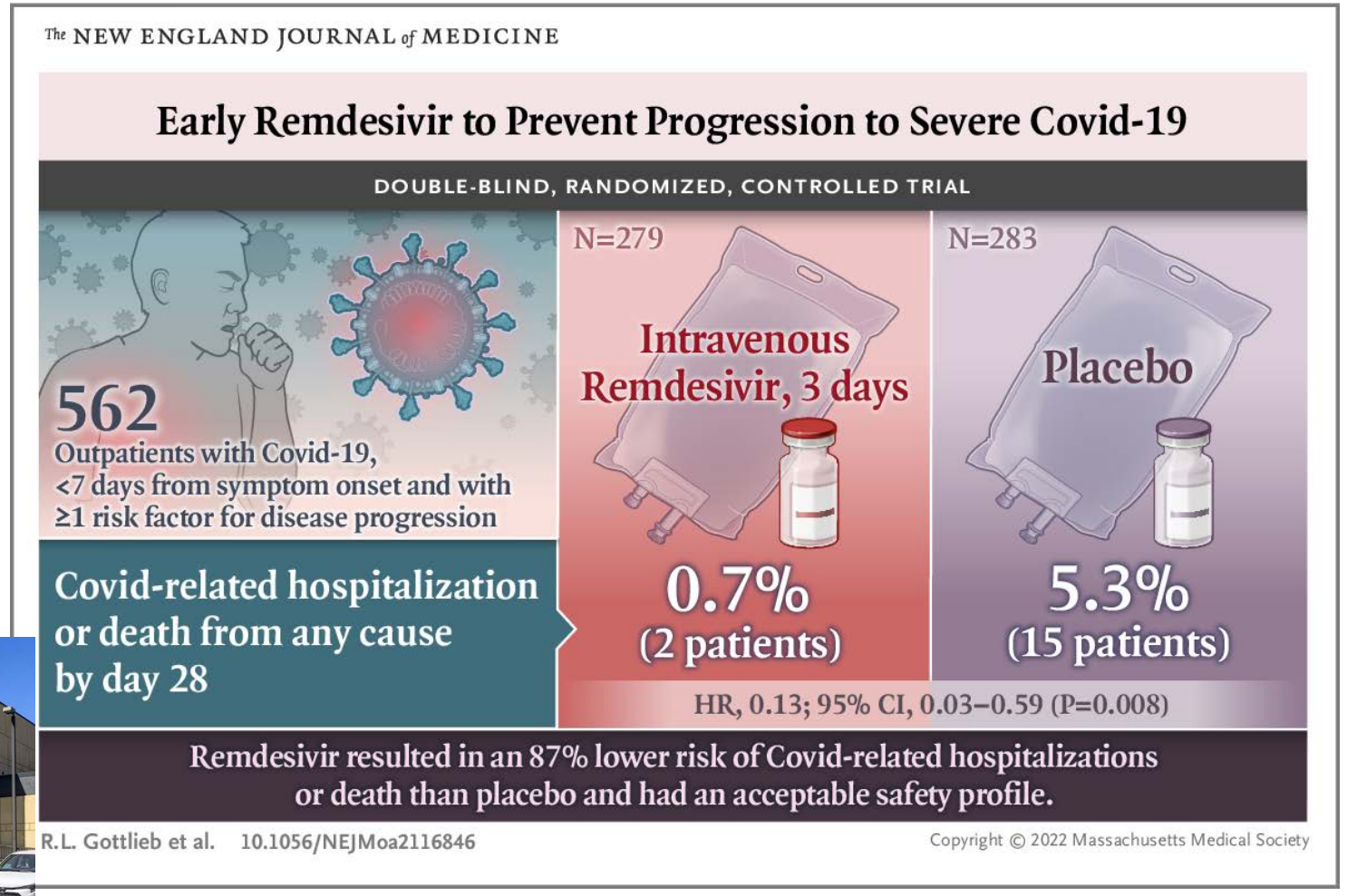
- EPIC-HR (patients at High risk of severe disease)
  - Randomized, double-blind study
  - < 5 days from symptom onset period
  - Mild to moderate symptoms

- Results:
  - 2246 patients
  - **Paxlovid- 0 deaths, 0.8 % hospitalization**
  - **Placebo- 12 deaths, 6.3% hospitalization**
  - **89% reduction**
  - Relative benefit similar at 3 and 5 days from symptom onset
  - 10 fold reduction in viral load

LOOK FOR DRUG INTERACTIONS!

Early IV Remdesivir X 3 days reduces the risk of hospitalization

- PINETREE STUDY



Monoclonal Antibodies: NOT RECOMMENDED

- **Bebtelovimab :**
- Does not work against XBB
- **Evusheld:**
  - Pre-exposure prophylaxis (PrEP) for immunocompromised
  - Long acting antibody cocktail that worked for up to 1 year
  - Worked very well : reduced risk of developing symptomatic COVID-19 by 77% in Renal Tx and other immune compromsd individuals
  - **Does not work against XBB**
- SA-55- experimental broader sarbecovirus SARS-CoV-2 NAb (bsNAb) neutralization
  - Epitopes on the conserved sites of sarbecoviruses.
  - Spike Mutation agnostic

Metformin, Ivermectin, Fluvoxamine

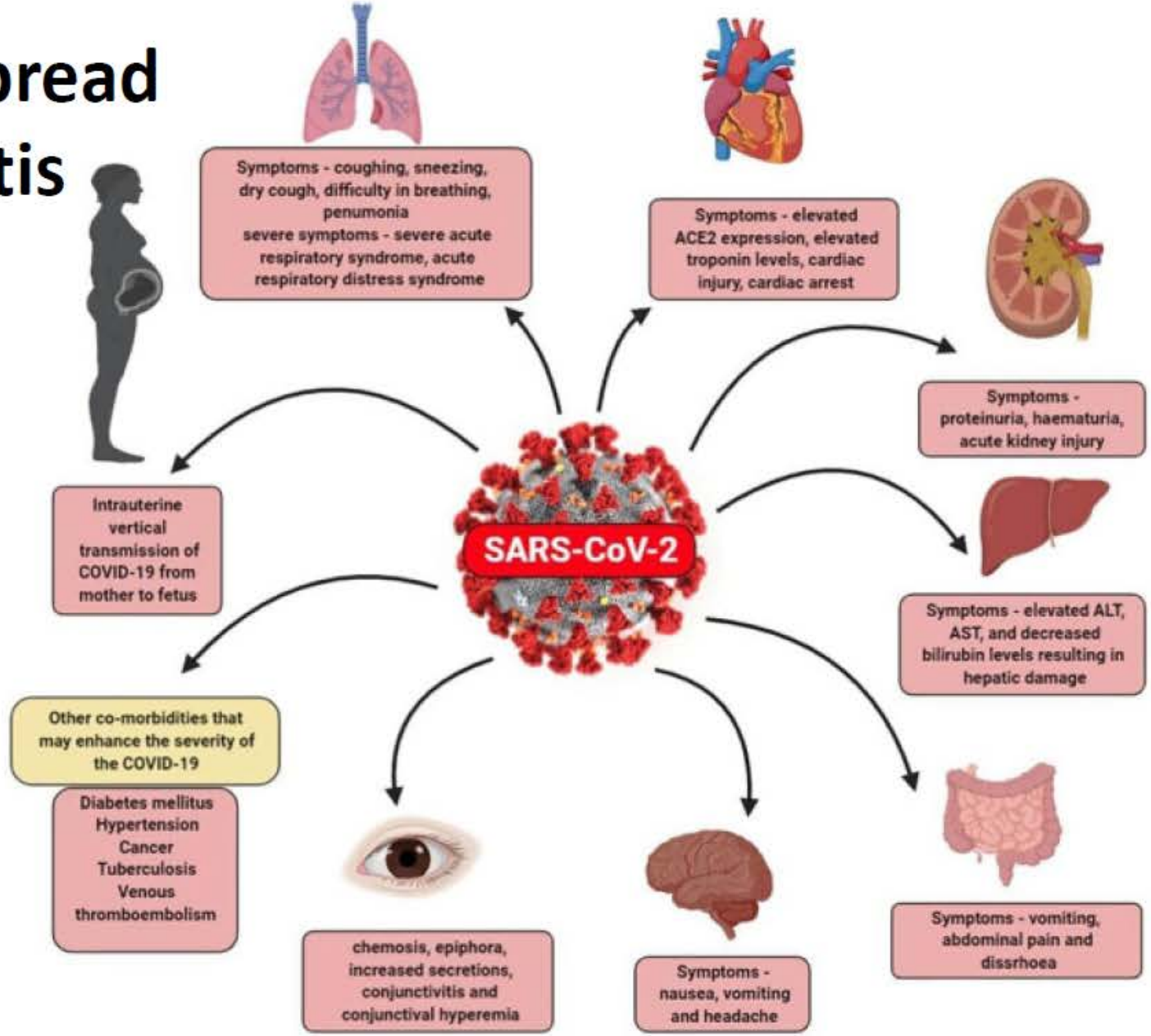
- Randomized, double-blind, placebo-controlled trial
  - Patients aged 30-85, all overweight or obese
  - Enrolled within 3 days after a confirmed diagnosis of infection and less than 7 days after the onset of symptoms
- Composite end point
  - Hypoxemia (≤93% oxygen saturation on home oximetry)
  - ED visit, hospitalization, or death
  - Analyses used controls who had undergone concurrent randomization; adjusted for vaccination and other medications

https://www.nejm.org/doi/full/10.1056/NEJMoa2201662

No Benefit in adding antiplatelet therapy in COVID 19

Trial	Usual care	Usual care + Antiplatelet agent
RECOVERY : Aspirin UK, Indonesia, Nepal; hospitalized patients ; hospitalized **not critically ill**; all on anticoagulation therapy	28 day mortality- 17% Incidence of hemorrhage- 1%	28 day mortality- 17% Incidence of hemorrhage- 1.6%
ACTIV-4a trial; USA, Brazil, Italy, Spain; hospitalized **non–critically ill patients** ;P2Y12 inhibitor (ticagrelor;clopidogrel)	No benefit with adding antiplatelet agent	
REMAPCAP-**critically ill patients,** on anticoagulation therapy; Aspirin or clopidogrel or ticagrelor, 60 mg or prasugrel	**Organ support–free days** - 7 in both the antiplatelet and control groups Antiplatelet therapy - increased risk of major bleeding	
US ACTIV-4B : 657patients **symptomatic outpatients ; placebo vs aspirin**	No benefit with Aspirin	

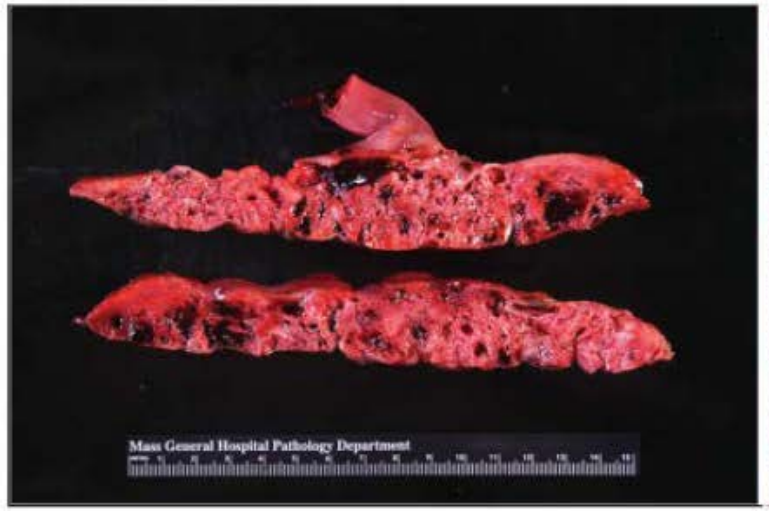
Widespread vasculitis



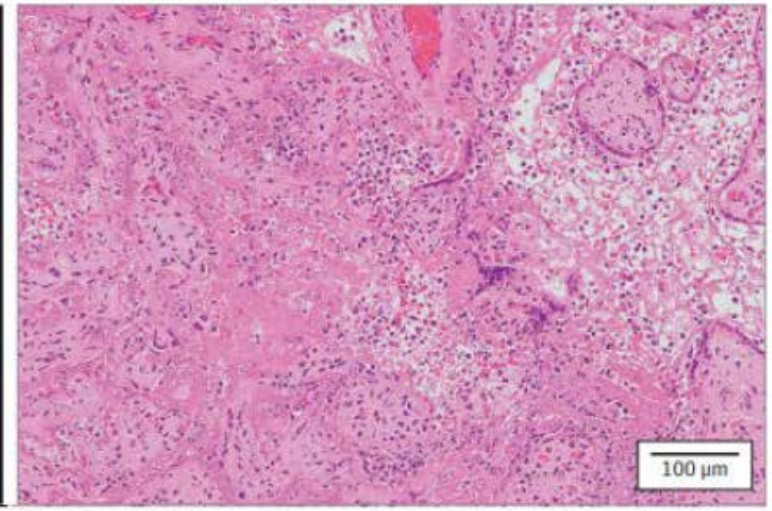
Symptoms in various organs due to SARS-CoV-2

Figure. SARS-CoV-2 Placentitis With Thrombohematomas From a 37.1 Week Gestational Age Intrauterine Demise

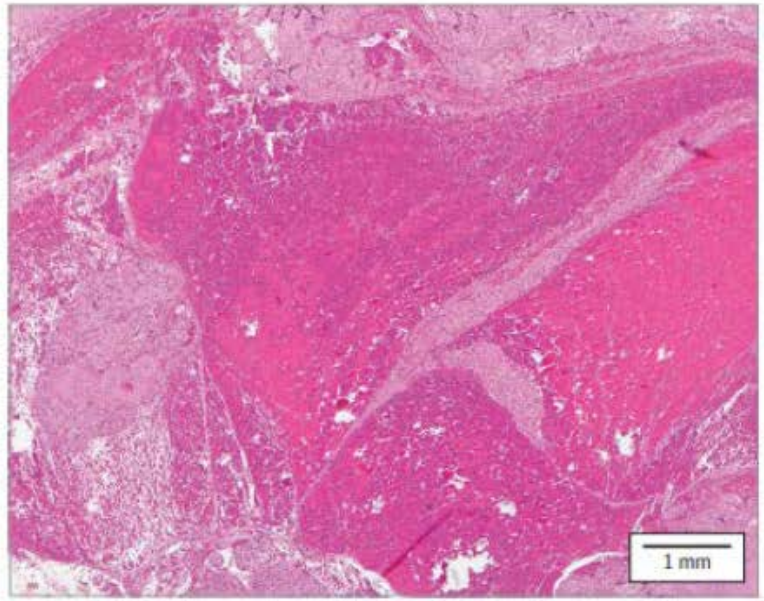
A Gross photograph of slab sections of the placenta showing multiple thrombohematomas



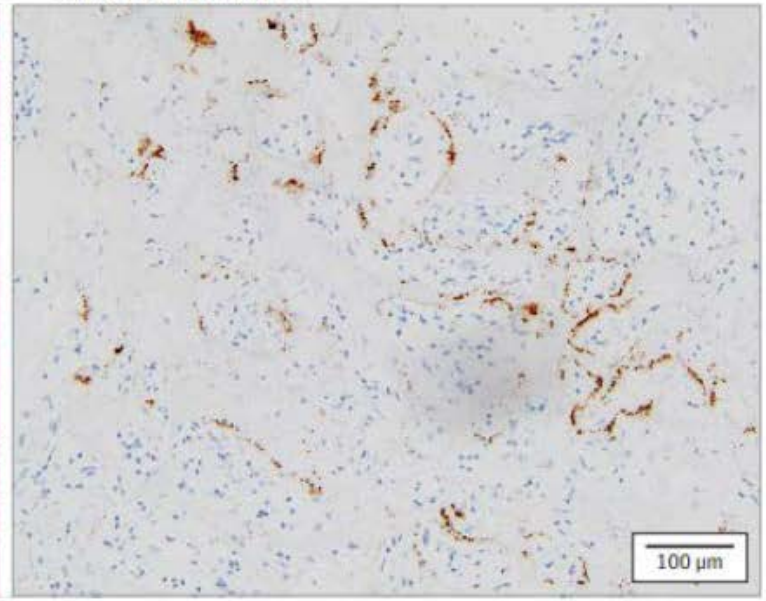
B H&E stained photomicrograph of the placental parenchyma showing SARS-CoV-2 placentitis



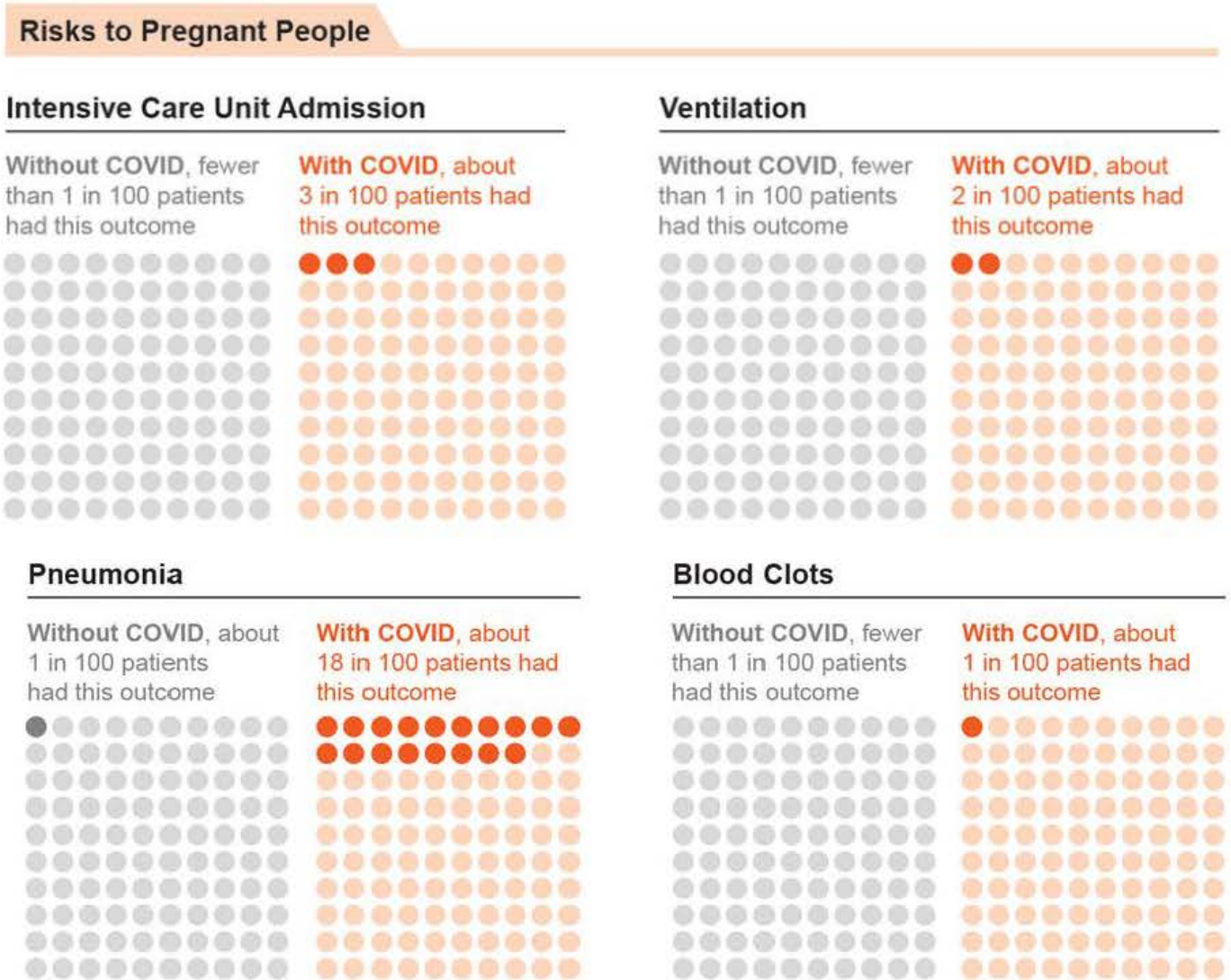
C H&E stained photomicrograph of 1 thrombohematoma



D SARS-CoV-2 RNA in situ hybridization with positive brown staining of villous trophoblast



https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2790175

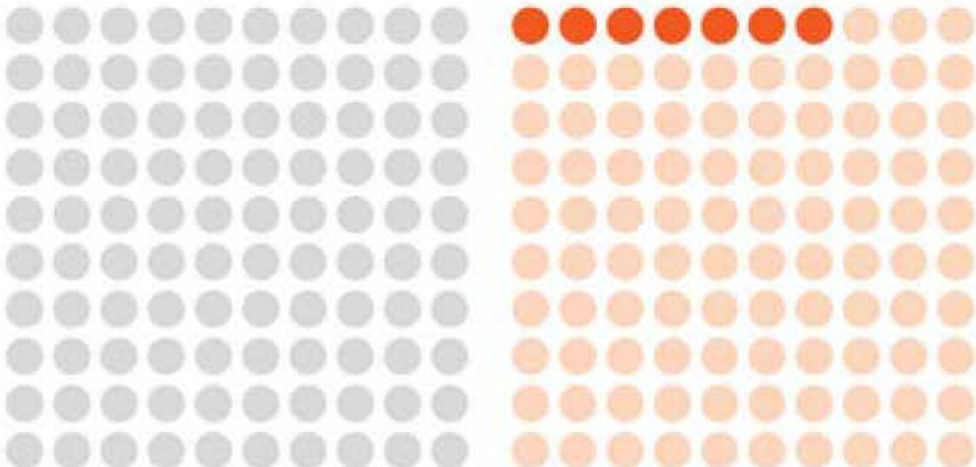


https://www.scientificamerican.com/article/covid-poses-severe-risks-during-pregnancy-especially-in-unvaccinated-people/

Maternal Death

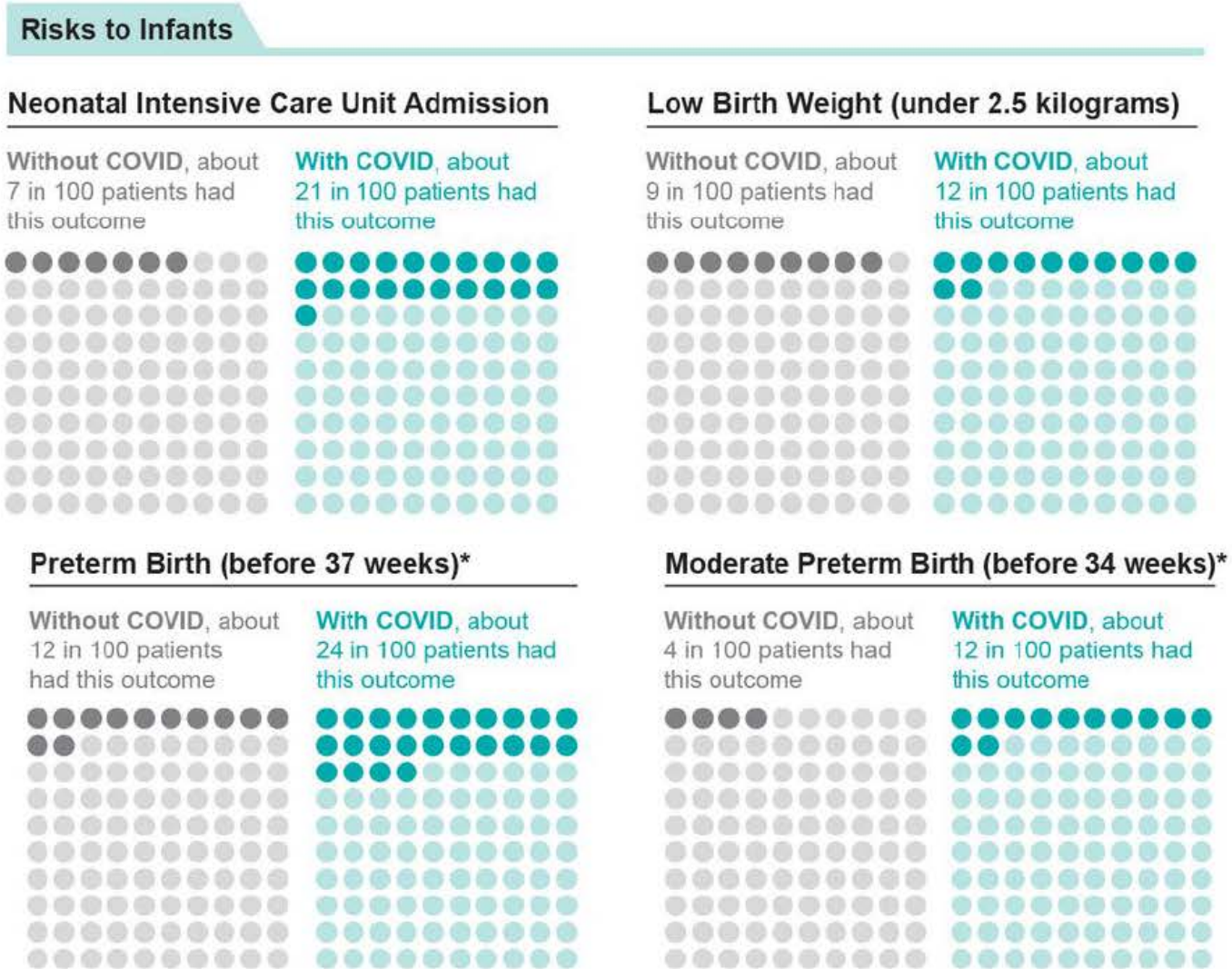
Without COVID, fewer than 1 in 100 patients had this outcome

With COVID, about 7 in 100 patients had this outcome



The maternal death rate was particularly high in this meta-analysis. Even though fewer than 1 percent of people in the non-COVID group died, the baseline maternal mortality rate was still significantly higher than what is typical for the U.S. or other high-income countries. So although COVID infection may be associated with a nearly eightfold increase in maternal deaths, as these data suggest, the absolute risk varies significantly by country.

https://www.scientificamerican.com/article/covid-poses-severe-risks-during-pregnancy-especially-in-unvaccinated-people/



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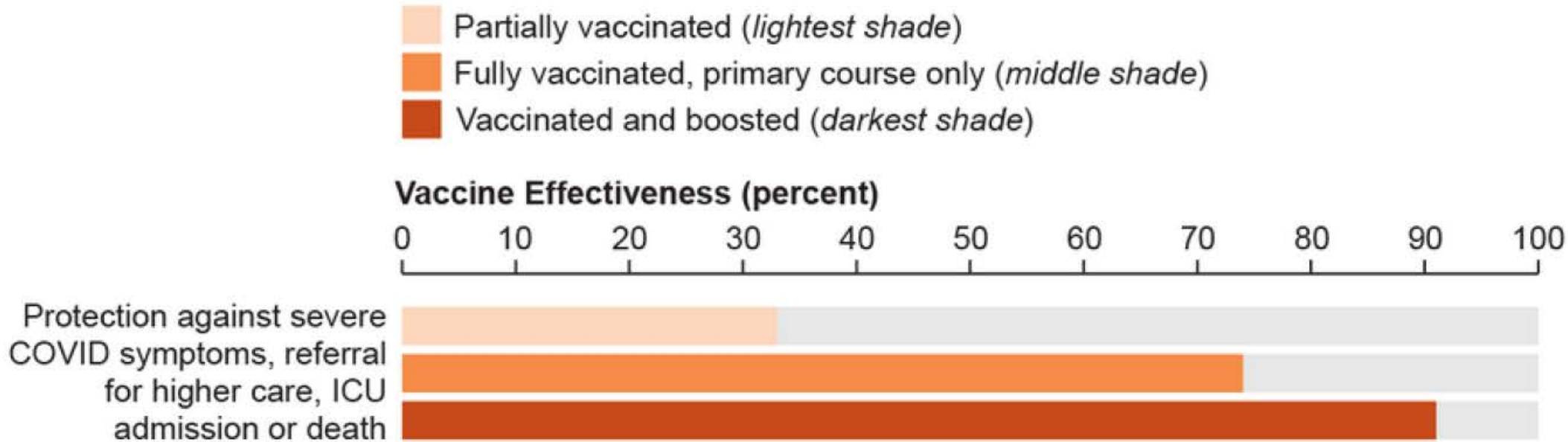
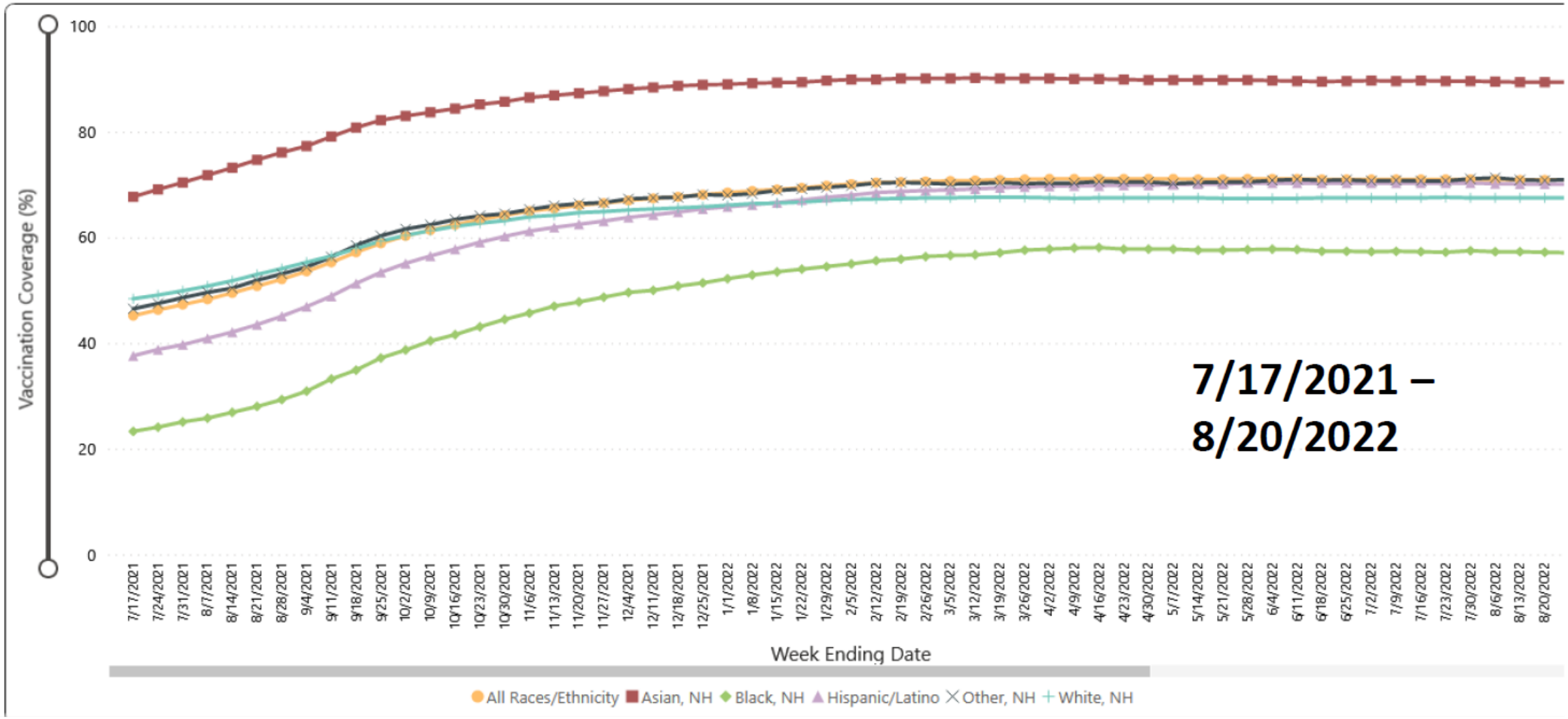
Comparison among Pregnant Patients Who Got COVID



Credit: Amanda Montañez; Source: "Pregnancy Outcomes and Vaccine Effectiveness during the Period of Omicron as the Variant of Concern, INTERCOVID-2022: A Multinational, Observational Study," by José Villar et al., in *Lancet*, Vol. 401, No. 10375; February 11, 2023

https://www.scientificamerican.com/article/covid-poses-severe-risks-during-pregnancy-especially-in-unvaccinated-people/

Figure 2: Percent of Pregnant People Ages 18–49 Years Who Completed the Primary Series of COVID-19 Vaccin Before or During Pregnancy Overall, by race and ethnicity, and Week Ending Date — Vaccine Safety Datalink,



Long COVID

- **Long COVID (post-acute sequelae of COVID-19)**
  - Occurs in at least 10% -30% of non-hospitalized cases
  - 50–70% of hospitalized cases
  - 10–12% of vaccinated cases
- **Health Impairments in Children & Adolescents After Hospitalization for Acute COVID-19 or MIS-C;** AUGUST 12 2022; PEDIATRICS
  - **Over 25% of children hospitalized with acute COVID-19 or MIS-C**
- **Long COVID -immune profiling**
  - 215 individuals multi-dimensional immune phenotyping
  - Unexpected increases in antibody responses against non-SARS-CoV-2 viral pathogens-particularly Epstein-Barr virus.
- Low Cortisol in most patients with long covid

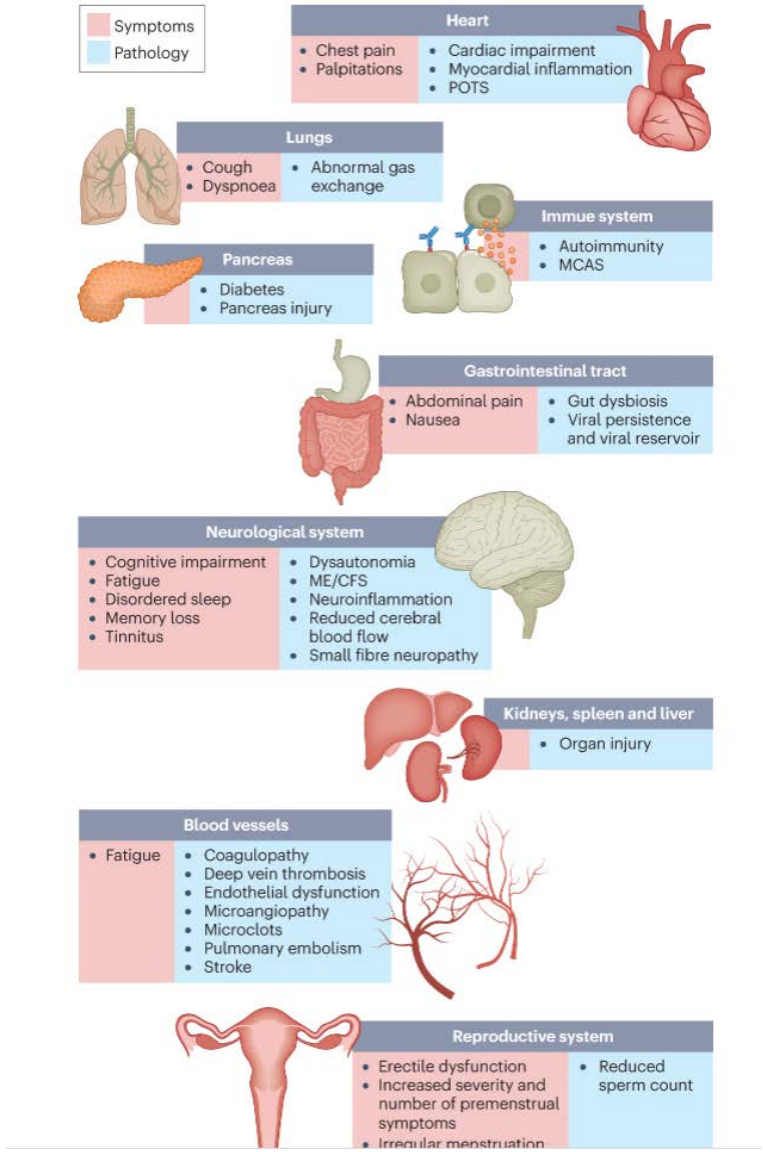
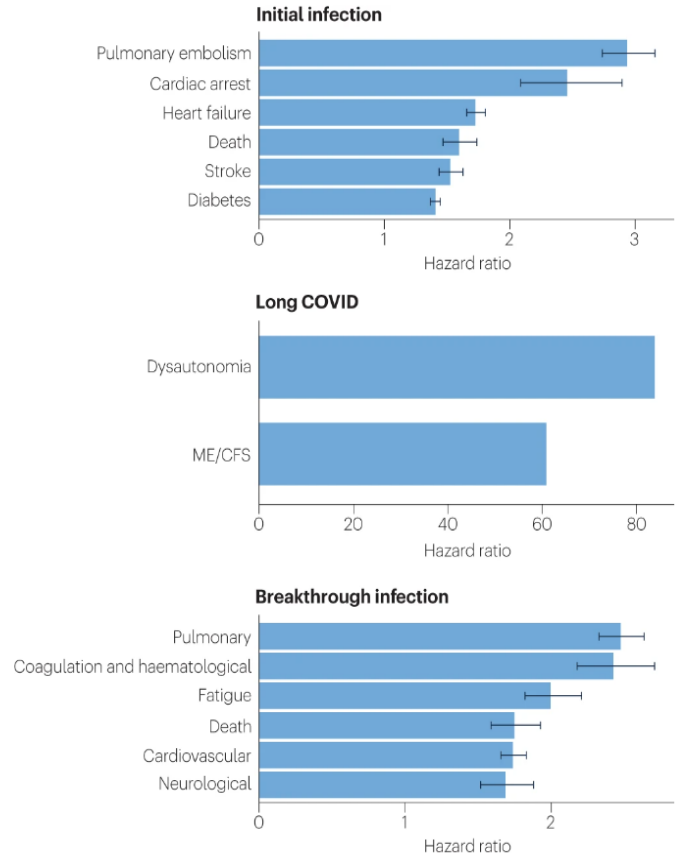


Fig. 2: SARS-CoV-2 infection, COVID-19 and long COVID increases the risk of several medical conditions.

From: Long COVID: major findings, mechanisms and recommendations



Long COVID

- Experimental treatments
  - Paxlovid- anecdotal evidence it helps as there is viral persistence in tissues
  - Vaccination with mRNA - anecdotal
- HBO Might Improve Symptoms in Patients with "Long COVID" *Zilberman-Itskovich S et al. Sci Rep 2022 Jul 12*
  - Randomized, double-blind, sham-controlled trial from Israel
  - Posttreatment, the HBO group had significantly better cognitive function, less fatigue, less pain, and fewer complaints of mood
  - MRI studies showed superior brain perfusion
- Other treatments
  - Postural Orthostatic Tachycardia syndrome:- fludrocortisone
- BEST Rx is time and Pulmonary Rehabilitation

Kosmicki JA, Cirulli ET, Drivas T, et al. (2022) Exome-wide association study to identify rare variants influencing COVID-19 outcomes: Results from the Host Genetics Initiative. PLOS Genetics 18(11): e1010367


PLOS GENETICS

RESEARCH ARTICLE

Exome-wide association study to identify rare variants influencing COVID-19 outcomes: Results from the Host Genetics Initiative

Guillaume Butler-Laporte[1,2], Gundula Povysil[3], Jack A. Kosmicki[4], Elizabeth T. Cirulli[5], Theodore Drivas[6,7,8], Simone Furini[9], Chadi Saad[10], Axel Schmidt[11], Pawel Olszewski[12], Urszula Korotko[12,13], Mathieu Quinodoz[14,15,16], Elifnaz Çelik[14,16], Kousik Kundu[17,18], Klaudia Walter[18], Junghyun Jung[19,20], Amy D. Stockwell[21], Laura G. Sloofman[22], Daniel M. Jordan[23], Ryan C. Thompson[24], Diane Del Valle[25], Nicole Simons[25], Esther Cheng[26], Robert Sebra[26], Eric E. Schadt[26], Seunghee Kim-Schulze[27], Sacha Gnjatic[28], Miriam Merad[28], Joseph D. Buxbaum[22], Noam D. Beckmann[29], Alexander W. Charney[29], Bartlomiej Przychodzen[30], Timothy Chang[31], Tess D. Pottinger[3], Ning Shang[32], Fabian Brand[33], Francesca Fava[9,34,35], Francesca Mari[9,34,35], Karolina Chwialkowska[12,13], Magdalena Niemira[36], Szymon Pula[12], J Kenneth Baillie[37,38,39,40], Alex Stuckey[41], Antonio Salas[42,43,44], Xabier Bello[42,43,44], Jacobo Pardo-Seco[42,43,44], Alberto Gómez-Carballa[42,43,44], Irene Rivero-Calle[43,44,45], Federico Martinón-Torres[43,44,45], Andrea Ganna[46,47], Konrad J. Karczewski[48,49], Kumar Veerapen[48,49], Mathieu Bourgey[50,51], Guillaume Bourque[50,51,52], Robert JM Eveleigh[50,51], Vincenzo Forgetta[2], David Morrison[2], David Langlais[51,52], Mark Lathrop[51,52], Vincent Mooser[52], Tomoko Nakanishi[2,52,53,54], Robert Frithiof[55], Michael Hultström[1,2,55,56], Miklos Lipcsey[55,57], Yanara Marincevic-Zuniga[58], Jessica Nordlund[59], Kelly M. Schiabor Barrett[5], William Lee[5], Alexandre Bolze[5], Simon White[5], Stephen Riffle[5], Francisco Tanudjaja[5], Efren Sandoval[5], Iva Neveux[59], Shaun Dabe[60], Nicolas Casadei[61,62], Susanne Motameny[63,64], Manal Alaamery[65,66], Salam Massadeh[65,66], Nora Aljawini[65,66], Mansour S. Almutairi[65,66], Yaseen M. Arabi[67], Saleh A. Alqahtani[68,69], Fawz S. Al Harthi[70], Amal Almutairi[70]

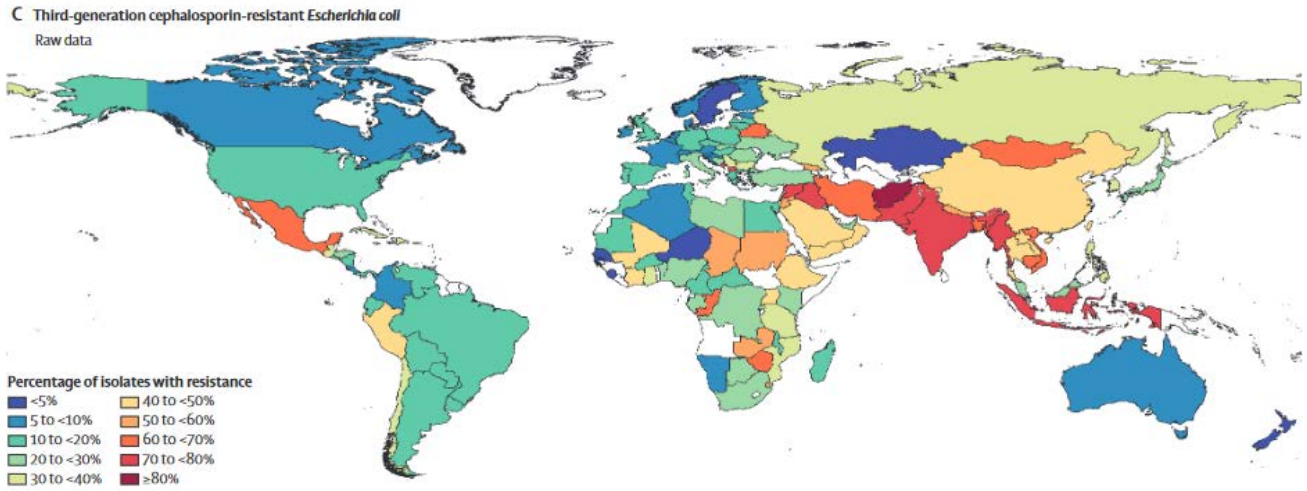
OPEN ACCESS

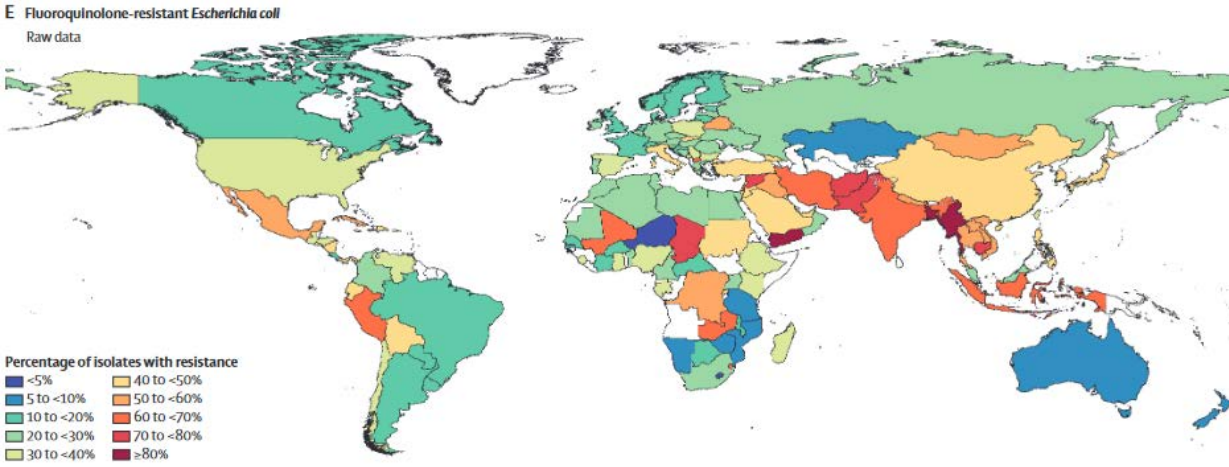
Citation: Butler-Laporte G, Povysil G, Kosmicki JA, Cirulli ET, Drivas T, Furini S, et al. (2022) Exome-wide association study to identify rare variants influencing COVID-19 outcomes: Results from the Host Genetics Initiative. PLoS Genet 18(11): e1010367. https://doi.org/10.1371/journal.pgen.1010367

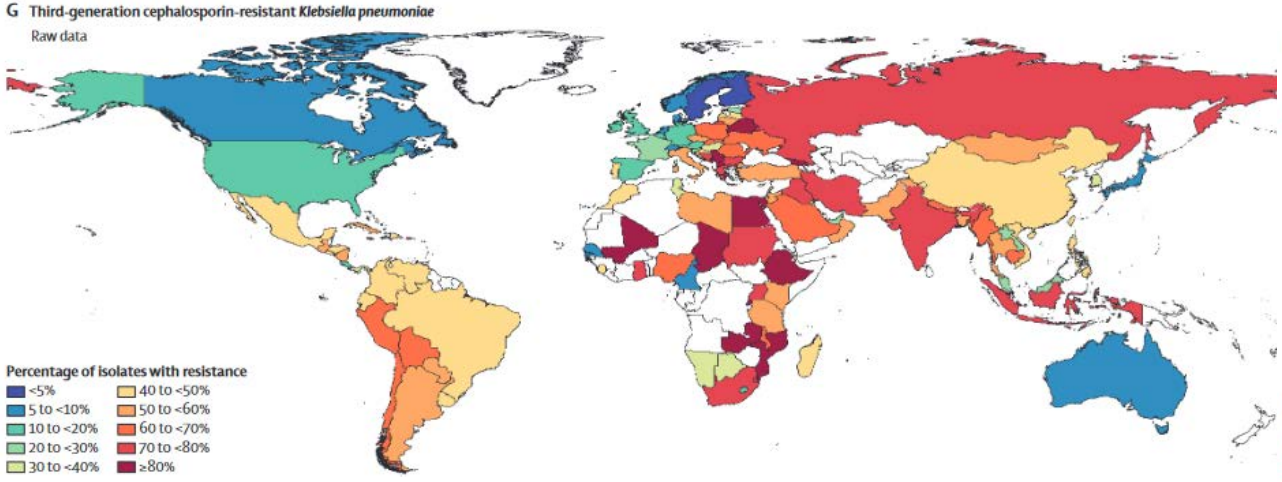
- International COVID-19 Host Genetics Initiative (COVID-19 HGI)
- >100 authors, 12 countries, 21 cohorts
- >1000 protective/severity associated genes
  - Some are quite common
  - Absence of TLR7 (X-linked, 1% of males under 60)
  - Hemizygote mutation (females) equally bad
  - Synergistic with traditional risk factors
    - Age, obesity, male gender, smoking, organ dysfunction
  - Too many trust their genes (Russian Roulette)

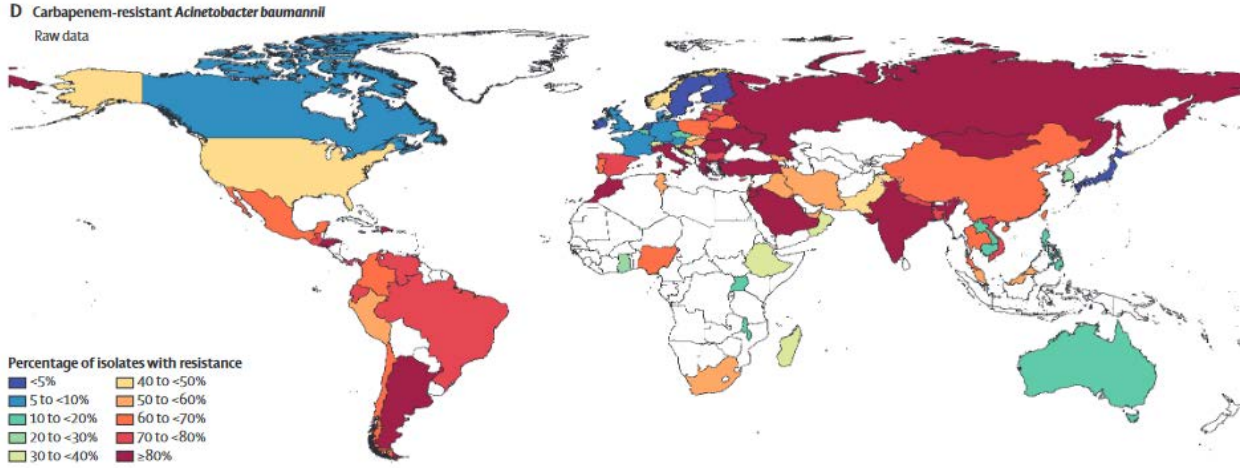
AMR Collateral Damage from the Pandemic (2020 alone)

- Carbapenem-resistant *Acinetobacter*
    - 78% increase in infections,
- Multidrug-resistant *Pseudomonas aeruginosa*
    - *32*% increase in infections,
- Vancomycin resistant *Enterococcus* (VRE)
    - 14% increase in infections, and
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
    - 13% increase in infections.
- *Candida auris*
    - –increased 60%





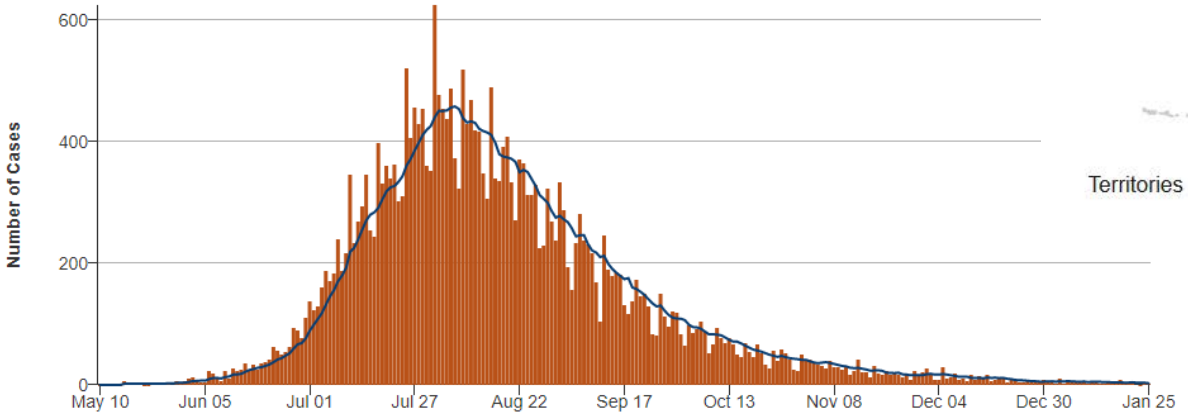


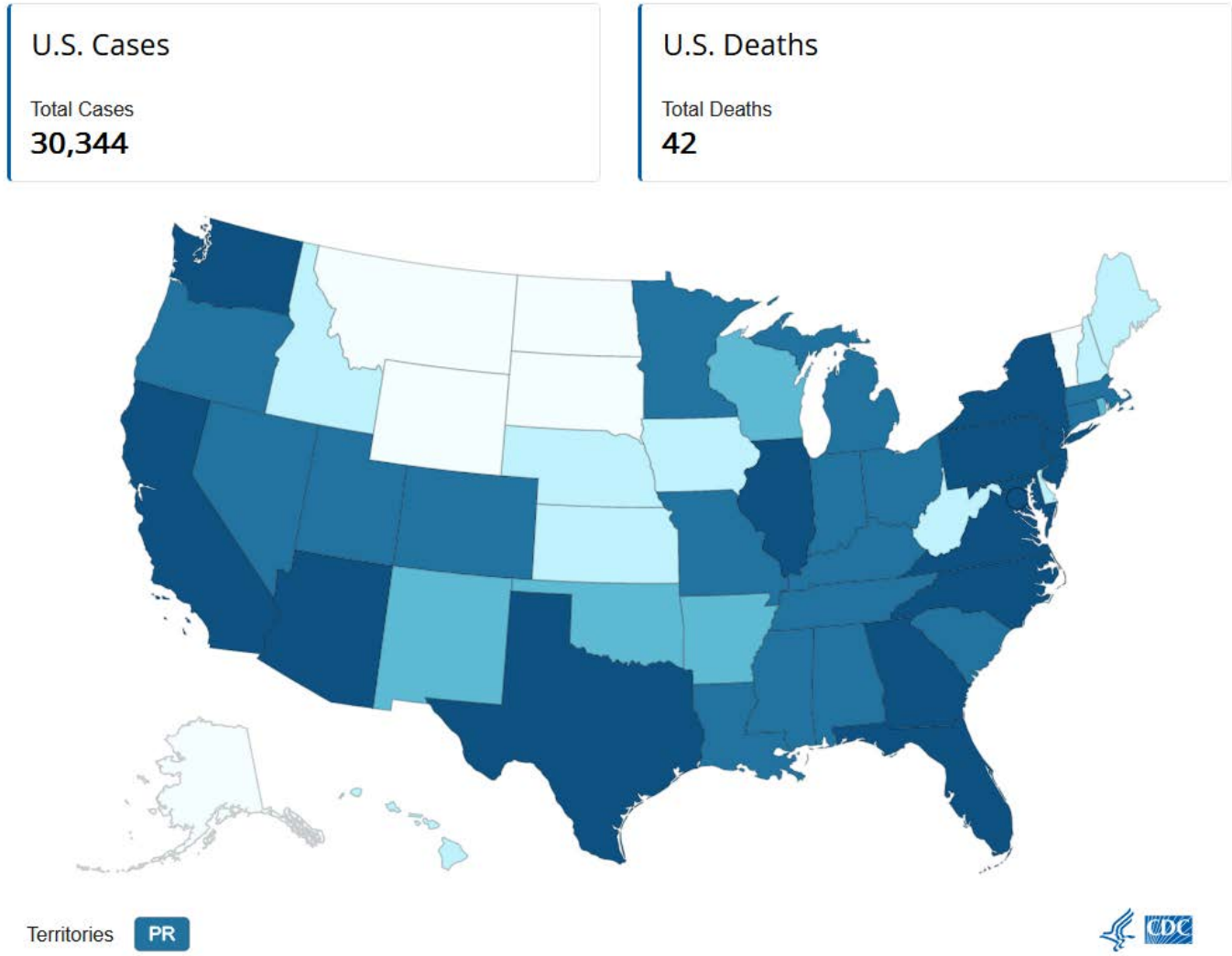


- Number of deaths associated with bacterial AMR in 2019 was 4.95 million, with 1.27 million deaths directly attributable to AMR
- We have the tools including antimicrobial stewardship, infection control, reducing antibiotic use in animals, and development of new antimicrobials and vaccines.

MPox

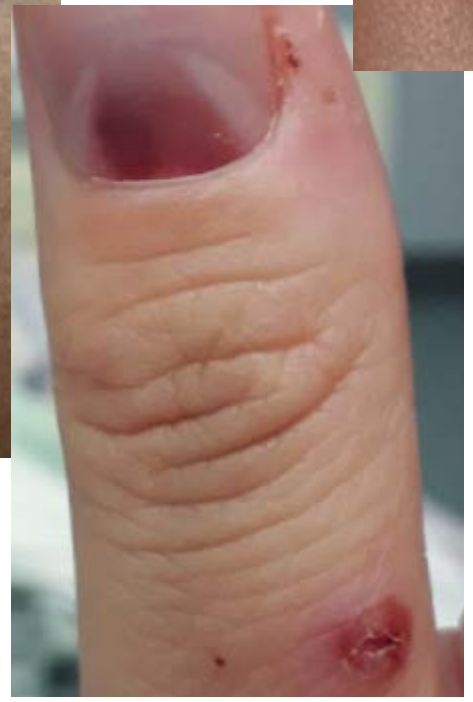
4/19/23 239 in SC

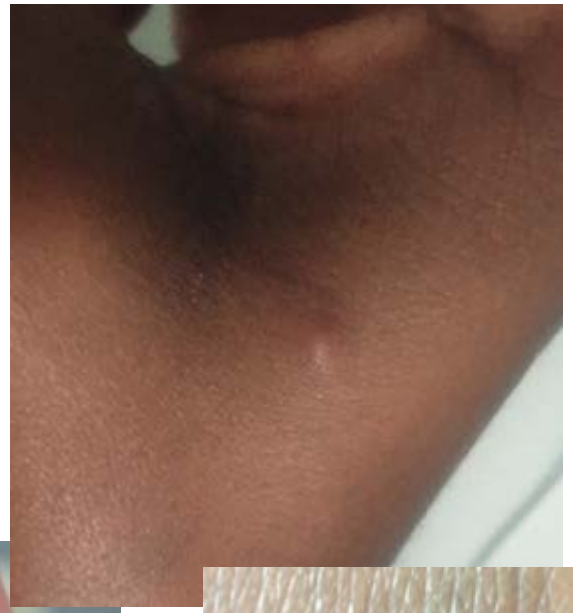




- Classic lesions (“textbook”)

Typical lesions

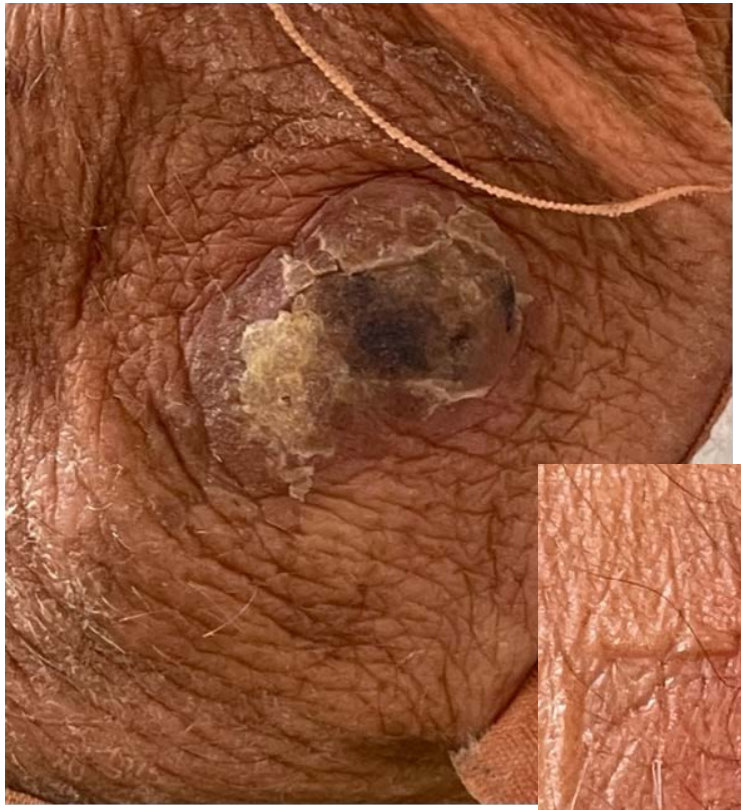




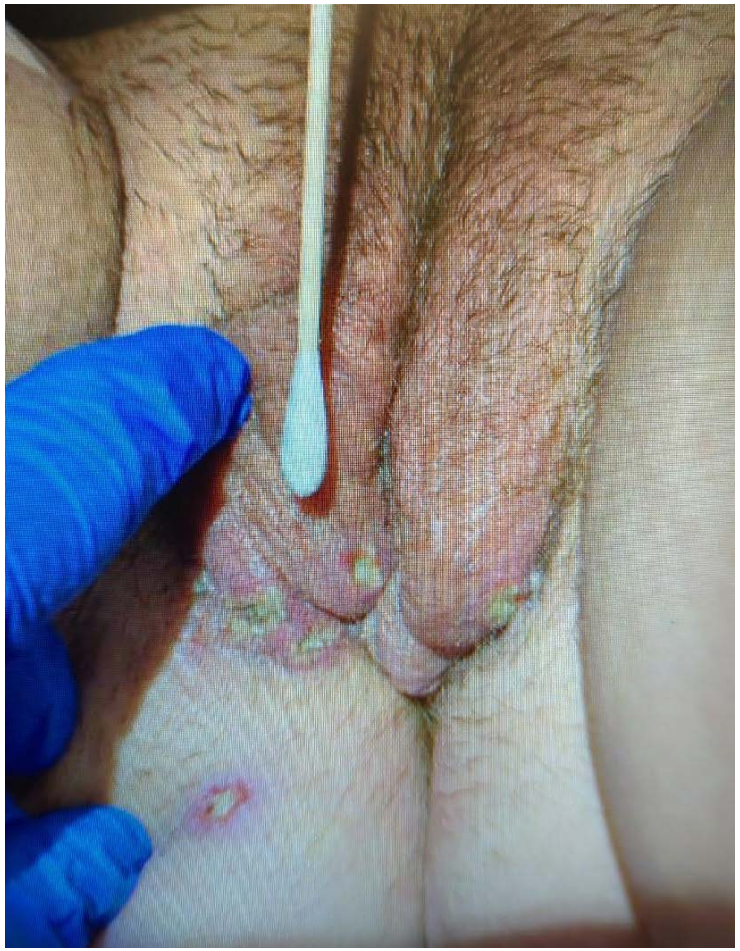
Characteristic/Classic lesion

Typical lesions All on the same day!

Difficult cases



Cases in children and female patients



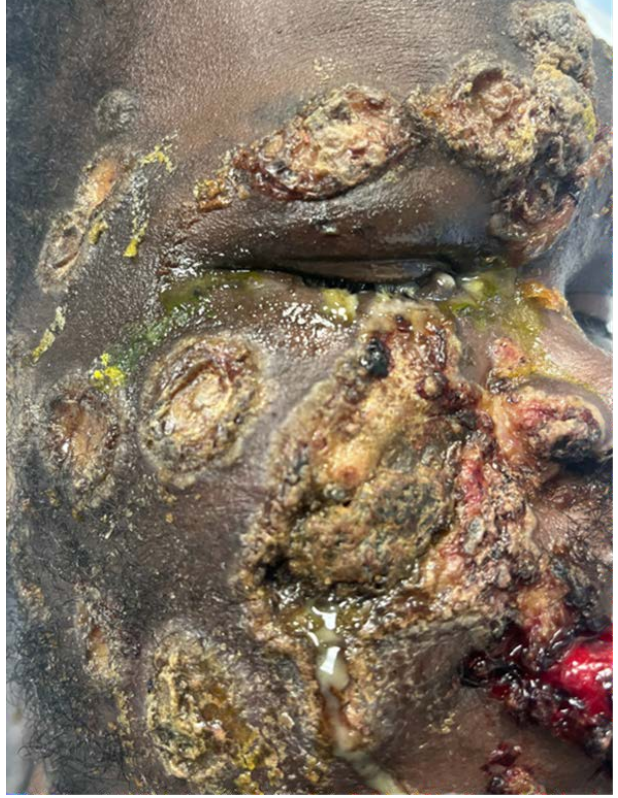
MPOX + uncontrolled HIV = Bad

- As in potentially really bad
- Especially if HIV + syphilis + Mpox?!

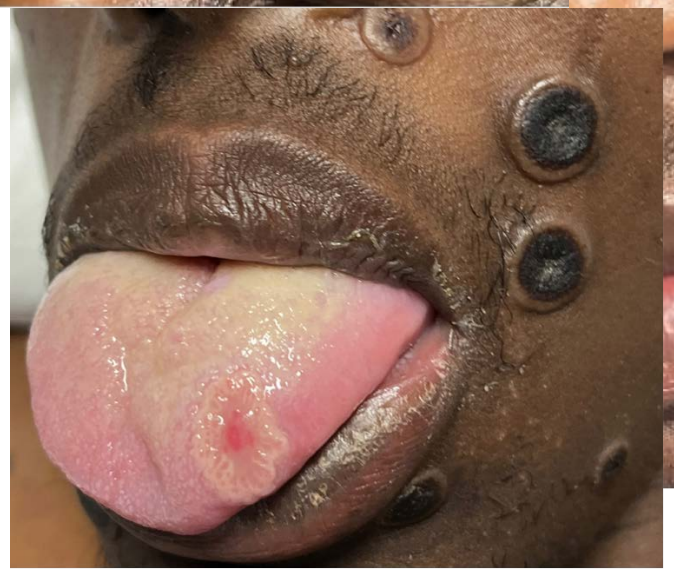
MPox

- Driving bad outcomes ?!
  - Co-infection (syphilis, HIV, HPV, others?)
  - HIV viral load
  - Low CD4
- Race, gender, MPox viral load, MPox substrains??
- Direct invasion vs. immune mediated damage vs. superinfection vs. immune reconstitution
  - More than one mechanism?

January 7
2023 (yes, 2023)



January 2023 – Patient 2



Bird flu

H5N1, clade 2.3.4.4b is not going away

- Really bad for turkeys, bad for broilers and egg layers
- Skunks, foxes, dolphins, humans infected
- As of Dec 2022 52 (!) million birds have been culled in 46 states in US alone
- Partially responsible for chicken/egg prices

- History lesson
  - H1N1 1918 (“Spanish”) was a human disaster and a 1917 disaster for birds
  - 18 HAs and 11 NAs have been described but there are more
  - H7N9 outbreaks have already occurred – in non human animals
  - How well are we prepared for H18N11?

Bird flu (H5N1 2.3.4.4b) encore

- 2.3.4.4b worse for birds, less bad for humans
- Nov 2022 1000s of dead birds on Peru beaches
  - Pelican population widely affected, also penguins
  - 100s of sea lions also dead, H5N1 confirmed in 3
  - Hospitalized human cases including 53yo healthy patient admitted to ICU in Antofagasta region in March 2023 with 2 PB2 gene mutations (virulence, mammalian adaptation)
- US situation
  - H5N1 cases in wild birds have been described in every US state
  - H5N1 cases in backyard flocks or commercial poultry operations in 47 states
  - 4/22 1 human US case (Colorado prison inmate in work program killing infected birds)
- Foxes, raccoons, skunks, bears, seals, porpoises & mink
  - Mink farms ravaged by COVID, 10/22 H5N1 outbreak in Spanish farm (52k animals)

Dangerous steps

For the H5N1 avian influenza virus to spark a human pandemic, its genome must acquire mutations that alter several of its proteins.

Hemagglutinin
Mutations can improve this protein's ability to bind to the species-specific carbohydrates on mammalian cells. Other mutations can stabilize it so the virus can be transmitted in aerosols.

Neuraminidase

Ion channel

Nucleoprotein
A change in shape can help it avoid detection by MxA, a sensor in human cells that alerts the immune system.

RNA

Polymerase complex
The enzyme in this complex replicates the viral genome with the help of a host protein, and it works poorly with mammalian versions. Polymerase mutations can improve the match.

Matrix protein

More flu

- A 56-year-old woman from China was reported to be the first human death from the H3N8 strain on April 11 2023
  - Direct poultry contact
  - 2 other human cases (children) in April/May 2022
- H10N7 outbreak in seals in Europe in 2014
- H5N6 (n>70) & H5N8 (n<10) spreading to humans
  - H5N6 numbers in humans going up in China
- H5 evolves to clade H5 2.3.4.4b (worse for birds, less bad for humans)
- H4N6 in mice

Morbidity and Mortality Weekly Report (*MMWR*)

CDC

Public Health Response to a Case of Paralytic Poliomyelitis in an Unvaccinated Person and Detection of Poliovirus in Wastewater — New York, June–August 2022

Weekly / August 19, 2022 / 71(33);1065-1068

On August 16, 2022, this report was posted online as an MMWR *Early Release.*

Ruth Link-Gelles, PhD[1]; Emily Lutterloh, MD[2,3]; Patricia Schnabel Ruppert, DO[4]; P. Bryon Backenson, MS[2,3]; Kirsten St. George, PhD[5,6]; Eli S. Rosenberg, PhD[2,3]; Bridget J. Anderson, PhD[2]; Meghan Fuschino, MS[5]; Michael Popowich[5]; Chitra Punjabi, MD[4]; Maria Souto, MPH[4]; Kevin McKay, MPH[4]; Samuel Rulli[4]; Tabassum Insaf, PhD[2]; Dustin Hill, PhD[7]; Jessica Kumar, DO[2]; Irina Gelman, DPM[8]; Jaume Jorba, PhD[1]; Terry Fei Fan Ng, PhD[1]; Nancy Gerloff, PhD[1]; Nina B. Masters, PhD[1]; Adriana Lopez, MHS[1]; Kathleen Dooling, MD[1]; Shannon Stokley, DrPH[1]; Sarah Kidd, MD[1]; M. Steven Oberste, PhD[1]; Janell Routh, MD[1]; 2022 U.S. Poliovirus Response Team (View author affiliations)

- IPV vs OPV
- This is not patient zero in the US…

Polio Vaccination Coverage With Three Doses, by New York City Modified ZIP Code Tabulation Areas

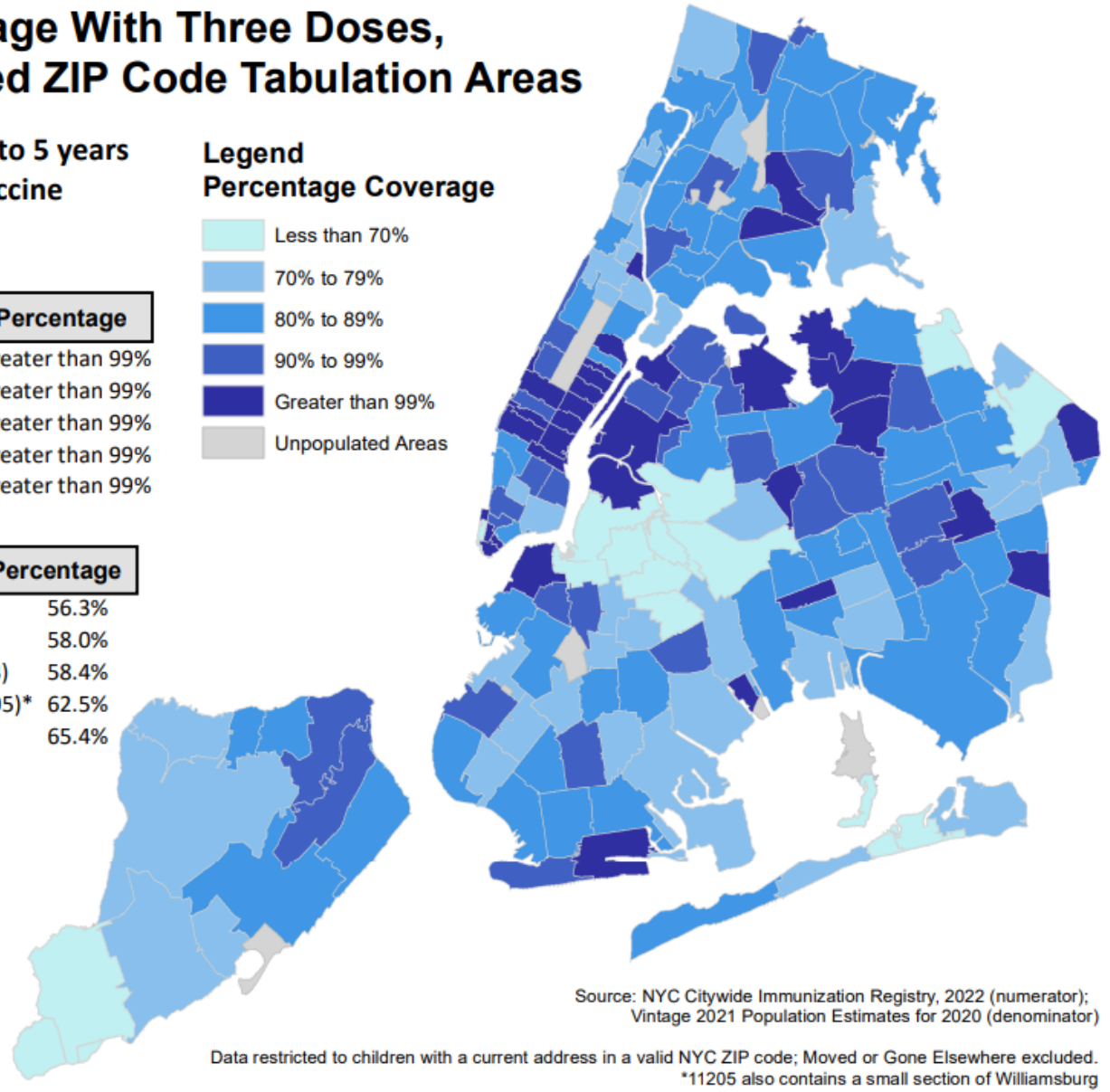
Percentage of children age 6 months to 5 years who received three doses of polio vaccine as of June 30, 2022

Highest	Percentage
Cambria Heights (11411)	Greater than 99%
Bellerose/Douglaston/Little Neck (11004)	Greater than 99%
Lincoln Square (10069)	Greater than 99%
Astoria/Long Island City/Sunnyside (11101)	Greater than 99%
Greenpoint (11222)	Greater than 99%

Lowest	Percentage
Williamsburg (11206)	56.3%
Battery Park City (10280)	58.0%
Bedford-Stuyvesant/Ocean Hill/Brownsville (11233)	58.4%
Bedford-Stuyvesant/Clinton Hill/Fort Greene (11205)*	62.5%
East Williamsburg/Williamsburg (11211)	65.4%

Borough	Percentage
Manhattan	91.0%
Bronx	87.8%
Brooklyn	81.2%
Queens	89.6%
Staten Island	81.7%

NYC Overall: 86.2%



Source: NYC Citywide Immunization Registry, 2022 (numerator); Vintage 2021 Population Estimates for 2020 (denominator)

Data restricted to children with a current address in a valid NYC ZIP code; Moved or Gone Elsewhere excluded.
*11205 also contains a small section of Williamsburg

Data as of 6/30/2022
Created 7/28/2022

https://nyc.gov/site/doh/health/health-topics/poliomyelitis.page

M&D pandemic

- Misinformation
  - Wrong, misunderstood information
  - Sample of 1 (“my grandfather smoked 2 PPD and lived to 101 and my aunt never smoked and died of lung cancer age 40”)
- Disinformation
  - Deliberate misinformation, pseudo science, out of context facts, lies usually for nefarious purposes
  - Often bots (China, Middle East, Russia, North Korea)

"A powerful, well-documented exposé of those criminally responsible for the bioweapon known as SARS-CoV-2."
—DR. MERCOLA, founder of Mercola.com

Is COVID-19 a Bioweapon?

A SCIENTIFIC AND FORENSIC INVESTIGATION

Dr. Richard M. Fleming
PHD, MD, JD

NWO REPORT
Conservative News Alternative Nwo News

HOME | WHAT IS THE NEW WORLD ORDER? | COVID VACCINE DEATHS | COVID VACCINE REACTION

CORONAVIRUS VACCINE, DEPOPULATION AGENDA

Exposed! Covid Vaccines Part of Depopulation Agenda, 'Died Suddenly' Documentary Reveals

Date: November 2, 2022
Author: Nwo Report
0 Comments

"Died Suddenly" explores the bizarre surge of people dying unexpectedly in wake of the Covid-19 vaccine rollout.'This is the greatest orchestrated die-off in the history of the world,' says the scientist.

"greatest orchestrated die-off in the history of the world"

MPOX same but quicker

Chuck Callesto
@ChuckCallesto

BOMBSHELL REPORT: Fauci Funded Research into Potential Monkeypox Cures BEFORE the Viral Disease Global Outbreak..

8:01 PM · May 30, 2022 · Twitter Web App

1,113 Retweets **63** Quote Tweets **2,253** Likes

Is it monkeypox, or crystalpox?

Once again, honesty is going to prove tough for the public health authorities

Alex Berenson
May 23

898 236

Are you a gay man?

Specifically, are you a gay man who likes sex with lots of other gay men? Maybe in a bathhouse? Maybe names optional? Maybe with a meth bump on the side?

No? Are you sure?

It's cool if you are, no judgments. They're called glory holes for a reason, people!

Still no?

Okay. Don't worry about the monkeypox thing then.

Bloomberg
US Edition

Live Now | Markets | Technology | Politics | Wealth | Pursuits | Opinion | Businessweek | Equality | Green | CityL

Politics

Conspiracy Theories That US Let Loose Monkeypox Swirl in China

John B Brady
This comment is fact the FB fact checkers being anti heterosexual and pro homosexual. All the initial cases in the UK were caught and spread by homosexua
This is a medical fact the Leftwing media are liars.

Dr. Abby @DrAbby83797237 · 12h
Everyone who took the poison, 1,2,3 or more should be on bitter melon, olive leaf, gamma oryzanol, quercetin + c to save themselves from a summer of death and **monkeypox**.

Shingles in 2022 is an adverse effect of the COVID-19 injections. In other words, people were injected smallpox under the guise of COVID19 vaccine, among many other harmful nanoparticles and poisons.

Monkey Pox is clustered in the gay pulation and being spread by gay sex. Be Aware!

05/23/22 • BIG PHARMA › NEWS

As Monkeypox Cases Spread, Report Shows Gates Foundation, WHO, Pharma Execs Took Part in Monkeypox Pandemic 'Simulation'

BBlues60
@BBlues60

Shingles is the monkey pox because it's all a hoax, it's from the side effects from the Pfizer vaccines


Schwab's
COCO POX
Just like a covid crisis but with blisters


SUMMER 2023

Communication

- CDC does – on average - weekly podcasts
  - No good data on metrics, last public data 2016, 5 million total views???
  - Rochelle Walensky 374k Twitter followers total, Zero YouTube subscribers
  - Qualifications: BA biochemistry/molecular biology, IM/ID MD, MPH
  - YouTube
    - Director debrief 2022-23 2.3k views
    - Director debrief: updated COVID-vaccines 804 views
    - Children Who Have Had COVID-19 Should Get Vaccinated 183k views

- Joe Rogan Experience
  - Qualification: Self taught wrestling color commentator, actor & comedian
  - Average views per podcast 11 million
  - 16.1 million Instagram, 10.4 million twitter, 13.9 million YouTube followers
  - Mixed politics but generally against covid vaccines & restrictive COVID policies
  - Took cocktail containing ivermectin for his COVID and advised others to do so
  - Aaron Rogers “immunized” and “consulted Joe Rogan for medical advice”
  - Took Rogan cocktail incl. ivermectin, recovered and was voted MVP same year

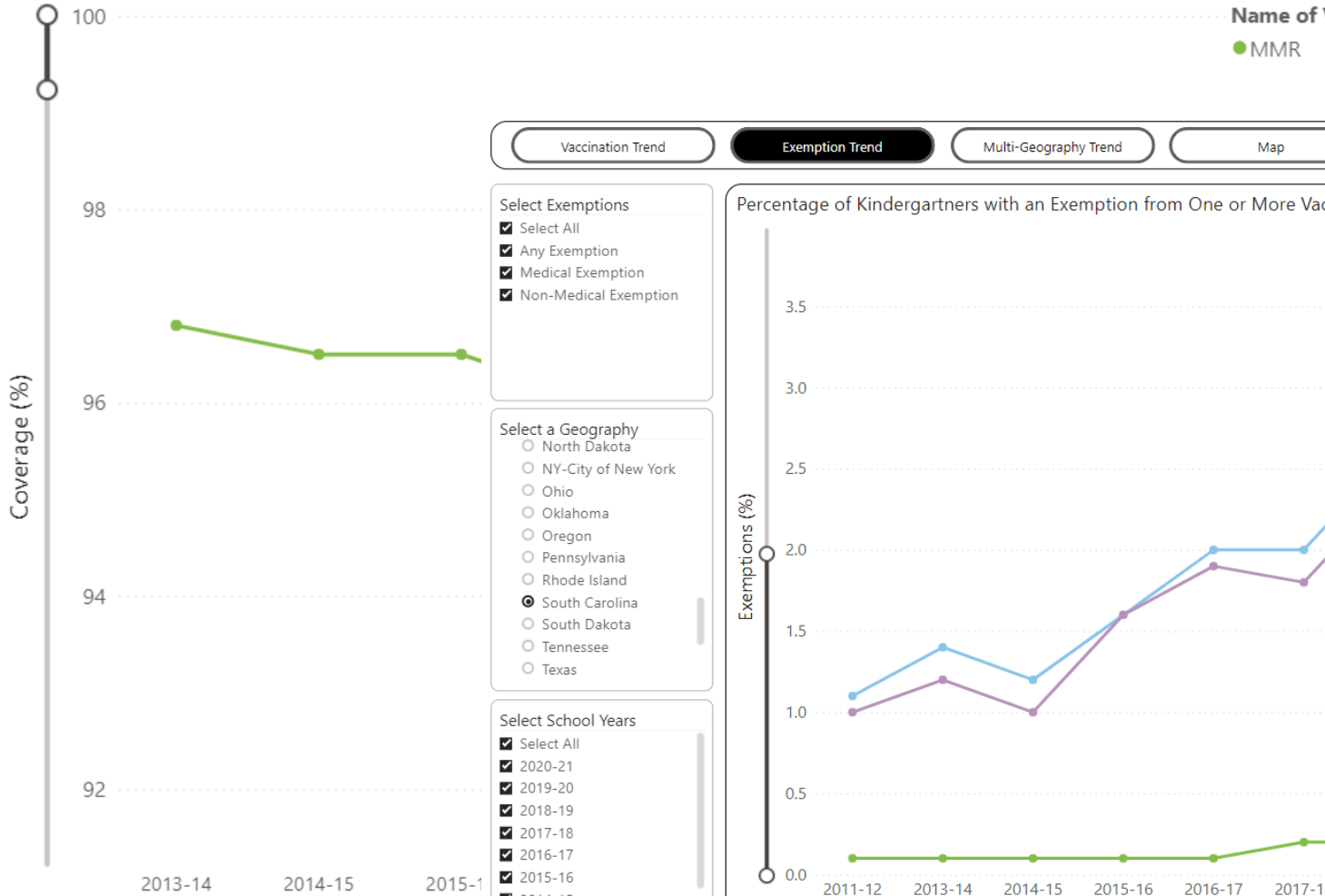
Vaccination Trend | Exemption Trend | Multi-Geography Trend | Map | Data Table | Data Notes

Select Vaccines
- Select All
- DTP, DTaP, or DT
- Hepatitis B
- MMR
- Polio
- Varicella

Select a Geography
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- TX-City of Houston
- Utah
- Vermont
- Virginia

Select School Years
- 2019-20
- 2018-19
- 2017-18
- 2016-17
- 2015-16
- 2014-15
- 2013-14
- 2012-13
- 2011-12

Vaccination Coverage among Kindergarteners by School Year, South Carolina



Vaccination Trend | Exemption Trend | Multi-Geography Trend | Map | Data Table | Data Notes

Select Exemptions
- Select All
- Any Exemption
- Medical Exemption
- Non-Medical Exemption

Select a Geography
- North Dakota
- NY-City of New York
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas

Select School Years
- Select All
- 2020-21
- 2019-20
- 2018-19
- 2017-18
- 2016-17
- 2015-16
- 2014-15
- 2013-14

Percentage of Kindergartners with an Exemption from One or More Vaccines by School Year, South Carolina

Most Viewed Articles

Today | Week | Month | Year

Getting vaccinated for covid four or more times results in near-complete collapse of the immune system, bombshell study finds

Netanyahu admits Israeli government partnered with Pfizer to compile genetic database of population

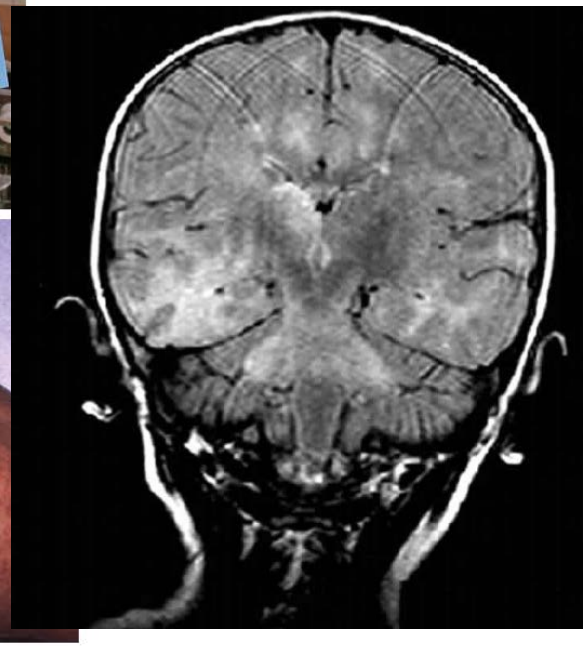
Frontal nudity to be ALLOWED on Facebook to appease the trans thought police

person's carbon dioxide
d - no more breathing

Stunning video shows how the vaccine industry has turned the measles, an ordinary, non-fatal infection like chicken pox, into a hyperventilated national emergency

Tuesday, February 26, 2019 by: Cassie B.
Tags: badhealth, badmedicine, badscience, Big Pharma, chicken pox, child health, Dangerous Medicine, false-flag, fear mongering, lies, measles, measles outbreak, MMR, Pharmaceutical industry, propaganda, real immunity, vaccine, Vaccine dangers, vaccine injury, vaccines

This article may contain statements that reflect the opinion of the author



What do pediatric vaccines most commonly result in?

- Adults
- I can’t wait

Communication

- This will get worse and we are not well trained at this
- Quantity and lack of quality of opponents is scary
- We always had non scientists, now we have anti scientists
  - We are knee deep in “The world is really not flat” discussions
  - “Do your own research”
    - You can find anything that supports your opinion
    - Opinion > knowledge/facts
    - Google search > decades of training
    - Talking points > scientific communication
    - Facts vs. non facts
      - Now also “alternate facts” (non facts/lies repeated often enough)
      - “You should do this” does not mean “they will do it” anymore

Errors

- Social distancing
  - Idiotic to mislabel physical distancing as social distancing
- Airborne
  - A pet peeve of mine and I was wrong
  - It flies through the air, that’s enough
- Masking
  - Pilot announcement in turbulence works for seatbelts, why can’t we have a pilot?
- Vaccination
- Paxlovid rebound
  - Give a second dose if you are Dr. Fauci
  - If you are a 75 yo AA obese patient with COPD please refrain as per FDA

ID fellowship match 2022

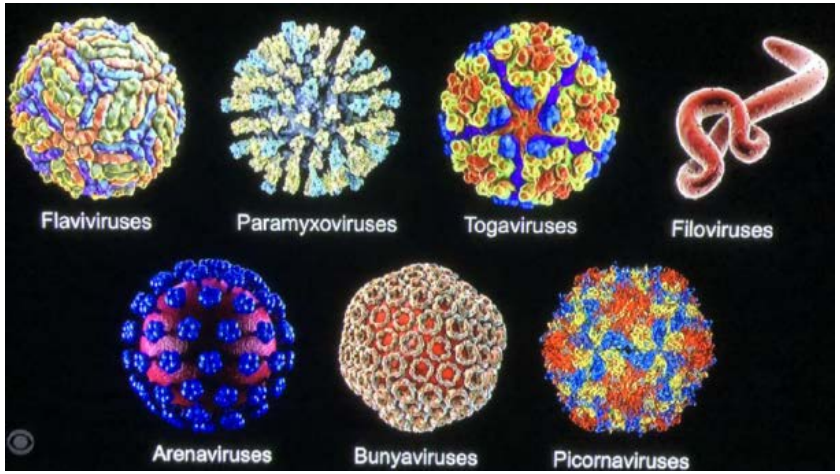
- Shortage of trained providers
  - Turnover and retirement in ID > other specialties
- Importance painfully obvious in the past 3 years
  - 50% of avoidable deaths in hospitals are due to infections
  - ID consultation decreases SA bacteremia mortality by 30%
  - Stewardship saves lives and millions of dollars
  - We actually cure patients, how are you doing pulm, cards etcetera?

- 56% of programs filled vs >90% of non curing specialties

What should we do as far as epidemics go?

- Be ready for the next one
  - The next one will come, it is not a question of if but when & what
- Learn from the last ones
  - We have, “they” likely will not
- Make public health a first responder
  - Have surge capabilities
  - Update infrastructure/IT between pandemics
  - Update technologies
- Invest into new technologies
  - Wastewater, advanced molecular detection, molecular/genomic epidemiology
- Global awareness, global collaboration, and global surveillance
  - America first (patriotism) is good, America only (nationalism) is deadly

CDC Warning 2021



National Wastewater Surveillance for Infectious Diseases Worthy of Further Investment, Says New Report

News Release | January 19, 2023

Announced 1/19/2023:
National Academies of Sciences, Engineering, and Medicine recommend strengthening national coordination and ensure a national wastewater surveillance system that is “flexible, equitable, and sustainable to inform the public health response to COVID-19 and future infectious diseases.”

Announced 1/22/2023:
New York State to expand wastewater monitoring to start looking for influenza, RSV, hepatitis A, norovirus, and antibiotic resistant genes

Testing Wastewater Can Protect People

Posted On: September 2022

Story Highlights

- In 2018, CDC funded the University of South Carolina to measure antimicrobial resistance genes in wastewater and in treatment plant workers at municipal wastewater treatment plants.
- With additional funding from CDC, the researchers were able to build on this work and begin testing wastewater to measure levels of SARS-CoV-2 (which carries genetic information) as an indicator of whether COVID-19 infections are increasing or decreasing in specific communities.
- This work plays an important role as an early warning system to help stop the spread of deadly organisms in U.S. communities.

Funding through the CDC's Antimicrobial Resistance Solutions Initiatives in 2018
Initially studied "resistant germs" in wastewater treatment plants
The study provided "critical, foundational data to establish CDC's National Wastewater Surveillance System (NWSS)" [pronounced "news"]
Now, CDC funds 46 cities and two territories to support COVID-19 wastewater surveillance

https://www.cdc.gov/drugresistance/solutions-initiative/stories/testing-wastewater.html

Roadmap to public health genomic epidemiology