COVID-19
Past, Present, Future

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Waitemata DHB

Goals

- Give you an idea of what to expect when COVID hits.
- Let you learn from our mistakes.
- Help answer some common COVID-related questions.
- Describe the clinical features so that you are prepared.

Agenda

- Seattle's Experience: Initial Outbreak
  - A Brief History of COVID in the USA…
  - Mistakes Made and Lessons Learned
  - Adaptation
- COVID Review
  - What will I see in the Emergency Department
- COVID Literature
  - What is the evidence?

Disclosures

- In mid-2020, as a response to COVID, I co-founded a company called Dispatch which I will tell you a little about.
- I’m part owner, but no longer actively working on the project.
- We’ve made zero dollars.

Timeline—Origins of COVID in the USA

On January 20th, 2020, the first patient in the USA was diagnosed with the novel coronavirus at a Seattle area hospital.

On February 29th, the first death was reported at another area hospital.

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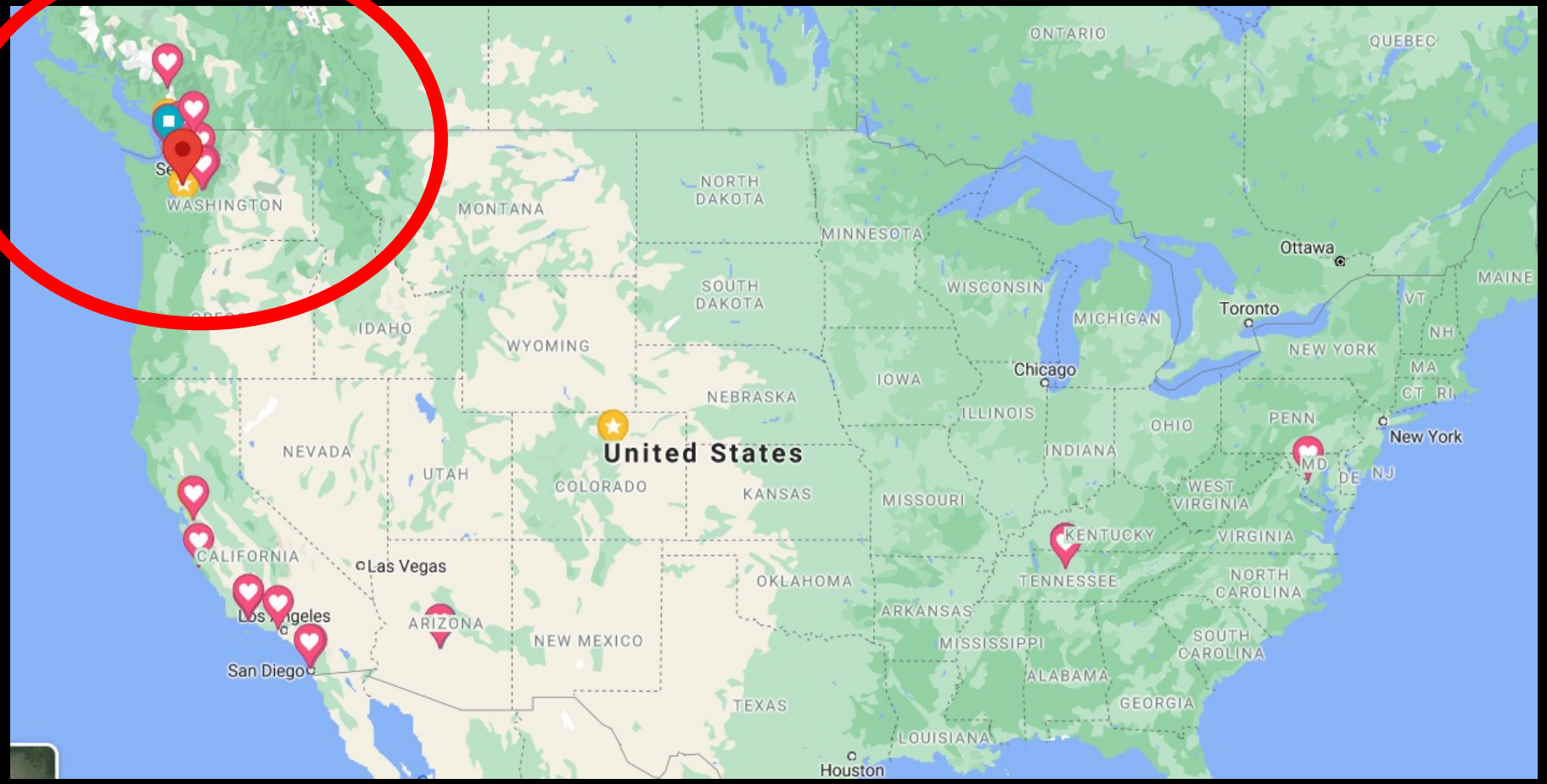
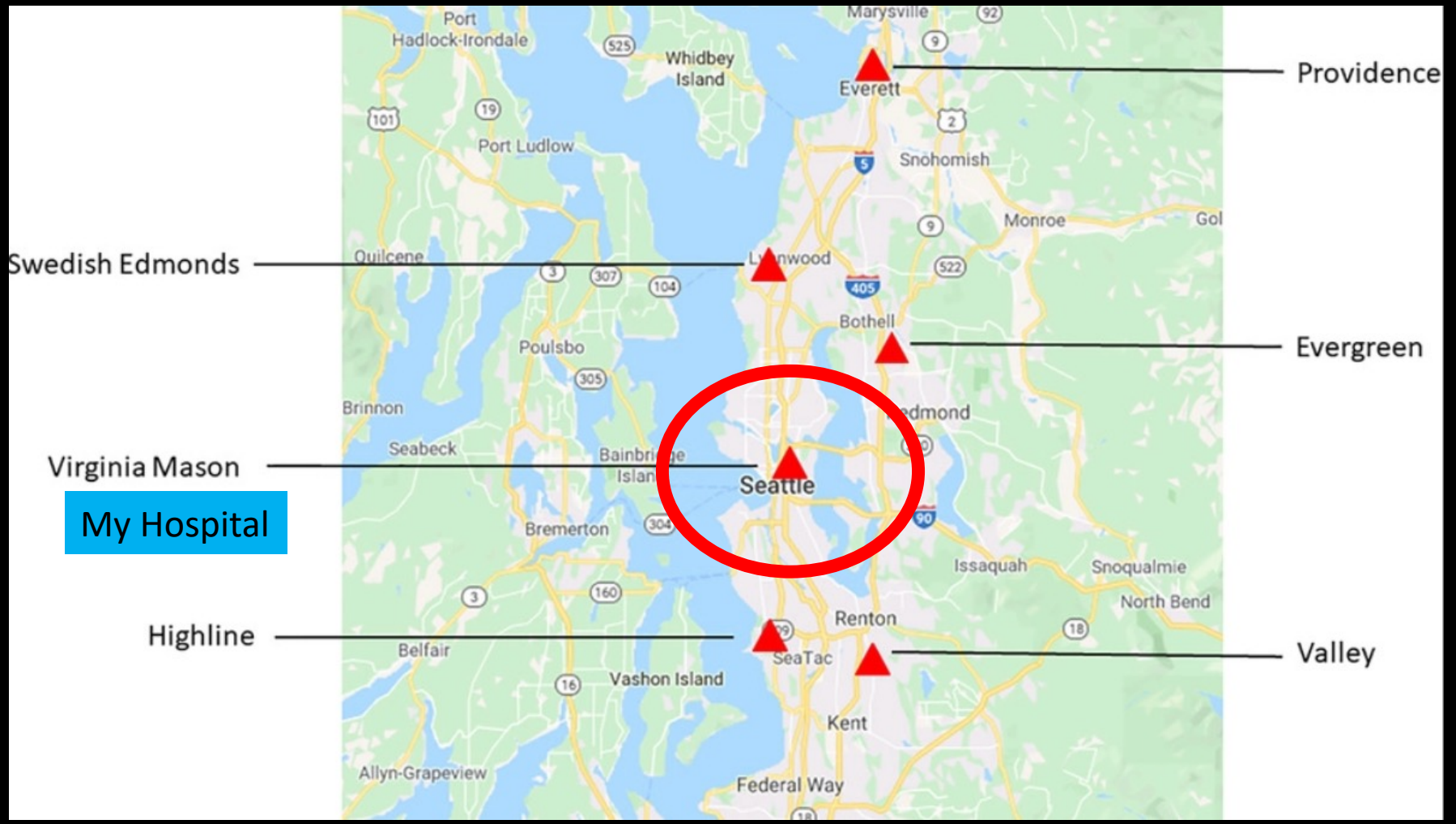
Pugent Sound: A Hotbed

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Bothell
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Seabeck
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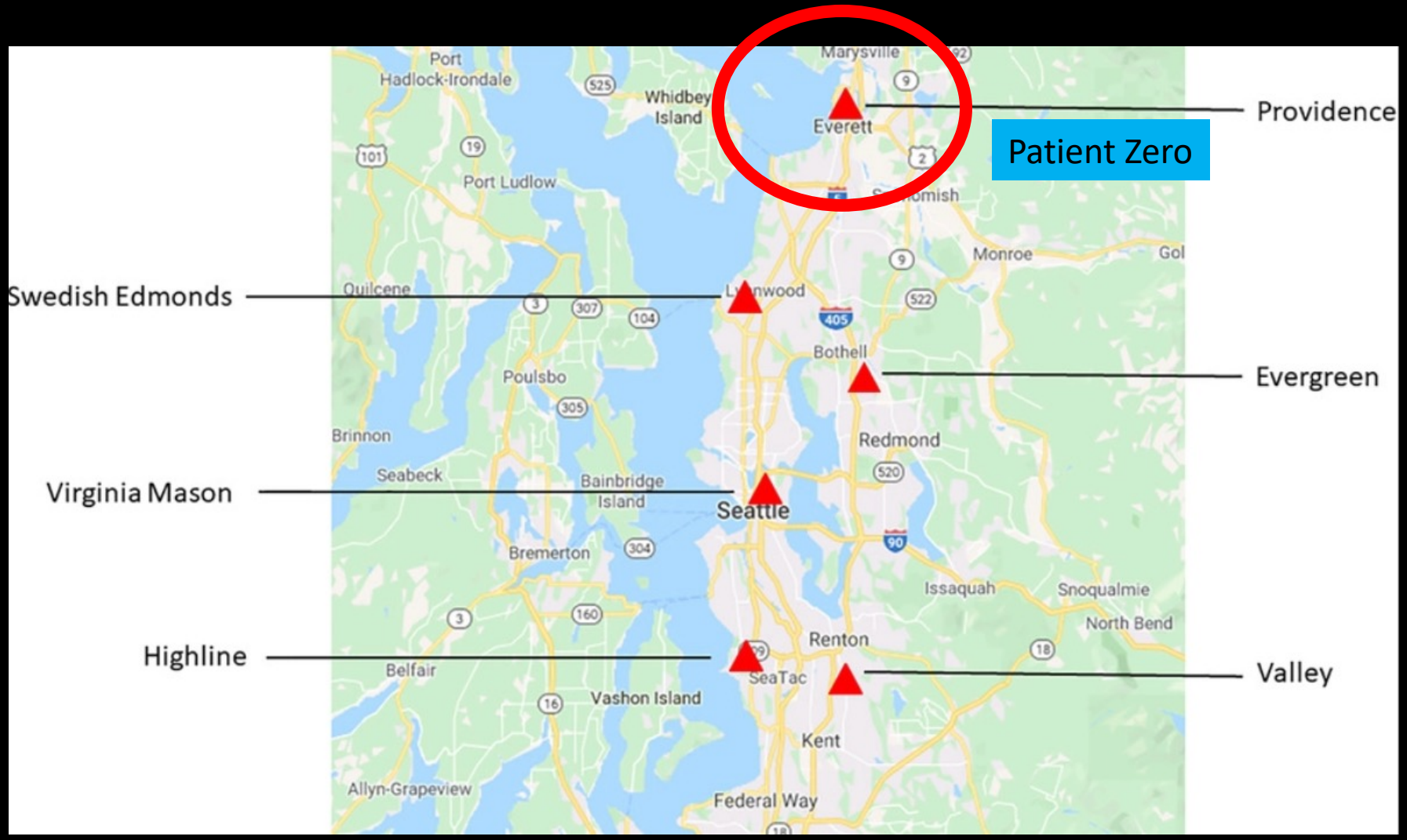
SeaTac
Vashon Island
Kent
Allyn-Grapeview
Federal Way


Providence
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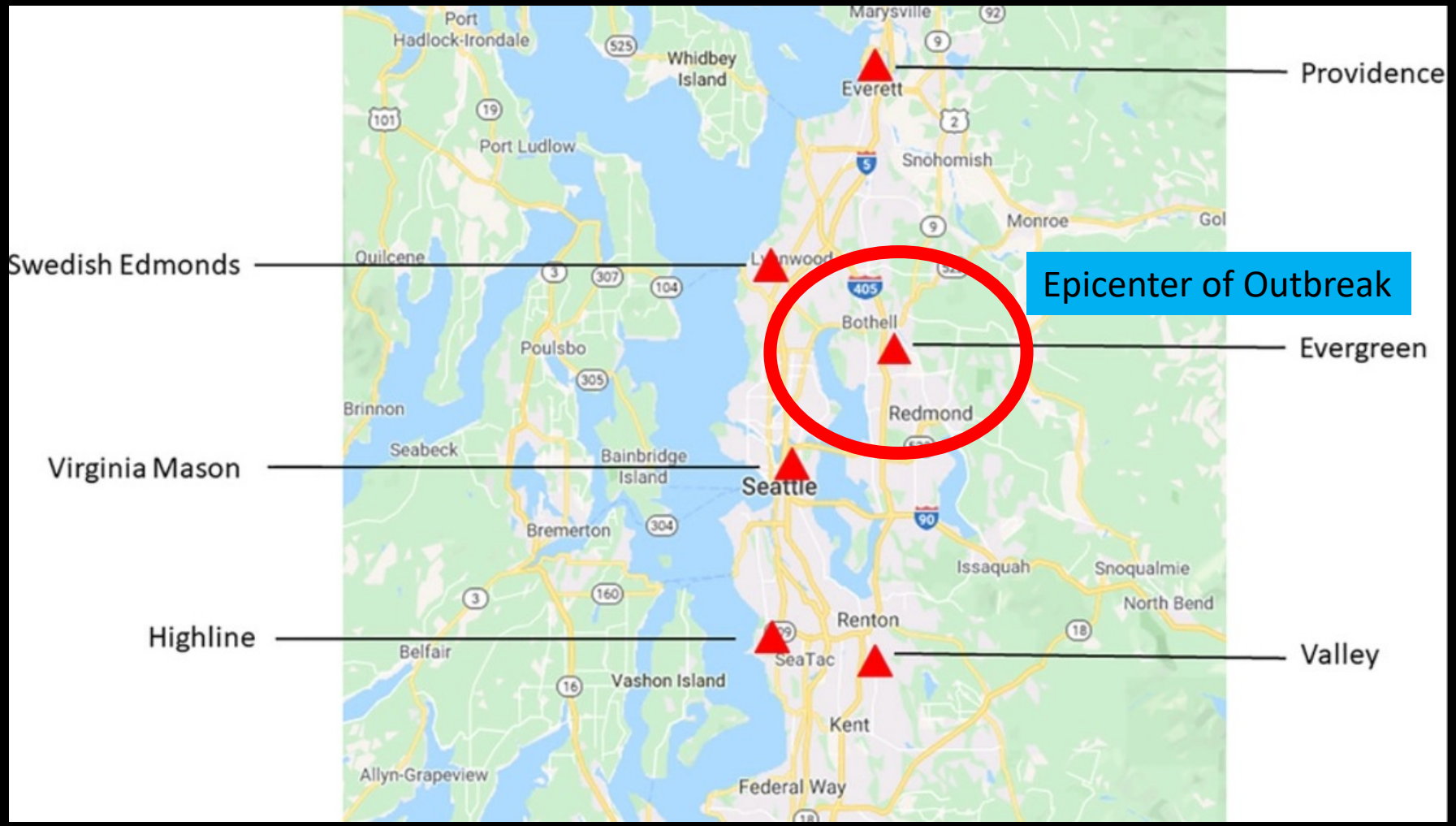
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Bremerton
Issaquah
Snoqualmie
North Bend
Renton
Belfair
SeaTac
Vashon Island
Kent
Allyn-Grapeview
Federal Way

Hospital/ICU Capacity in Seattle

Hospital	Health system	Location	Annual ED visits	Inpt beds	ICU beds
EvergreenHealth Medical Center	Evergreen	Kirkland	57,000	318	20
Highline Medical Center	CHI Franciscan	Burien	55,000	124	10
Providence Regional Medical Ctr	Providence	Everett	90,000	591	48
Swedish Medical Center	Swedish	Edmonds	50,000	130	12
Valley Medical Center—UW Med	Univ of WA	Renton	84,000	310	30
Virginia Mason Hospital	Virginia Mason	Seattle	27,000	275	20
			363,000	1748	140

Ventilators in New Zealand

ICU-capable ventilators in public hospitals as at 14 July 2021

Region	DHB	Quantity
Northern	Auckland	107
	Counties Manukau	56
	Northland	25
	Waitemata	29
	Total	217
Midland	Bay of Plenty	23
	Lakes	8
	Tairawhiti	7
	Taranaki	13
	Waikato	55
	Total	106
Central	Capital and Coast	61
	Hawkes Bay	29
	Hutt Valley	12
	Mid Central	20
	Wairarapa	4
	Whanganui	6
	Total	132
South Island	Canterbury	82
	Nelson Marlborough	18
	South Canterbury	8
	Southern	64
	West Coast	2
	Total	174
Held in DHBs		629

Life Care Center of Kirkland

Due to lack of testing, COVID was not recognized as the cause of a large nursing home outbreak until days into the episode.

Given proximity to one of the large area hospitals, the hospital admitted 20+ patients before COVID was recognized and the regional command center activated. Their ICU was full.

All told, the nursing home would have 101 confirmed cases and 46 deaths.

HEALTH

First Covid-19 outbreak in a U.S. nursing home raises concerns

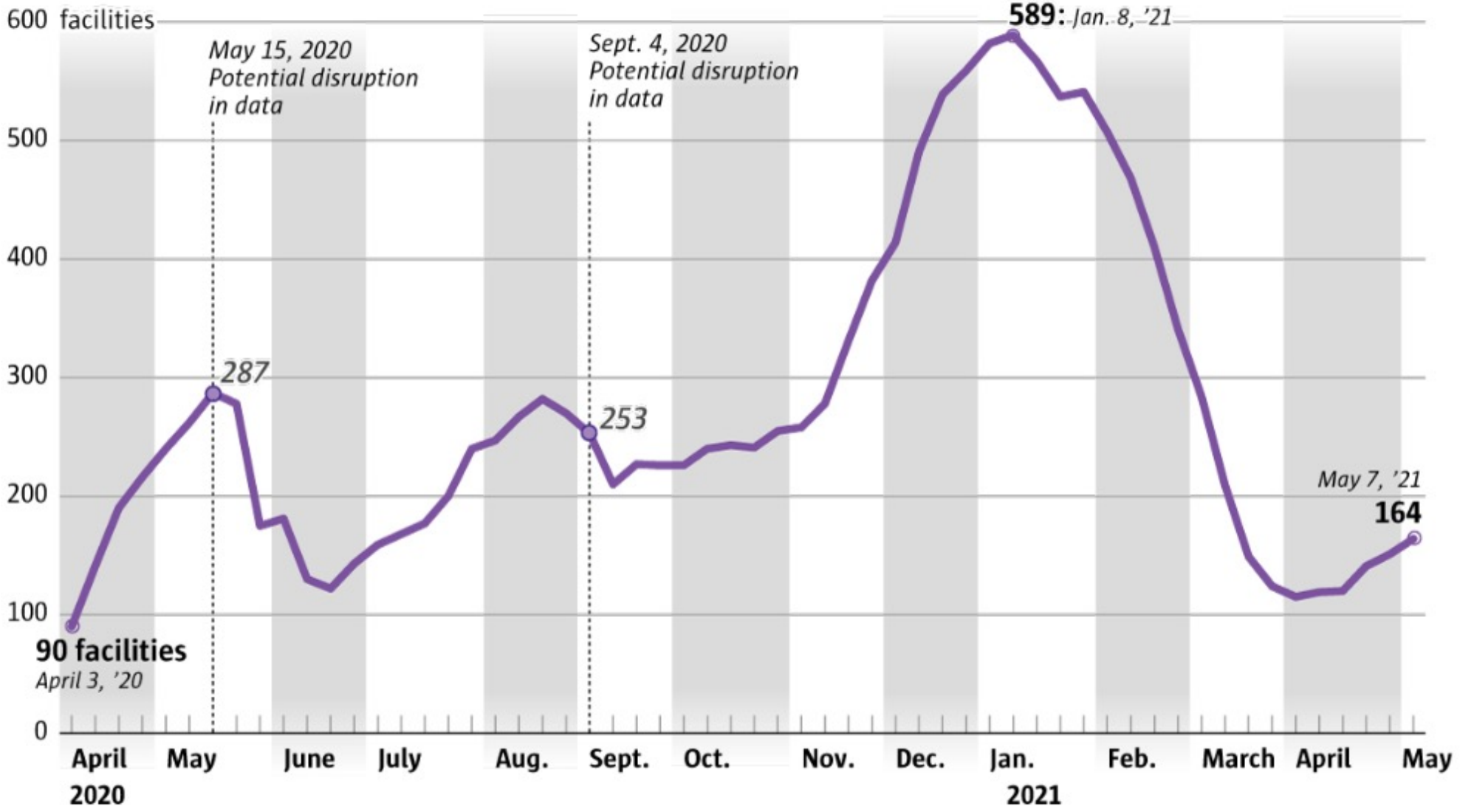
By Eric Boodman and Helen Branswell Feb. 29, 2020 Reprints

Nancy Messonnier of the CDC.

https://www.statnews.com/2020/02/29/new-covid-19-death-raises-concerns-about-virus-spread-in-nursing-homes/

Number of Washington facilities with COVID-19 outbreaks

Each long-term care facility reported at least one active COVID-19 case among residents or staff members. The total represents the average number for each week.



Source: Washington State Department of Social and Human Services

MARK NOWLIN / THE SEATTLE TIMES

EvergreenHealth doctor opens up about 'brush with death,' recovery after coronavirus

April 13, 2020 at 1:11 pm | *Updated April 13, 2020 at 5:39 pm*

EvergreenHealth's Dr. Ryan Padgett believes he likely became infected with the new coronavirus during an "onslaught" of cases flowing into the emergency department... (Erika Schultz / The Seattle Times) **More**

By Evan Bush

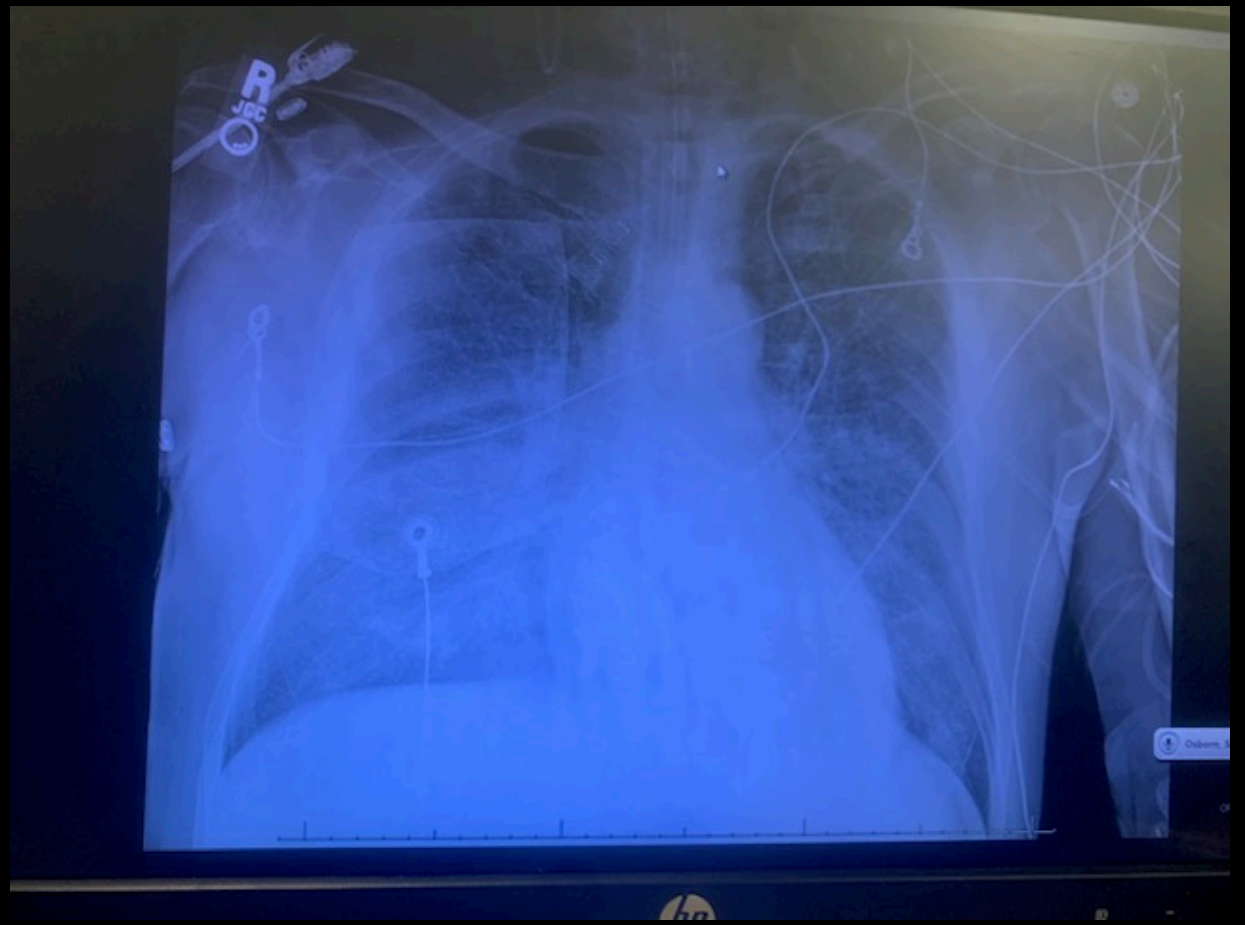
Seattle Times staff reporter

An EvergreenHealth Medical Center physician who became infected with COVID-19 in early March, who spent more

It begins

Josh Gets Sick

But does fine, thank goodness.



Early Days

- Clinical Presentations **(more detail later in the show)**
  - Asymptomatic “Worried well”—Cough, malaise, fever.
  - Vomiting/Diarrhea—10-20% presentations
  - Dry cough, Chest tightness—Common even in mild disease
  - Shortness of breath—Low to midrange sats before tachypnea
  - Anosmia present in “obvious” COVID patients, but not many.
- Unusual Clinical Features
  - “Happy Hypoxia”
  - Protracted intubations
    - ICU duration, not ICU capacity was main limiting factor

Brief Course of Pandemic in Seattle

- Initial wave
  - Large bolus up front of elderly, unwell patients.
  - Later patients were mostly younger, ignoring or unable to live up to lockdown provisions.
  - ICU full at epicenter—regional network able to compensate.
- Later waves
  - Able to keep hospital open using strict admission protocols, follow-up system.
  - "Crisis Standard of Care" never met, but agreed upon.
  - ICU volume largely came from rural areas via transfer.

COVID-19 IN WASHINGTON STATE

Cases, Hospitalizations, Deaths and Vaccinations by County

DATA AS OF 08/19/2021 11:59PM PT

Confirmed cases are individuals with a positive molecular test for COVID-19. Probable cases are individuals with a positive antigen test for COVID-19 and n positive molecular test. Hospitalizations and deaths are reported among confirmed and probable cases. Number of vaccine doses given includes all COVID-19 vaccine doses given and reported in Washington facilities. Learn More

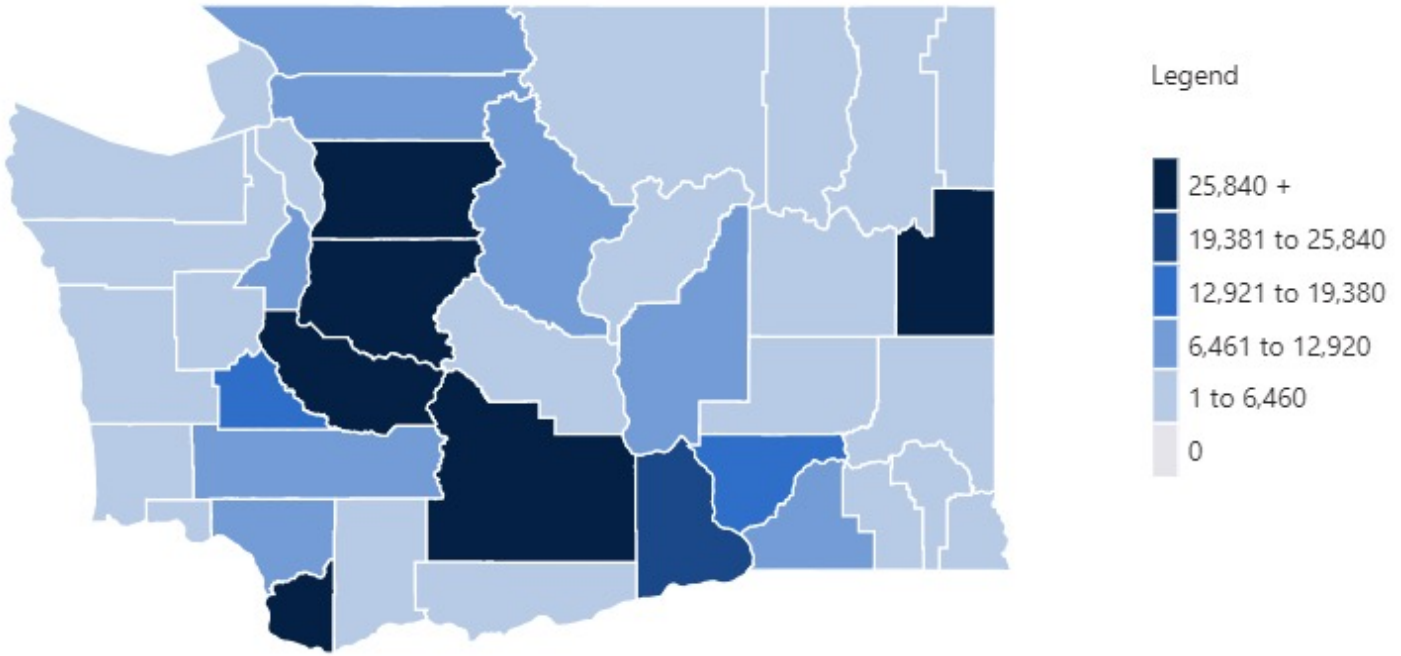
SELECT COUNTY

Search

- Select all
- Adams County
- Asotin County
- Benton County
- Chelan County
- Clallam County
- Clark County
- Columbia County
- Cowlitz County
- Douglas County
- Ferry County
- Franklin County
- Garfield County
- Grant County
- Grays Harbor County
- Island County
- Jefferson County

Confirmed Cases	477,415
Probable Cases	51,038
Total Cases	528,453
Hospitalizations	29,491
Deaths	6,356
Percent of Deaths (deaths/total cases)	1.2%
Total Molecular Tests	8,699,378
Total Molecular+ Antigen Tests	9,230,917
Statewide ICU Occupancy by COVID-19 Patients	27.3%
Number of Vaccine Doses Given	8,397,269

CASES BY COUNTY



Tabular View

*Please click **"Learn More"** for more information.*

1,603 of 528,453 cases do not have an assigned county

Early Day Setbacks

- Staff members caught stealing masks and were fired
- Staff who were in contact with COVID patients pulled from duty
  - Staff shortages
- Staff at high risk (age, pregnancy) pulled from duty—many never came back.

Early Day Setbacks

- Ventilators and BiPAP machines in short supply
  - No coordinated Federal response
  - Some hospitals ran out; diversion of ambulances due to ICU capacity
- Surgical mask shortages
  - Supply chains completely backed up; hospitals scrambled to get supply directly from foreign manufacturers and via third parties
  - Coughing patients given cloth towels to cough into in the waiting room
- Sanitizer shortage
  - Local distiller provided significant amount of alcohol sterilizer

Early Day Setbacks

- Diagnostics limited:
  - Unable to get a Chest-XR
  - Unable to get a Chest-CT
  - Unable to get a COVID test

Early Days

- Staff anxiety levels very high
  - Sleeping apart from family
  - Sending family away
  - Limited contact with friends—unable to see them in person for 9+ months
- Staff outbreak from potluck
  - Could not even sit in break rooms together
  - Poor morale
- Schools closed
  - Juggling dependent responsibilities

Silver Linings

- Daily Applause!
- Free Food!
- No Traffic!
- No Patients!
- Sense of Purpose—Comraderie.
- Family check-ins.

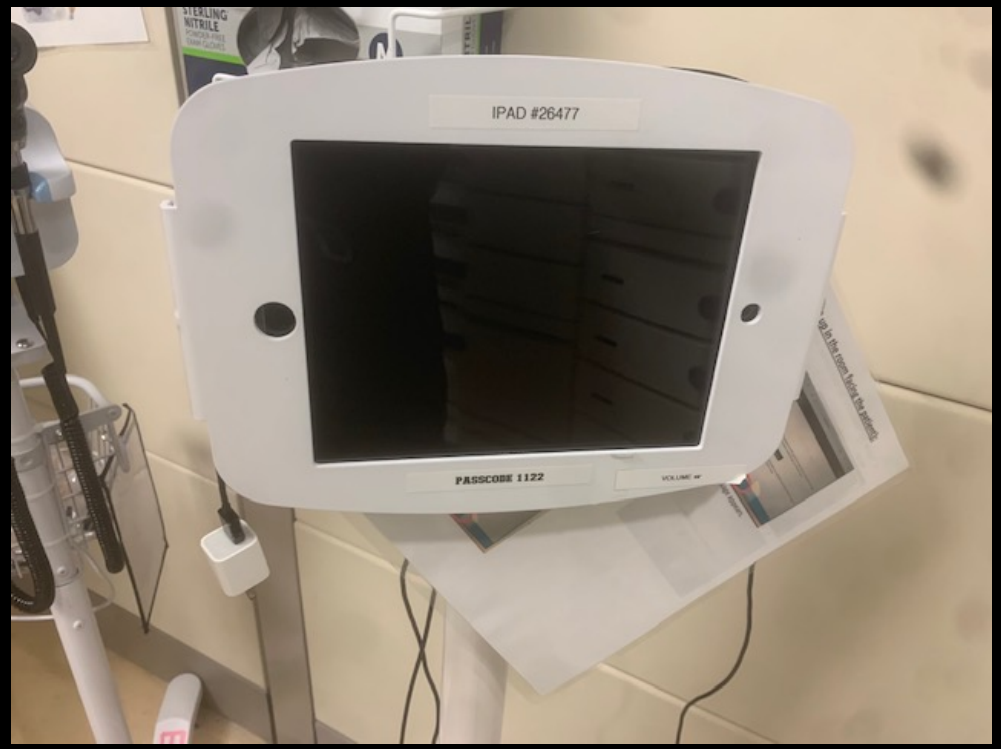
Adaptations


STOP!
Did you gel or wash your hands yet?
Please keep door closed.
Thank you
Dwyer
MARK II
INCHES OF WATER COLUMN
-.05
0
.10
.20
.30
.50
1
2
3
Treatment
11
Wash Hands
J0711

Adaptations

iPads employed, cell phones

PAPR makes it impossible to communicate



Adaptations

- Elective surgeries cancelled to keep vents available in hospital
  - Anesthesiologists freed up to help with airway pathways
- Intubations with PAPR (not N95) and creation of intubation teams
  - Found to be impractical and led to inappropriate intubations
- Mask use controversial / Masks in short supply
  - Patients not required to wear masks until late into epidemic
  - Nurses not allowed to use masks/N95's unless patient was respiratory

5 | PERSONAL PROTECTIVE EQUIPMENT AND ISOLATION MEASURES

Personal protection equipment guidelines have changed rapidly based on local institutional supply and are continuing to change. In general, due to dwindling PPE supplies, our usage transitioned to the World Health Organization (WHO) guidelines of contact/droplet precautions, reserving airborne precautions for high risk/aerosolizing procedures such as intubation, high-flow nasal cannula, bilevel ventilation, and nebulized treatments.[6] In general, however, high-risk procedures are avoided in all respiratory patients when possible. Our current PPE practice is in contrast to much of the rest of the country, and to the CDC guidelines, which had been recommending broad airborne precautions.[7]

We wear surgical masks rather than respirators for typical patient encounters, in addition to face shields, gowns, and gloves. If

Adaptations

- Aerosol-generating procedures reintroduced
  - Kept to negative pressure when possible
  - Staff in N95 plus facemask at all times
  - Became commonplace.
- BiPAP and high-flow nasal cannula reintroduced
  - Abandoned “early intubation” mindset
  - Significantly fewer intubations after hospitalization
  - Hypoxia, tachypnea, chest XR main determinants of level of care

Therapeutics

- Hydroxychloroquine
  - We never used it.
- Remdesivir + Dexamethasone
  - Became standard of care
- Lopinavir/Ritonavir
  - Used on a trial basis
- Bleach, UV light, etc.
  - “Late adopters”

Adaptations

- Testing changed significantly through pandemic
- Initial test: Send-out testing with 48-72h turnaround
  - Respiratory patients only tested
  - Quarantine units filled, requiring expansion to other units/ICU
- Outbreak on inpatient unit (non-respiratory)
  - 2 patients died, several staff hospitalized
  - ALL patients admitted to hospital OR operating room received testing
- Point-of-care testing (Oct 2020) 15m turnaround

Adaptations

- Staff stand-down policies adjusted
  (early days)
  - Initially: Exposure meant staff offline for 10 days
  - Then: Exposure meant staff offline until negative COVID at 72h
    - AND asymptomatic
  - Then: Exposure only counted IF mask not warn
    (once widespread)
  - Then: No exposure ramifications regardless of type
    Stand-down based only on symptoms + positive test

Adaptations

- Staff testing drive-through if symptoms
  - Phone number for COVID concerns
  - →Approval for drive-through testing
  - Test result within 2 hours
  - Staff member OK for work after negative test

Adaptations

- Visitation Policy
  - Early pandemic: Open to public, masked
  - After first hospitalizations: One family member only, masked
  - After first spread via family: Closed to family
  - After widespread testing: Limited family visits for NON-COVID patients,
If end-of-life, limited COVID visits

Adaptations—Current Visitation Policy

Visitors who will still be allowed include these situations:

- Patients at end-of-life: End-of-life refers to a patient who is highly likely to pass away in the coming days and is not restricted to patients who are receiving palliative care. This is for both COVID-19 positive and non-COVID-19 patients.
- Patients who have cognitive, physical or emotional deficits needing Americans with Disabilities Act accommodations
- Caregivers who need to receive in-person education related to patient discharge care needs
- Pre-approved care partners for Centers of Excellence patients during patient education sessions
- Birth support person and certified doula
- Clergy
- Certified interpreter
- The care team may request exceptions for complex situations via escalation through nursing leadership

Personal Protective Equipment (or lack thereof)

This is where a person who cannot hear anything goes

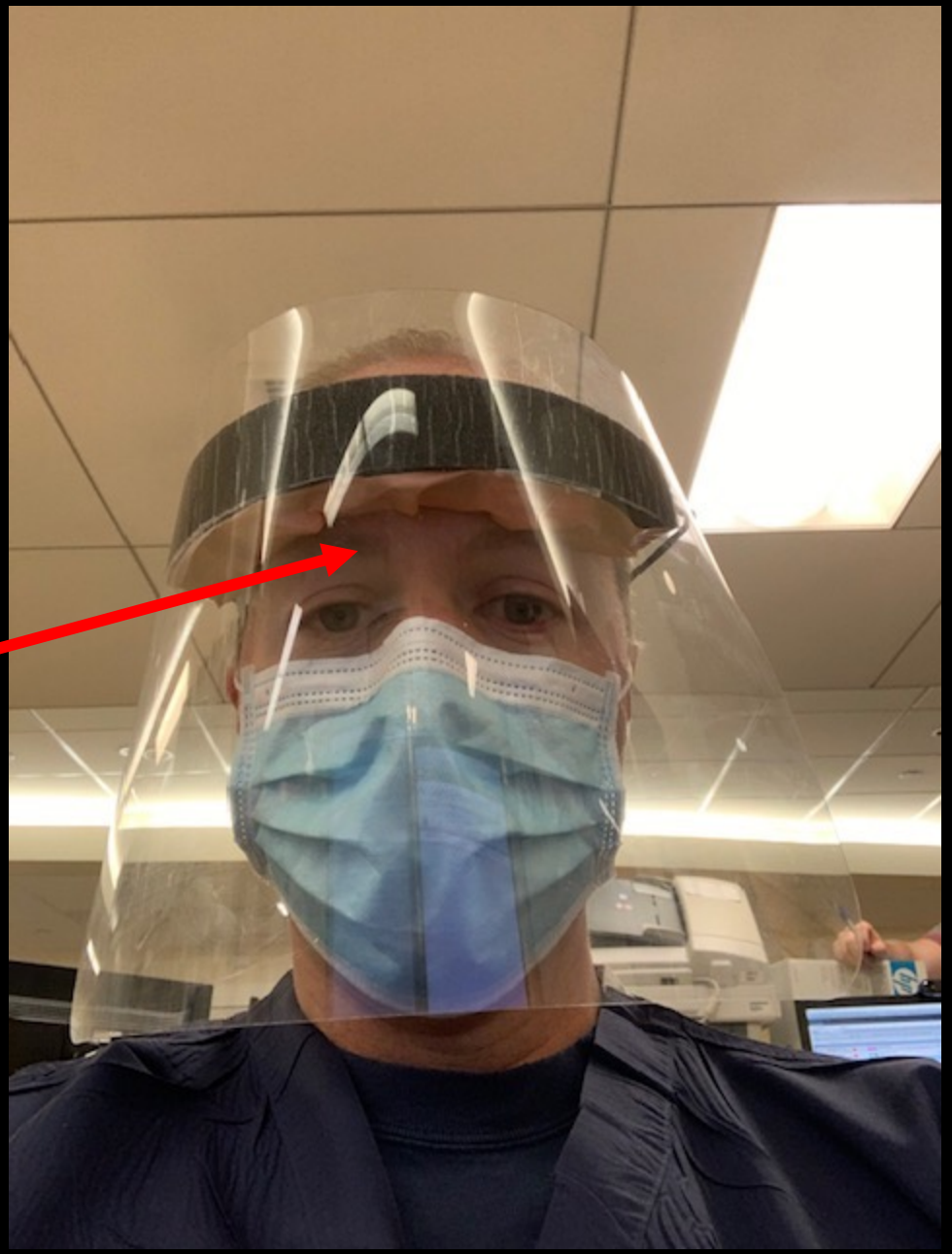
Non-Surgical Mask

Homemade
3D Printed
Mask Holder

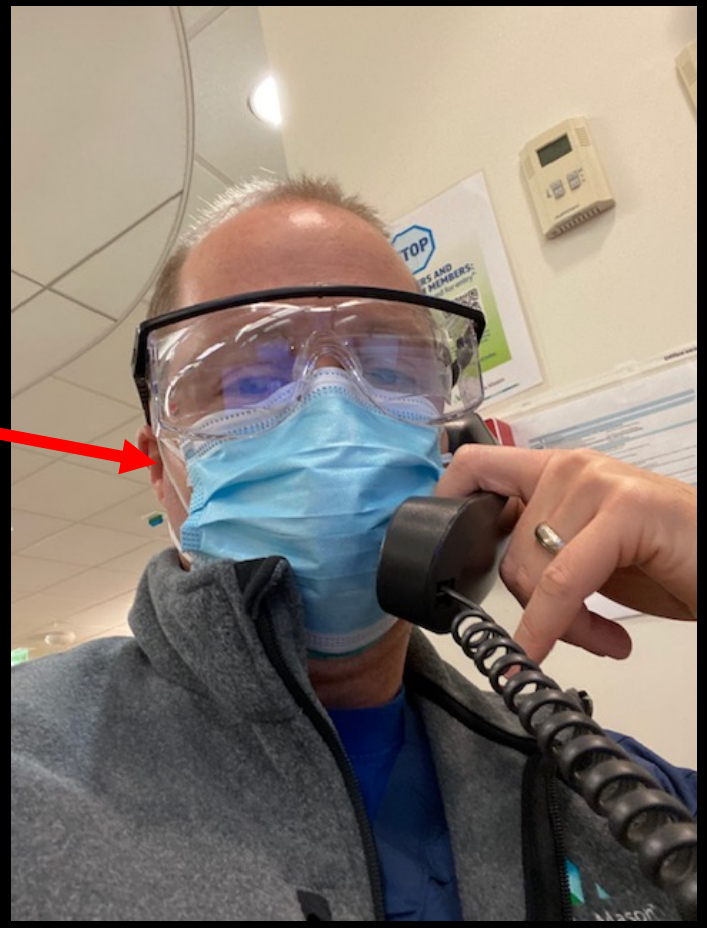
Homemade
Sewn Cap

N95
Plus Mask
Plus
Faceshield

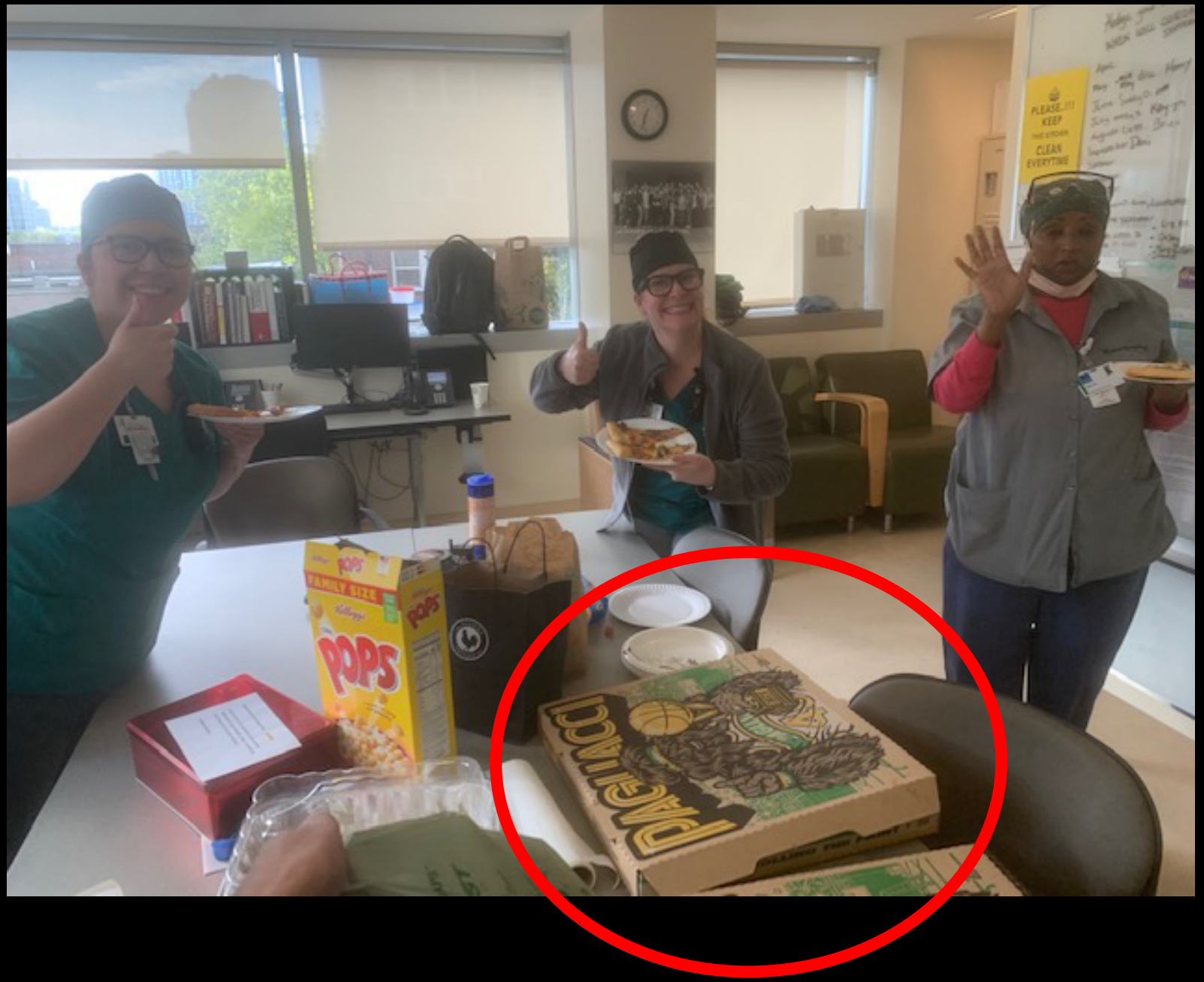
Homemade
Reusable
Face Shield



Safety Glasses
Double Mask



Yes,
That is a
Trash Bag


PLEASE...!!!
KEEP
CLEAN
EVERYTIME
FAMILY SIZE
POPS
POPS
PACIFICA

Free Food!

Health care workers and other staff walk out of Harborview Medical Center during a noon hour break on May 14 in Seattle. (AP Photo/Elaine Thompson)

CORONAVIRUS OUTBREAK

Harborview: COVID outbreak killed a patient, infected staff

Ten staffers at the Seattle hospital have tested positive for COVID-19 and are isolating.

Disaster Planning

PHASE AND RISK ASSESSMENT

Data as of August 19, 2021 11:59PM PT

Phase by County

Select a County

All

Select a key metric

- Rate per 100K newly diagnosed cases
- **Daily molecular testing rate**
- Percent of positive molecular tests
- Percent of adult staffed acute care beds
- Beds occupied by COVID patients
- Percent of adult ICU staffed beds occupied
- Percent of adult ICU staffed beds occupied by COVID-19 cases

Daily Testing rate

Average daily COVID-19 molecular testing rate per 100K over a week

This map shows the average rate of molecular testing by county from Jul 30 through Aug 05.

Learn More

Washington State

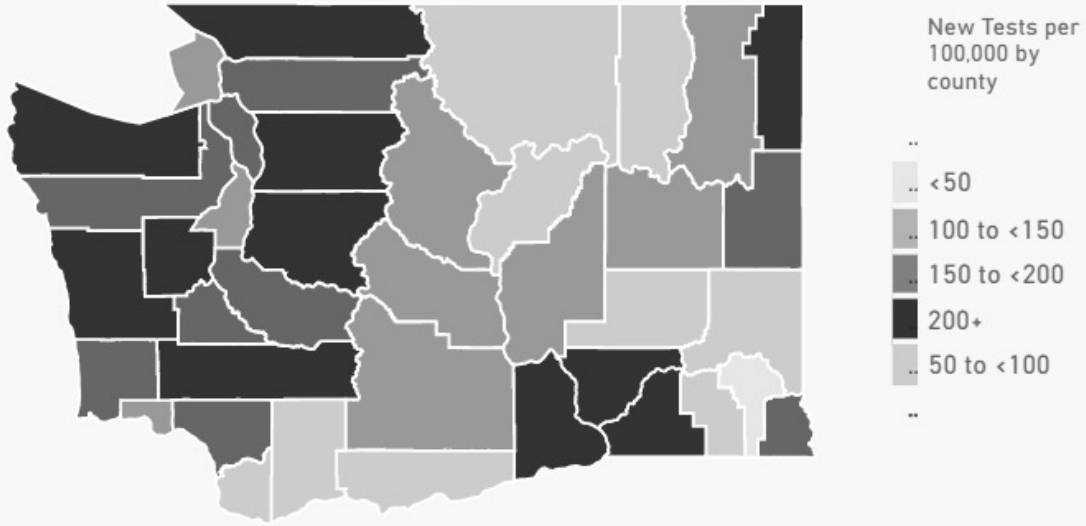
Average daily COVID-19 molecular testing rate per 100K during the prior week*	236.4
Meeting testing goal	-

Supporting detail

Population	7.66M
Avg. number of daily molecular tests in the week	18,098.4

* Metrics updated on 8/25/20. See Learn More for details

Rate of testing by county



Sources: Washington State Department of Health

Self Care
(hobbies)

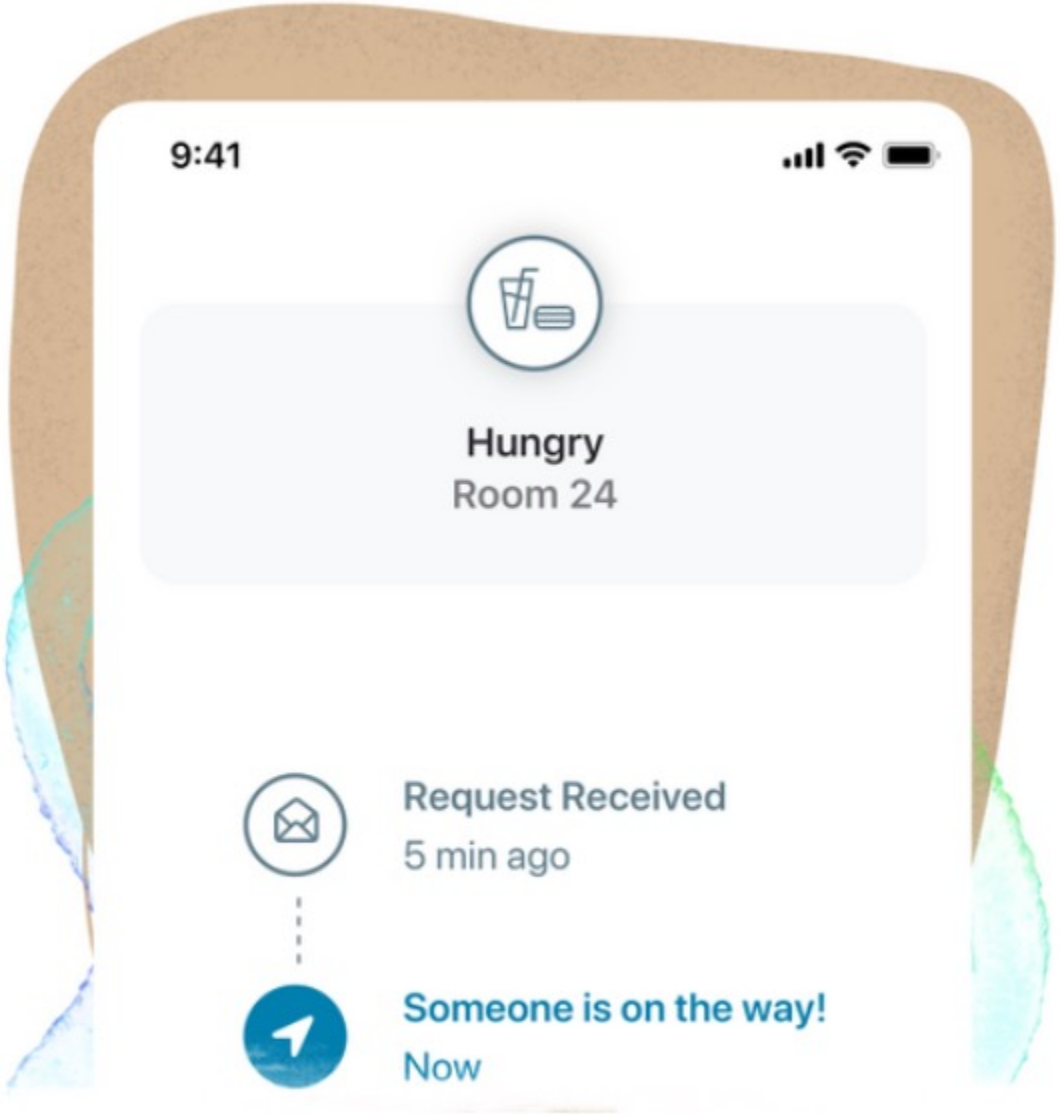

CIRCULON

Also,
The Real World
Continued


PANDEMIC


STOP
RACISM
STOP KILLING
BLACK PEOPLE
BLM
BLACK
LIVES
MATTER

Dispatch

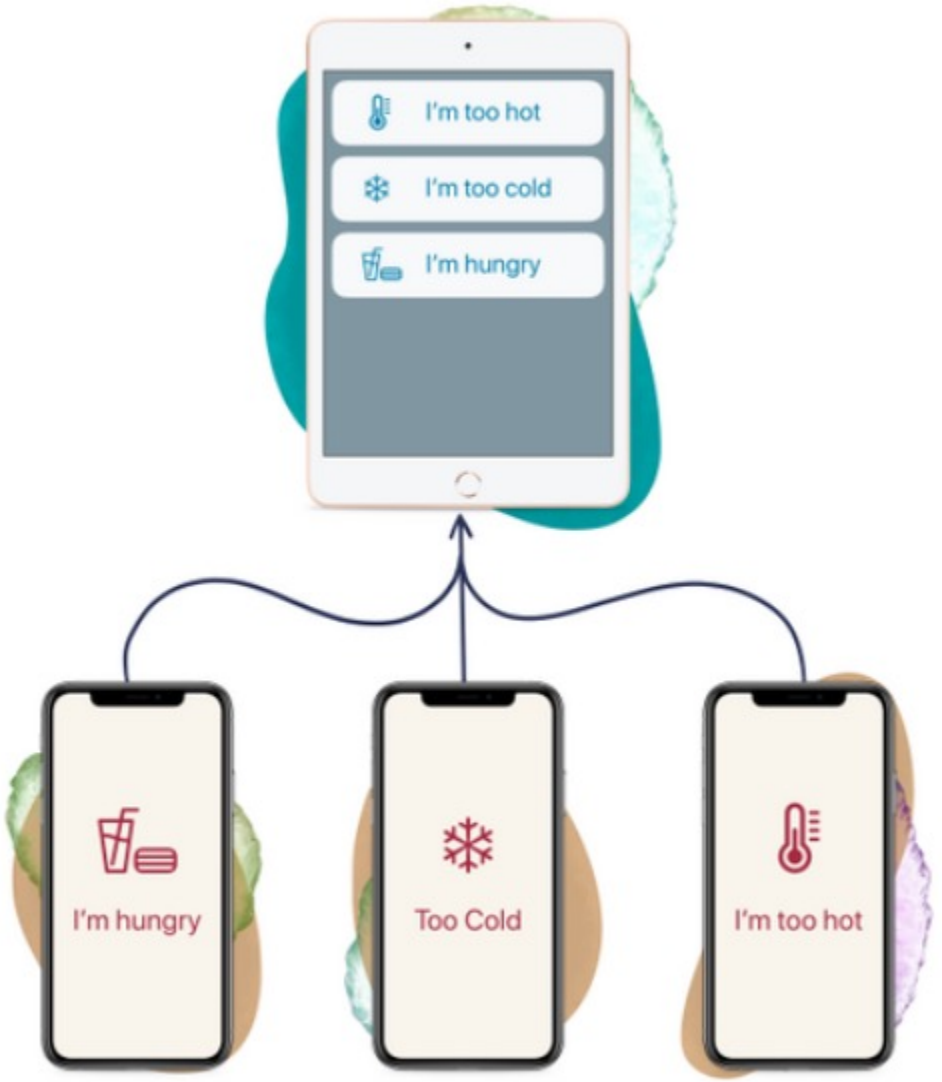


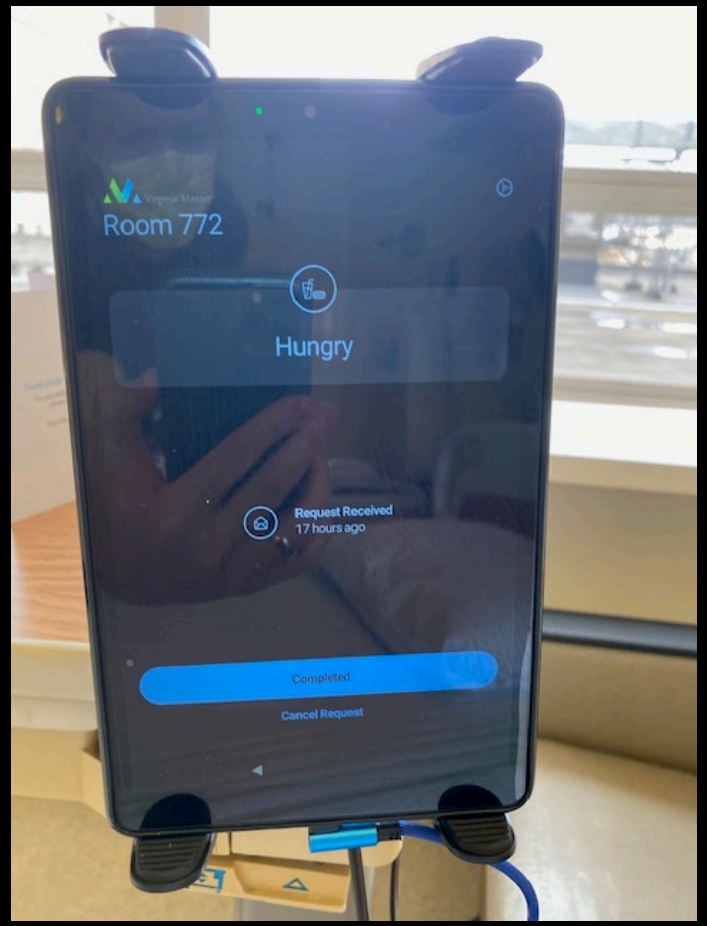
Improve Patient Satisfaction

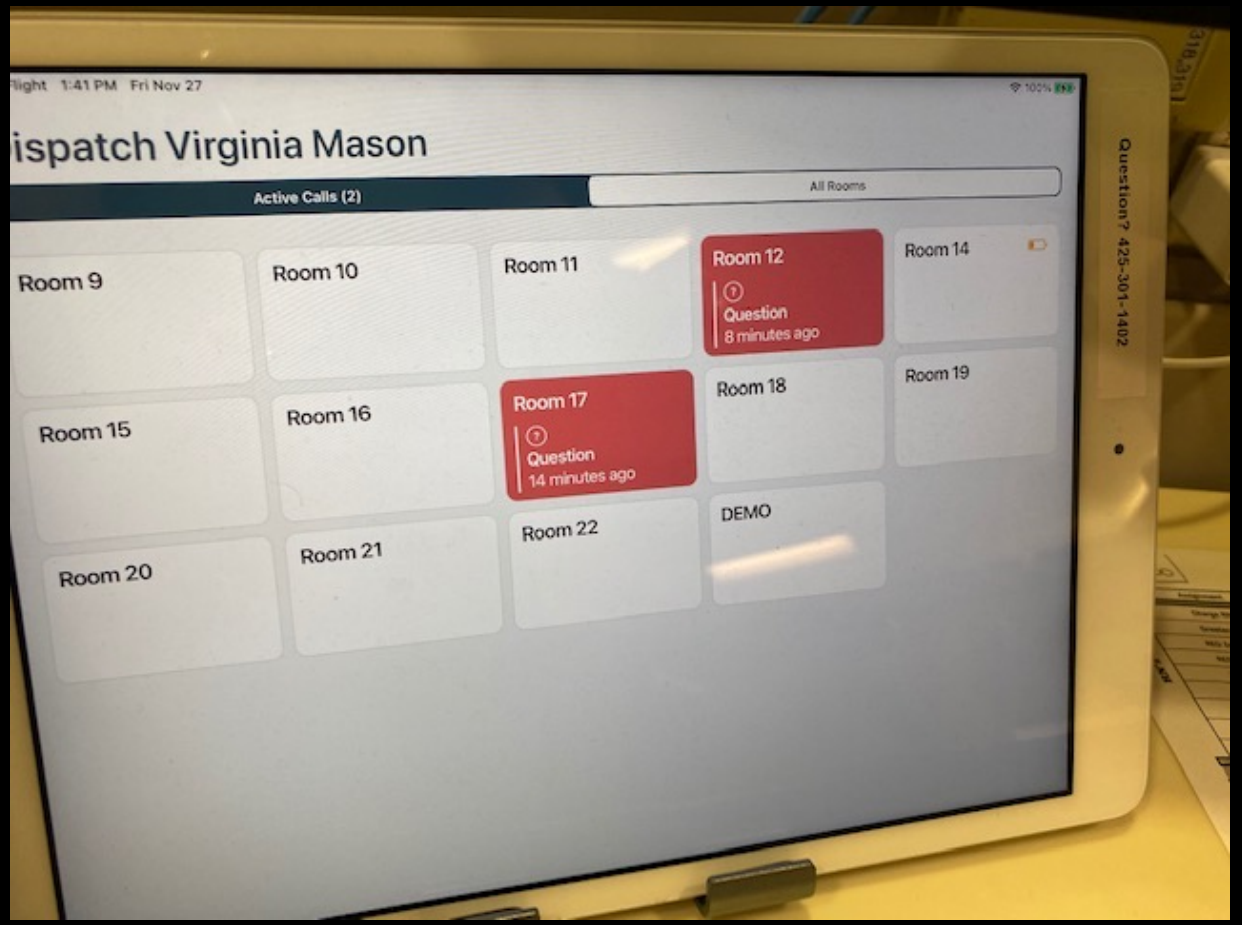
Patients get their non-medical needs met faster and can see when someone is on the way. No more wondering.

Reduce Nursing Burden

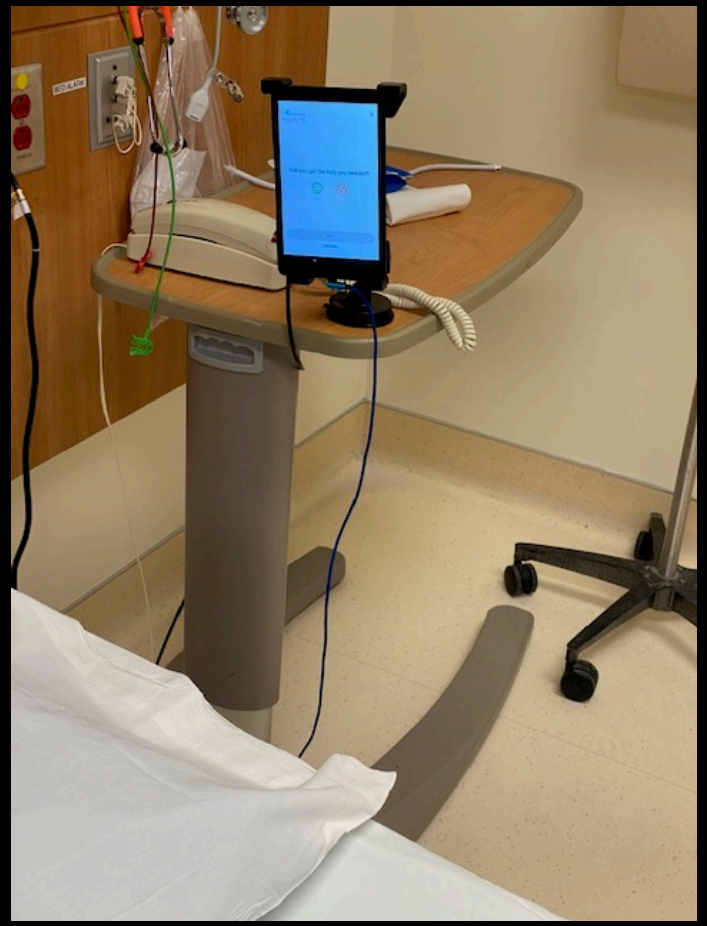
Non-medical requests can be routed to the appropriate staff members.

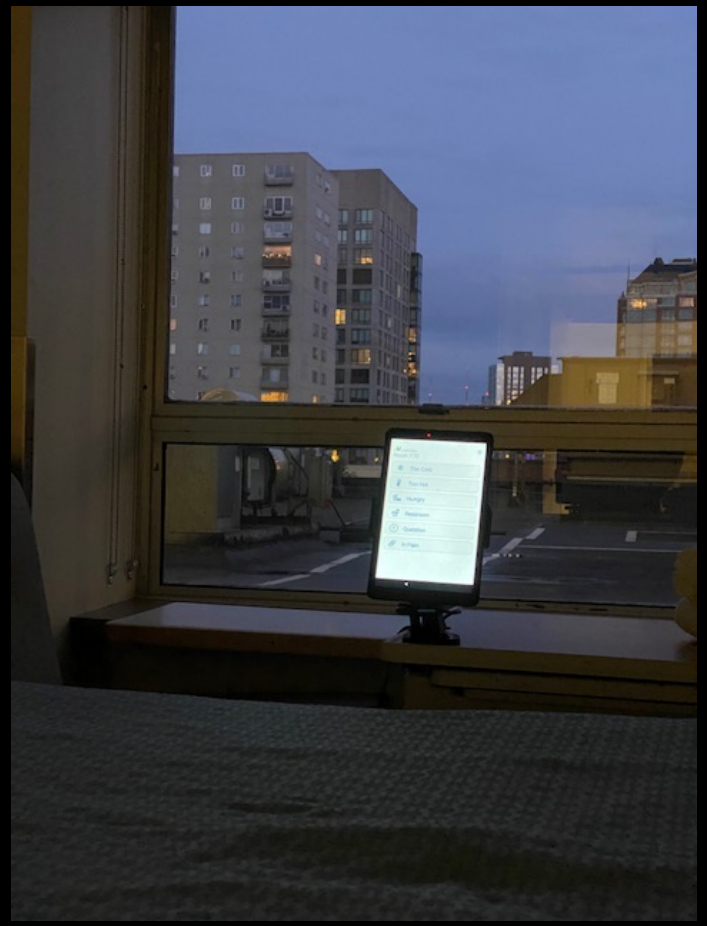



Room 772
Hungry
Request Received
17 hours ago
Completed
Cancel Request


Flight 1:41 PM Fri Nov 27
ispatch Virginia Mason
Active Calls (2)
All Rooms
Room 9
Room 10
Room 11
Room 12
Question
8 minutes ago
Room 14
Room 15
Room 16
Room 17
Question
14 minutes ago
Room 18
Room 19
Room 20
Room 21
Room 22
DEMO
Question? 425-301-1402

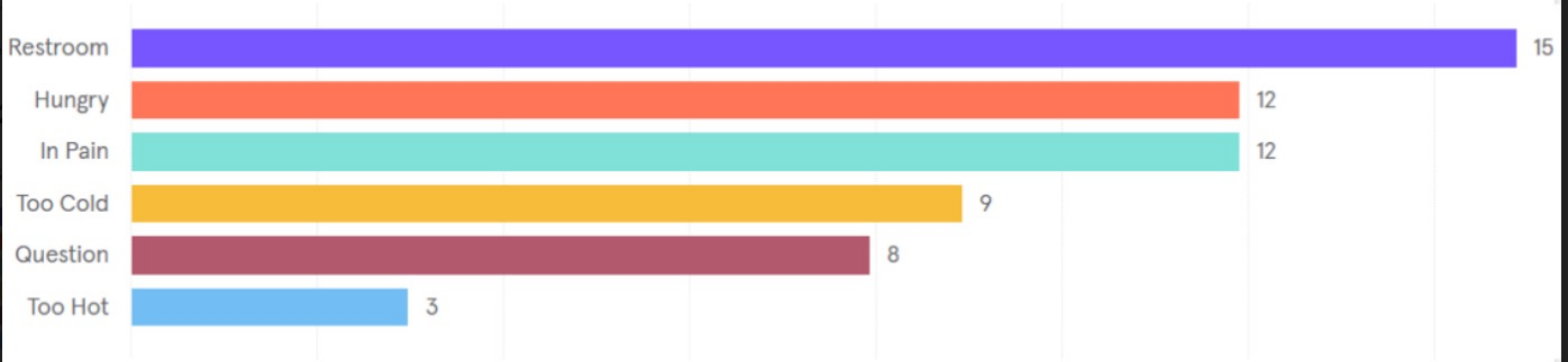

(206)583-6450
Dispatch Virginia Mason





March 22: CP7

97 calls last week (~17/day)



Some Thoughts

- Treat every patient as if they have COVID.
- Trust the PPE.
- Leave your stethoscope at home.
  - Trust your across-the-room exam skills (or through-the-window.)
- Let your family take care of you.
- It’s okay for the kids to get a C in math.

The Present:
Current Therapeutic Guidelines
and
Clinical Review

COVID Review

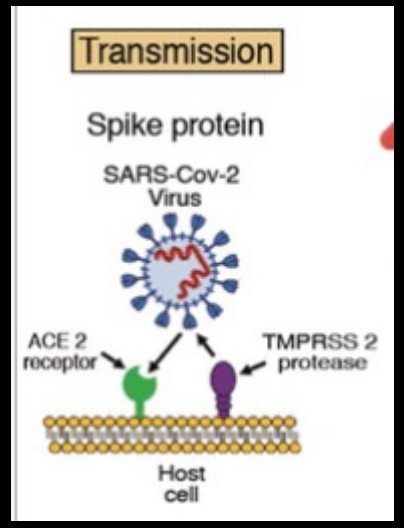


Table 2. Similarities and Differences between SARS and COVID-19[a]

	SARS	COVID-19
Pre- Transmissibility	NO	YES
Mild Case Transmissibility	NO	YES
Reproduction Number (R_0)	1.7-1.9 (WHO)	2.0-2.5 (WHO); 5.7 with 95% CI 3.8-8.9 (CDC)
Number of Reported Cases	More than 8000	31.44 million through September 22, 2020
Number of Reported Deaths	774	967,197 through September 22, 2020
Mortality Rate	About 9%	3.1%
Primary Mode of Transmission	Infectious respiratory droplets dispersed from mucous membranes	
Ability to Survive on Surfaces	YES	
Median Incubation Period	4-7 days	
Maximum Incubation Period	14 days	
Potential to cause severe respiratory infection	YES	
Potential to infect CNS and brain	YES	

https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.0c00608?fig=tgr1&ref=pdf

COVID Review

- Coughing/sneezing generates aerosol plumes.
- Remains in air for 3 hours (half-life 1h).
- ACE2 receptor lets it in.
- Incubation period of 3-12 days.

https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.0c00608?fig=tgr1&ref=pdf

COVID Review

Day 0:

- Cough, fever, myalgias, anorexia, anosmia, dysgeusia

Day 5: Dyspnea

- Hypoxemia
- Bilateral pneumonia
- Elevated LFTs/creatinine

Day 7-8: Progression to ICU

- Respiratory failure
- Cardiac complications—dysrhythmias (25-50% of all ICU patients)
- Coagulopathy

https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.0c00608?fig=tgr1&ref=pdf

COVID Review

- Prevalence of specific symptoms:
  - Cough: 50-80%
  - Fever: 77-100%
  - Dyspnea: 30%
  - Diarrhea: 10% (often prodromal)
  - Asymptomatic: 30%
  - Mild symptoms of any type: 55%
  - Bilateral pneumonia on CXR: 75%
  - Dyspnea requiring ICU care: 20%
  - Cardiac dysrhythmias: 30% but none in non-ICU patients! (no need for telemetry)

https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.0c00608?fig=tgr1&ref=pdf

COVID Review

- Common Findings:
  - Lymphopenia: 65%
  - Leukocytosis: 25%
  - Thrombocytopenia: 35%
  - Transaminitis: 35%
  - CXR: 50% are _normal_ on initial workup.
  - CXR: bilateral peripheral patchy opacities.

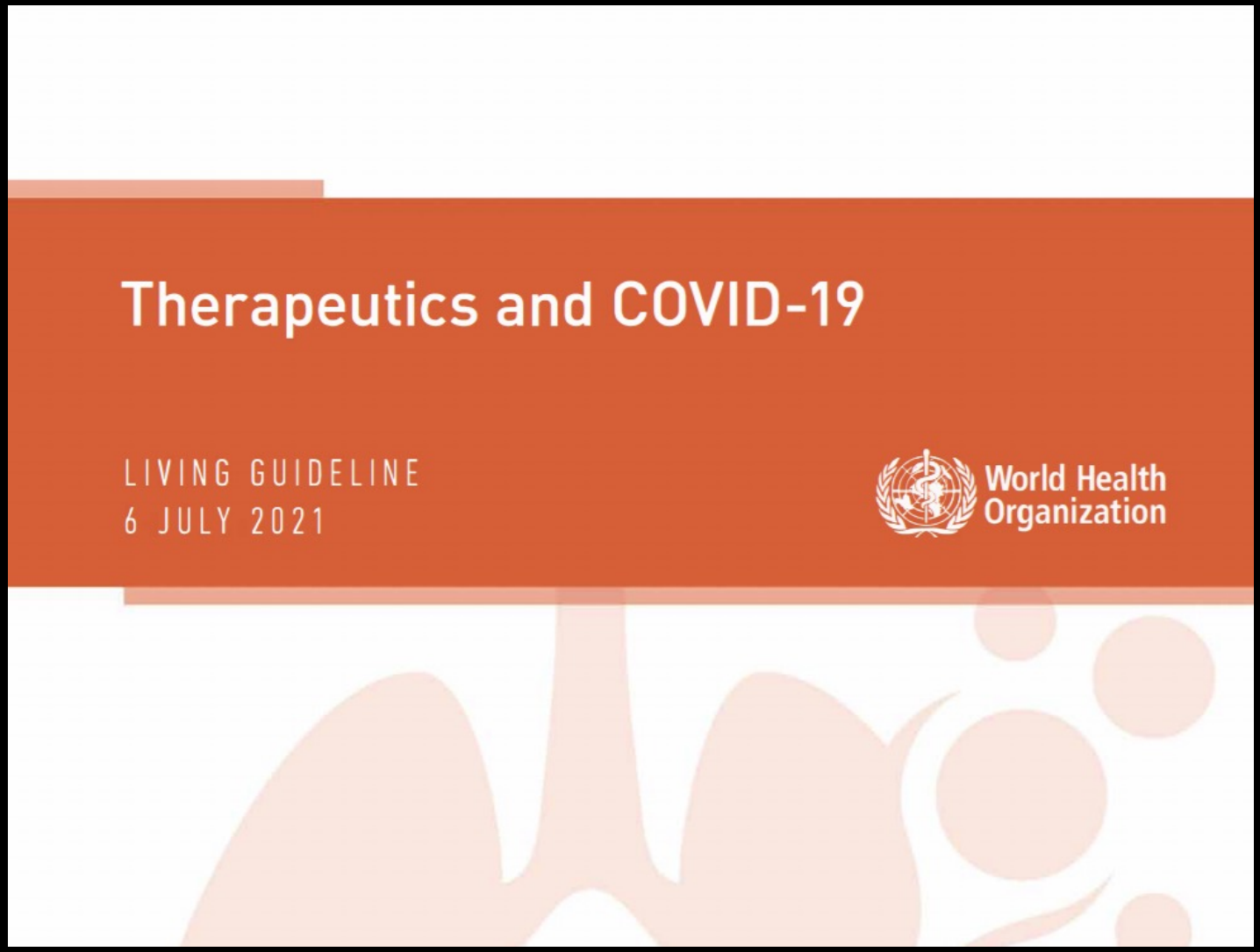
Basically, nothing reliable

https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.0c00608?fig=tgr1&ref=pdf

COVID Review (CDC Guidelines)

- Admission Criteria:
  - Hypoxemia
  - Viral pneumonia
  - Respiratory failure/shock (obviously)

- Mild-to-moderate disease may go home if:
  - Low risk for progression
  - Ability to self-isolate
  - Able to monitor and return if needed
  - Symptoms more important than o2 Saturation
  - O2 saturation less accurate in highly pigmented individuals



https://cdn.who.int/media/docs/default-source/documents/emergencies/covid-19-guideline-development-group-clinical-management-bios.pdf?sfvrsn=3aab40bb_2

WHO Clinical Update (6 July, 2021)

Recommendations: In this update, the panel makes a strong recommendation to use IL-6 receptor blockers (tocilizumab or sarilumab) in patients with severe or critical COVID-19.

Previous recommendations include:

- a strong recommendation for systemic corticosteroids in patients with severe and critical COVID-19;
- a conditional recommendation against systemic corticosteroids in patients with non-severe COVID-19;
- a conditional recommendation against remdesivir in hospitalized patients with COVID-19;
- a strong recommendation against hydroxychloroquine in patients with COVID-19 of any severity;
- a strong recommendation against lopinavir/ritonavir in patients with COVID-19 of any severity;
- a recommendation against ivermectin in patients with COVID-19 of any severity, except in the context of a clinical trial.

The Future:
Applying Science to Future Practice

(with caveats)

January 4, 2021

Risk Factors Associated With All-Cause 30-Day Mortality in Nursing Home Residents With COVID-19

Orestis A. Panagiotou, MD, PhD[1,2,3]; Cyrus M. Kosar, MA[1,2]; Elizabeth M. White, PhD, APRN[1,2]; et al

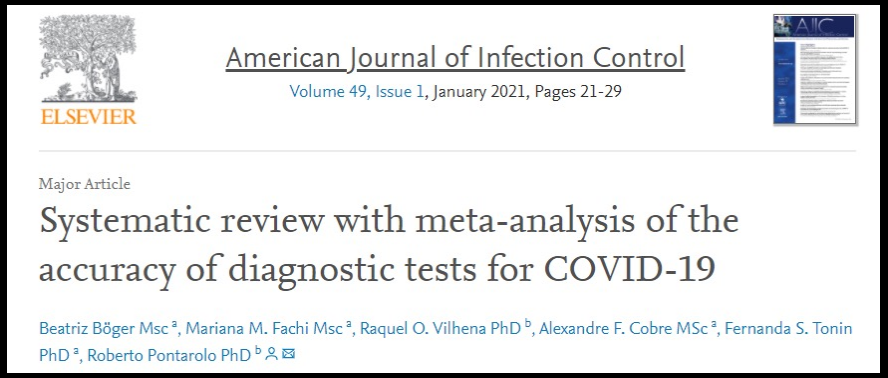
» Author Affiliations | Article Information

JAMA Intern Med. 2021;181(4):439-448. doi:10.1001/jamainternmed.2020.7968

- Age
- Diabetes
- Chronic kidney disease
- Function at time of infection

Testing Accuracy

	Sensitivity	Specificity
• CT Chest:	92%	25%
• IgM/IgG Titers:	85%	92%
• ELISA:	97%	50-80%
• RT-PCR:	97%	85-100%


ELSEVIER

American Journal of Infection Control

Volume 49, Issue 1, January 2021, Pages 21-29

Major Article

Systematic review with meta-analysis of the accuracy of diagnostic tests for COVID-19

Beatriz Böger Msc [a], Mariana M. Fachi Msc [a], Raquel O. Vilhena PhD [b], Alexandre F. Cobre MSc [a], Fernanda S. Tonin PhD [a], Roberto Pontarolo PhD [b]

January 6, 2021

Comparison of Out-of-Hospital Cardiac Arrests and Fatalities in the Metro Detroit Area During the COVID-19 Pandemic With Previous-Year Events

Adrienne V. Nickles, MPH[1]; Adam Oostema, MD[2]; Justin Allen, BA, EMT-P[1]; et al

» Author Affiliations | Article Information

JAMA Netw Open. 2021;4(1):e2032331. doi:10.1001/jamanetworkopen.2020.32331

Unwitnessed Cardiac arrest highly likely to be COVID when endemic.

Be wary!

ORIGINAL ARTICLE

Antibody Status and Incidence of SARS-CoV-2 Infection in Health Care Workers

Sheila F. Lumley, B.M., B.Ch., Denise O'Donnell, B.Sc., Nicole E. Stoesser, M.B., B.S., D.Phil., Philippa C. Matthews, F.R.C.P., D.Phil., Alison Howarth, Ph.D., Stephanie B. Hatch, Ph.D., Brian D. Marsden, D.Phil., Stuart Cox, Tim James, Ph.D., Fiona Warren, B.Sc., Liam J. Peck, D.Phil., Thomas G. Ritter, B.A., et al., for the Oxford University Hospitals Staff Testing Group*

Article Figures/Media Metrics

February 11, 2021
N Engl J Med 2021; 384:533-540
DOI: 10.1056/NEJMoa2034545

27 References 180 Citing Articles

COVID-19 Infection/seroconversion protective for 6 months.

Sociodemographic Factors Associated with COVID-19 Mortality

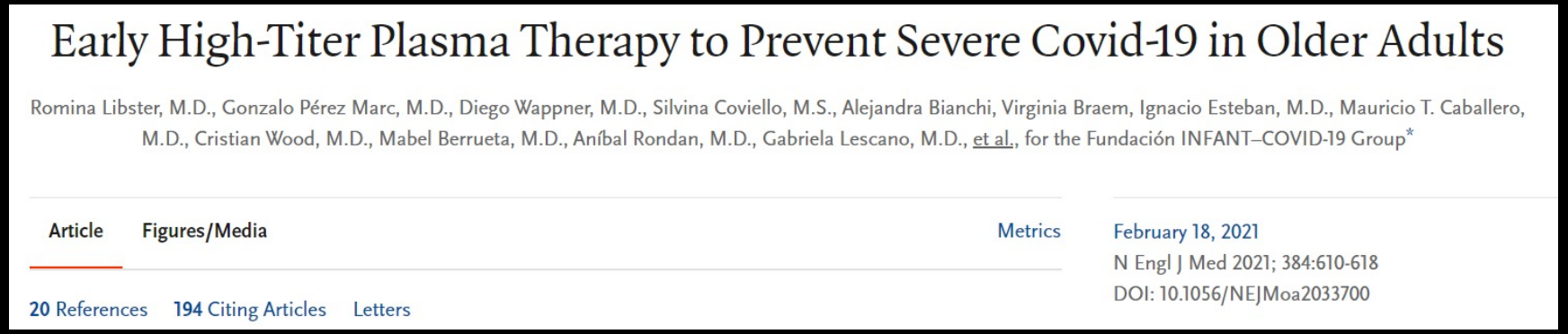
The role of built and social environmental factors in Covid-19 transmission: A look at America's capital city

Ming Hu [a], Jennifer D. Roberts [b], Gesine Pryor Azevedo [a], David Milner [a]

[a] School of Architecture, Planning and Preservation, University of Maryland, 3835 Campus Drive, College Park, MD, 20742, USA
[b] Department of Kinesiology, University of Maryland, USA

Received 23 August 2020, Revised 23 October 2020, Accepted 26 October 2020, Available online 2 November 2020.

mortality rate, age adjusted incidence rate and fatality rate data for DC wards. The results demonstrated that housing quality, living condition, race and occupation were strongly correlated with COVID-19 death count. The potential hot spots within DC were also identified based the regression model using currently available data. It can be concluded that based on the current available COVID-19 information, the identified combined built and social environment variables are the strongest and most significant predicators of COVID-19 death counts. And among those variables, crowding ratio has most significant influence, followed by work commute time and Black American Ratio.



Early High-Titer Plasma Therapy to Prevent Severe Covid-19 in Older Adults

Romina Libster, M.D., Gonzalo Pérez Marc, M.D., Diego Wappner, M.D., Silvina Coviello, M.S., Alejandra Bianchi, Virginia Braem, Ignacio Esteban, M.D., Mauricio T. Caballero, M.D., Cristian Wood, M.D., Mabel Berrueta, M.D., Aníbal Rondan, M.D., Gabriela Lescano, M.D., et al., for the Fundación INFANT–COVID-19 Group*

Article Figures/Media Metrics

20 References 194 Citing Articles Letters

February 18, 2021
N Engl J Med 2021; 384:610-618
DOI: 10.1056/NEJMoa2033700

- Plasma infusion for high-risk patients who do not require admission.
- Hotly debated.
- Significant burden to the system if employed
  - Infusion requires hours.
  - Huge number of potential candidates—limited pool.
  - When announced, big rush of patients during peak times.

Reduction in mobility and COVID-19 transmission

Pierre Nouvellet, Sangeeta Bhatia, [...]Christl A. Donnelly

Nature Communications **12**, Article number: 1090 (2021) | Cite this article

- Impressive study of 52 countries!
- Mobility correlates to transmission.

Simply put: Stay at home

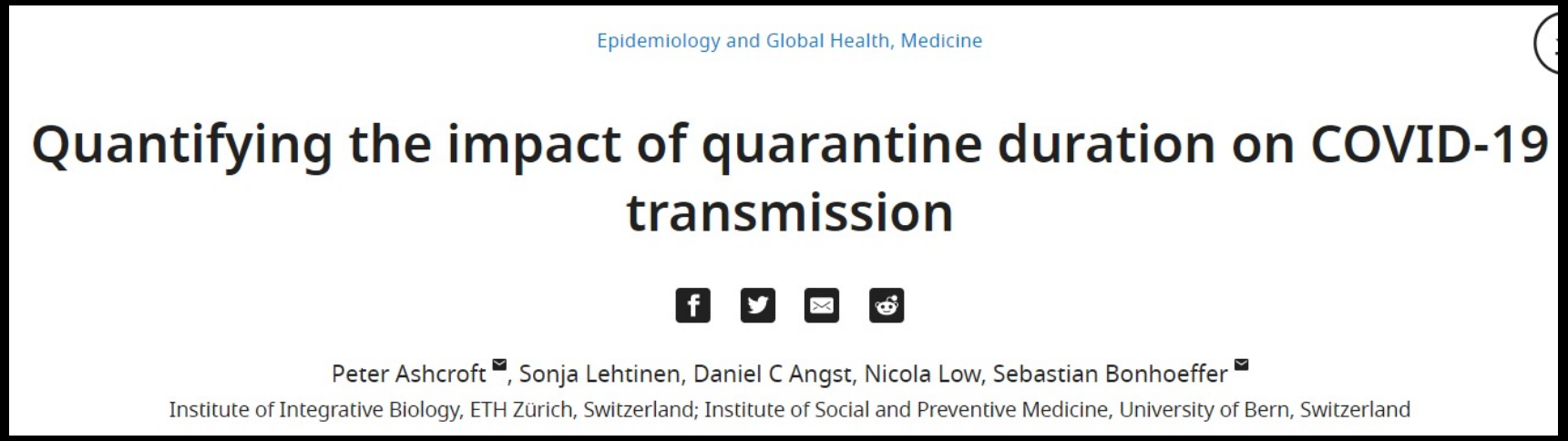
Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine

Lindsey R. Baden, M.D., Hana M. El Sahly, M.D., Brandon Essink, M.D., Karen Kotloff, M.D., Sharon Frey, M.D., Rick Novak, M.D., David Diemert, M.D., Stephen A. Spector, M.D., Nadine Rouphael, M.D., C. Buddy Creech, M.D., John McGettigan, M.D., Shishir Khetan, M.D., et al., for the COVE Study Group*

February 4, 2021
N Engl J Med 2021; 384:403-416
DOI: 10.1056/NEJMoa2035389

- **Vaccines are safe.**

- Fomites pose little risk.
- **Gowns use is debatable.**



- **Short quarantine (6 days) is as good as 12+ when appropriate testing is used.**

Emotional Well-Being Under Conditions of Lockdown: An Experience Sampling Study in Austria During the COVID-19 Pandemic

Stefan Stieger, David Lewetz & Viren Swami

Journal of Happiness Studies **22**, 2703–2720 (2021) | Cite this article

- **Go Outside!** (and put away the screens)

COVID Questions

(existential crisis in Emergency Medicine)

Where did the patients go?

If these people don't need to be seen, what is our role, really?

When is it okay to say "goodbye"—we didn't sign up for this job to put our lives/families at risk.

- COVID 19 Transmission
  - https://www.nature.com/articles/s41467-021-21358-2
- COVID School Transmission
  - https://pediatrics.aappublications.org/content/147/1/e2020031971?cct=2287/
- COVID Transmission Less in High Temps
  - https://www.sciencedirect.com/science/article/abs/pii/S0048969720379213
- COVID increases with housing quality (wash DC)
  - https://www.sciencedirect.com/science/article/abs/pii/S2210670720307988

- Limiting COVID Transmission with Layered Interventions at Universities
  - https://www.nature.com/articles/s41467-021-25169-3
- Molecular cause for COVID (good background for review and graphs)
  - Https://pubs.acs.org/doi/abs/10.1021/acs.molpharmaceut.0c00608
- COVID Factors for morbidity using machine learning (increased deaths in poor areas, deaths are related to hospital capacity)
  - https://www.sciencedirect.com/science/article/abs/pii/S0048969720363397
- Short Quarantine Periods are Fine
  - https://elifesciences.org/articles/63704

- Facemasks and Transmission
  - https://www.sciencedirect.com/science/article/pii/S1359029421000017
  - Great info on facemasks to take out, 1-2 slides
- Sat versus Fio2 in admission risk stratification (good for review, linked to CRP, etc)
  - https://link.springer.com/article/10.1007/s00540-021-02986-w
- COVID vaccine effectiveness against Delta (high)
  - https://www.nejm.org/doi/full/10.1056/NEJMoa2108891