

HHP/HPH COVID-19 Community Webinar Series

Thursday, June 17, 2021
5:30pm – 6:30pm

**HAWAI'I
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HEALTH**

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Moderator – 06/17/21

Andy Lee, MD

Medical Director, Hawai'i Health Partners
Chief of Staff, Pali Momi Medical Center
Hawai'i Pacific Health

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Disclaimer:

- The following is intended as information resource only for HHP/HPH providers, clinicians, administrative and clinical leaders.
- Specific areas may not pertain directly to your clinical practice area and/or may not be applicable to your practice based on your existing workflows, infrastructure, software (e.g. EHR), and communications processes.

Webinar Information

- You have been automatically muted. You cannot unmute yourself.
- You will be able to submit questions via the Q&A section.
 - Due to time constraints, any unanswered questions will be addressed this week and posted on the HHP website
- A recording of the meeting will be available tomorrow on the HHP website and intranet.

How to Claim CME Credit

1. Step 1: Confirm your attendance

- You should have completed a brief questionnaire before joining today's live webinar.

2. Step 2: HPH CME team will email you instructions

- Complete and submit evaluation survey that will be emailed to you within one week of the offering.
- Your CE certificate will be immediately available to you upon completion of your evaluation.
- Questions? Email hphcontinuingeduc@hawaiiipacifichealth.org

CME Accreditation Statement

- In support of improving patient care, Hawai'i Pacific Health is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.
- Hawai'i Pacific Health designates this webinar activity for a maximum of 1.0 AMA PRA Category 1 Credit (s) TM for physicians. This activity is assigned 1.0 contact hour for attendance at the entire CE session.



JOINTLY ACCREDITED PROVIDER TM
INTERPROFESSIONAL CONTINUING EDUCATION

Disclosures

- The planners and presenters of this activity report no relationships with companies whose products or services (may) pertain to the subject matter of this meeting



COVID-19 Updates

Gerard Livaudais, MD, MPH

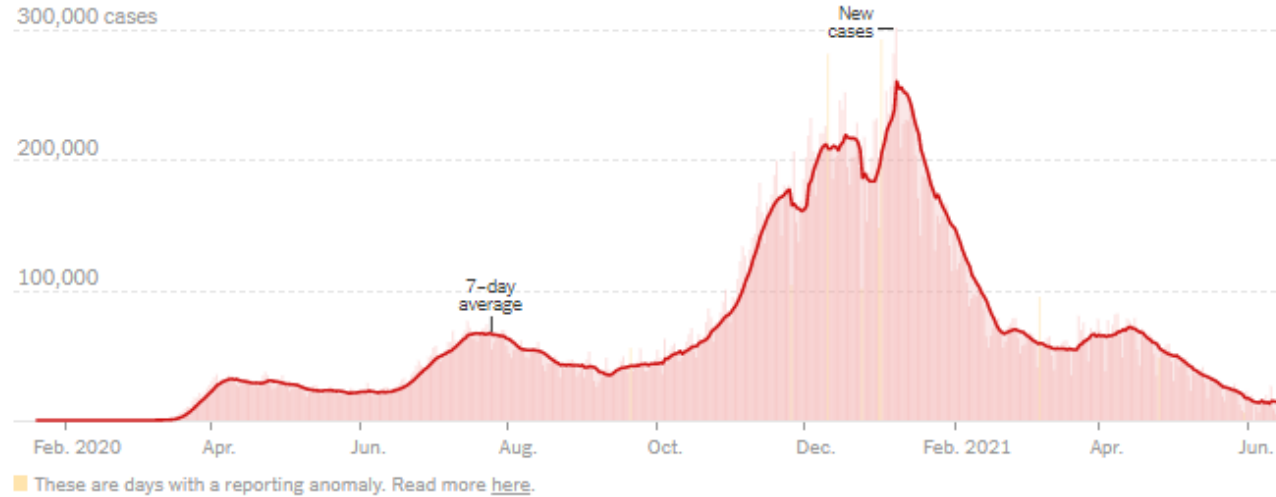
Executive Vice President, Population
Health and Provider Networks,
Hawai'i Pacific Health

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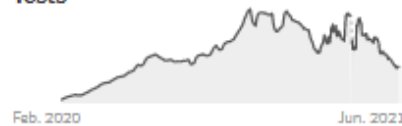
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United States

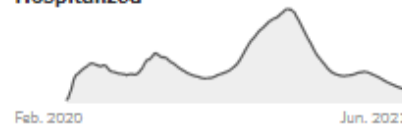
New reported cases



Tests



Hospitalized



Deaths



	AVG. ON JUN. 16	14-DAY CHANGE	TOTAL REPORTED
Cases	12,819	-21%	33,465,570
Tests	718,887	—	—
Hospitalized	18,873	-23%	—
Deaths	332	-20%	600,244

<https://www.nytimes.com/interactive/2021/us/covid-cases.htm>

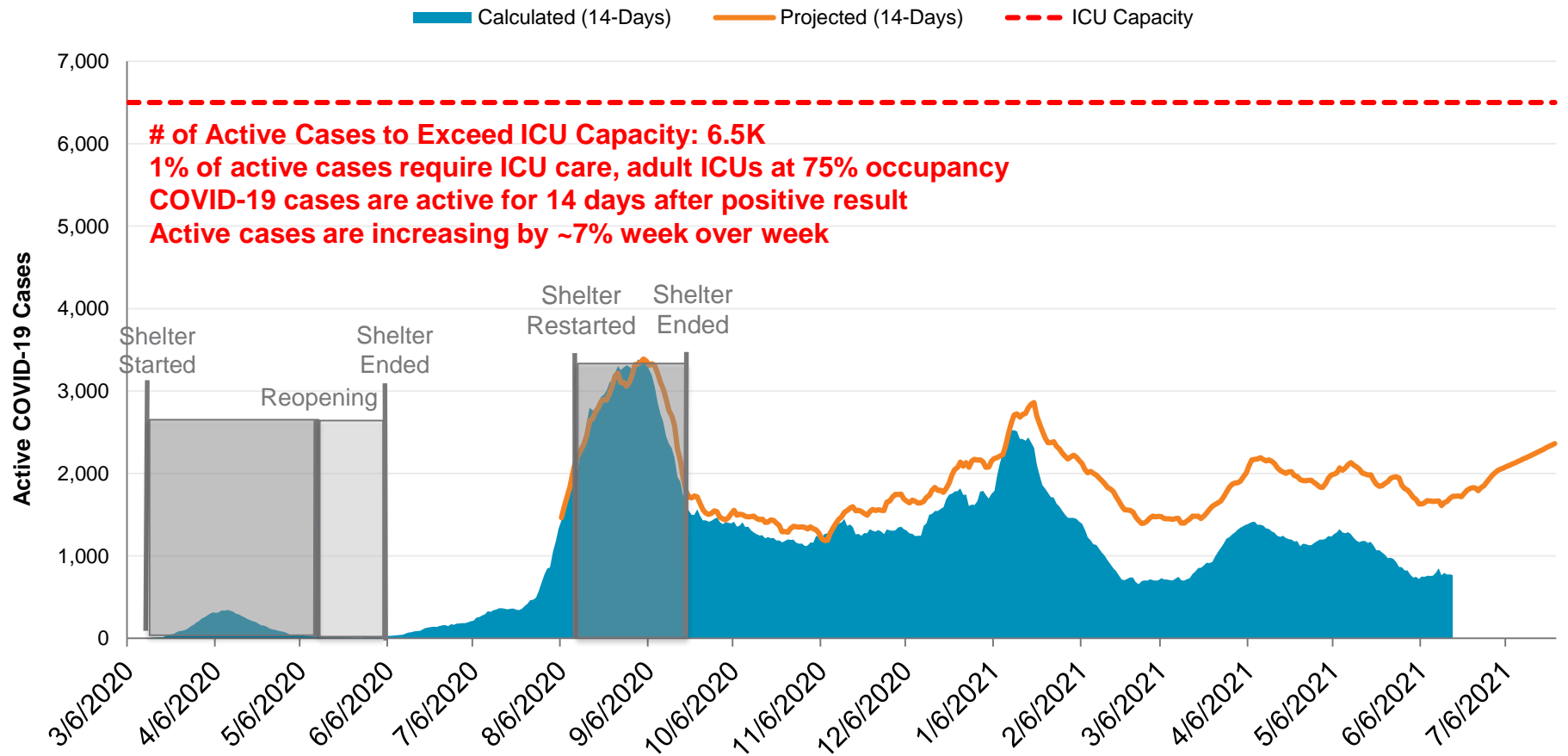
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Projected Active COVID-19 Cases

Hawaii Actual v. Projected Active COVID Cases Updated 6/17/2021



**As of
6/17/21**

	Total Census	ICU beds occupied	# Ventilators in use	# New Admissions w/ positive COVID-19	# Patients currently hospitalized w/ suspect or confirmed COVID-19	# Patients currently on a ventilator w/ confirmed COVID-19	# Patients currently in ICU w/ confirmed COVID-19
KMCWC	161	69	18	0	S: 0 C: 0	0	0
PMMC	106	14	5	1	S: 0 C: 4	1	1
SMC	134	9	7	0	S: 0 C: 1	0	0
WMC	64	2	0	0	S: 0 C: 0	0	0

S = Suspected; C= Confirmed

Overview of IDSA COVID-19 Treatment Guidelines

Version 4.3.0 – June 3, 2021

<https://www.idsociety.org/COVID19guidelines>

		Setting and severity of illness			
		Ambulatory care: mild-to-moderate disease	Hospitalized: mild-to-moderate disease without need for suppl. oxygen	Hospitalized: severe but non-critical disease ($SpO_2 \leq 94\%$ on room air)	Hospitalized: critical disease (e.g., in ICU needing MV, or septic shock, ECMO)
1	Hydroxy-chloroquine (HCQ)*	NA	Recommend against use ⊕⊕⊕○	Recommend against use ⊕⊕⊕○	Recommend against use ⊕⊕⊕○
2	HCQ* + azithromycin	NA	Recommend against use ⊕⊕○○	Recommend against use ⊕⊕○○	Recommend against use ⊕⊕○○
3	Lopinavir + ritonavir	NA	Recommend against use ⊕⊕⊕○	Recommend against use ⊕⊕⊕○	Recommend against use ⊕⊕⊕○
4-6	Corticosteroids	NA	Suggest against use ⊕○○○	Suggest use ⊕⊕⊕○ R: If dexamethasone is unavailable, equivalent total daily doses of alternative glucocorticoids may be used.**	Recommend use ⊕⊕⊕○ R: If dexamethasone is unavailable, equivalent total daily doses of alternative glucocorticoids may be used.**
7	Tocilizumab	NA	NA	Suggest use ⊕⊕○○ R: Patients, particularly those who response to steroids alone, who put a high value on avoiding possible adverse events of tocilizumab and a low value on the uncertain mortality reduction, would reasonably decline tocilizumab. R: In the largest trial on the treatment of tocilizumab, criterion for systemic inflammation was defines as CRP ≥ 75 mg/L	Suggest use ⊕⊕○○ R: Patients, particularly those who response to steroids alone, who put a high value on avoiding possible adverse events of tocilizumab and a low value on the uncertain mortality reduction, would reasonably decline tocilizumab. R: In the largest trial on the treatment of tocilizumab, criterion for systemic inflammation was defines as CRP ≥ 75 mg/L
8-9	Convalescent plasma	Recommended only in the context of a clinical trial (knowledge gap)	Suggest against use ⊕⊕○○	Suggest against use ⊕⊕○○	Suggest against use ⊕⊕○○
10-12	Remdesivir	NA	Suggest against routine use ⊕○○○	Suggest use ⊕⊕⊕○ 5 days vs. 10 days, on supplemental oxygen but without mechanical ventilation or ECMO: Suggest use ⊕⊕○○	Routine initiation of remdesivir: Suggest against use ⊕○○○

13	<i>Famotidine</i>	NA	Suggests against use except in a clinical trial ⊕○○○	Suggests against use except in a clinical trial ⊕○○○	Suggests against use except in a clinical trial ⊕○○○
14	<i>Bamlanivimab + etesevimab or casirivimab + imdevimab</i>	Suggest use ⊕⊕○○ R: Patients with mild to moderate COVID-19 who are at high risk of progression to severe disease admitted to the hospital for reasons other than COVID-19 may also receive bamlanivimab/etesevimab or casirivimab/imdevimab. Local variant susceptibility may be considered in the choice of the most appropriate neutralizing antibody therapy. There are limited data on efficacy of bamlanivimab/etesevimab or casirivimab/imdevimab in high-risk patients between 12 and 18 years of age.	NA	NA	NA
15	<i>Bamlanivimab monotherapy</i>	NA	NA	Recommend against use ⊕⊕⊕○	NA
16	<i>Baricitinib + Remdesivir</i>	NA	NA	Suggest use ⊕⊕⊕○ R: Baricitinib 4 mg per day up to 14 days or until discharge from hospital. R: Baricitinib appears to demonstrate the most benefit in those with severe COVID-19 on high-flow oxygen/non-invasive ventilation at baseline.	
17	<i>Baricitinib + remdesivir + corticosteroids</i>	NA	NA	Suggest use**** ⊕⊕○○ R: Baricitinib 4 mg daily dose for 14 days or until hospital discharge. The benefits of baricitinib plus remdesivir for persons on mechanical ventilation are uncertain.	NA
18-19	<i>Ivermectin</i>	Suggests against use except in a clinical trial ⊕○○○	NA	Suggests against use except in a clinical trial ⊕○○○	NA

COVID Pau Dashboard

7-Day Avg of New Cases

Region:

49.6

As of Jun 15



Clusters Under Investigation (Top 3 In Last 14 Days)

Region:

Exposure Setting	Total Cases	Clusters
Correctional Facilities	150	1
Social Gatherings	37	4
Restaurants	27	5

As of Jun 10

7-Day Avg of % Tests Yielding Positive Results

Region:

1.0%

As of Jun 14

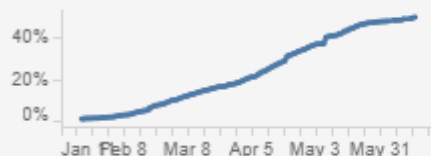


% of Residents Fully Vaccinated

State Value

49.8%

As of Jun 15

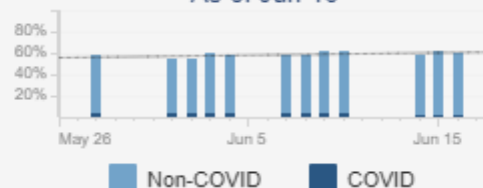


ICU Occupancy Rate

State Value

60%

As of Jun 16

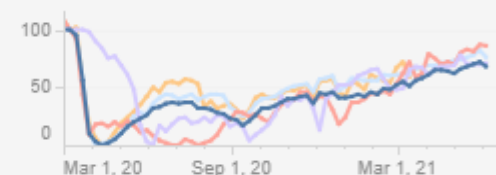


UHERO Economic Pulse Index

State Value

68 ↓

As of Jun 5



Economic Pulse

Economic Pulse

- > Covid-19 Vaccination
- > At a Glance
- > Employment
- > Visitor Industry
- > Income, Wages, GDP
- > Construction & Housing
- > External Indicators
- > Population
- > Prices
- > State Revenue
- > County Revenue & Expenditures
- > Clusters
- > Consumer Finance

Analyzer (0)

Hawai'i High Frequency
Economic Data

Built By **UHERO** Analytics

Economic Pulse

State of Hawaii

Weekly

Table View

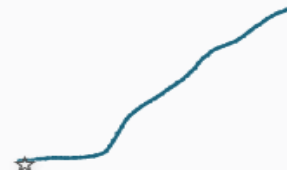
2020-02-29

2021-06-12

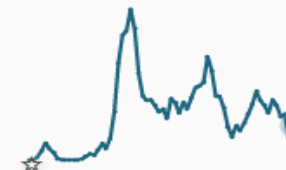
UHERO Economic Pulse
Jun 05 2021: 68.0 (Index)



Cumulative COVID-19 Cases
Jun 12 2021: 35,692.0 (No. Cases)



New Covid-19 Cases
Jun 12 2021: 413.0 (No. Cases)



Total Passenger Count
Jun 12 2021: 204.7 (Thous)



Deplaning Visitors
Jun 12 2021: 180.4 (Thou. Vis.)



Google Mobility, Retail
Jun 12 2021: -19.0 (Index)



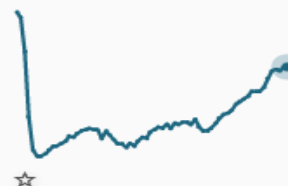
Google Mobility, Grocery
Jun 12 2021: -5.0 (Index)



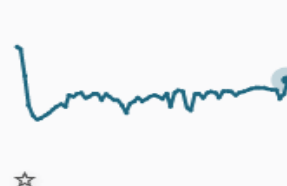
Google Mobility, Park
Jun 12 2021: -8.0 (Index)



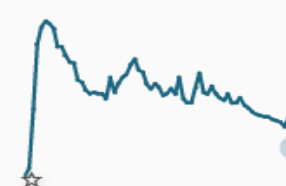
Google Mobility, Transit
Jun 12 2021: -28.5 (Index)



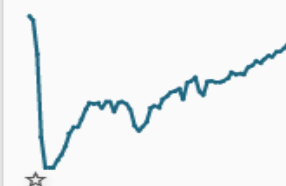
Google Mobility, Work
Jun 12 2021: -22.0 (Index)



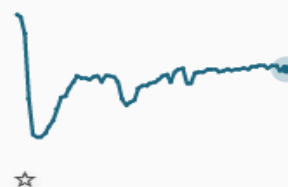
Google Mobility, Residential
Jun 12 2021: 4.0 (Index)



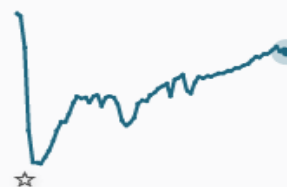
Homebase, Hours Worked
Jun 12 2021: -20.1 (Index)



Homebase, Businesses Open
Jun 12 2021: -29.8 (Index)



Homebase, Workers Employed
Jun 12 2021: -21.6 (Index)



Open Table Restaurant Activity
Jun 12 2021: -10.4 (yoy)



Descartes Lab Mobility Metric
Apr 17 2021: 6.5 (Mobility Metric)



All Hawai'i CARES Call Volumes by Month, 2019-2021





Hawaii COVID-19 Vaccine Summary

LAST UPDATED ON Wednesday, June 16, 2021

All persons age 12 and older are eligible for vaccination

DOSES ADMINISTERED

STATEWIDE TOTAL
VACCINES ADMINISTERED

1,621,282

TOTAL STATEWIDE PROGRESS

55% completed

61% initiated



[Click to view Dose Tracking](#)

FEDERAL PHARMACY PROGRAM

283,244

FEDERAL AGENCY DOSES

161,883

JURISDICTION DOSES*

1,176,155

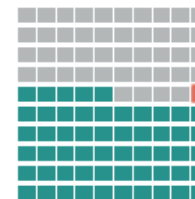
STATE PROGRESS

Status
Completed

Population
Total Population



Fully Vaccinated
Individuals
(State Benchmarks)



55%
of Total Population



785,746
Completed Doses

NAVIGATE TO OTHER VIEWS

[Click buttons to navigate to other views](#)



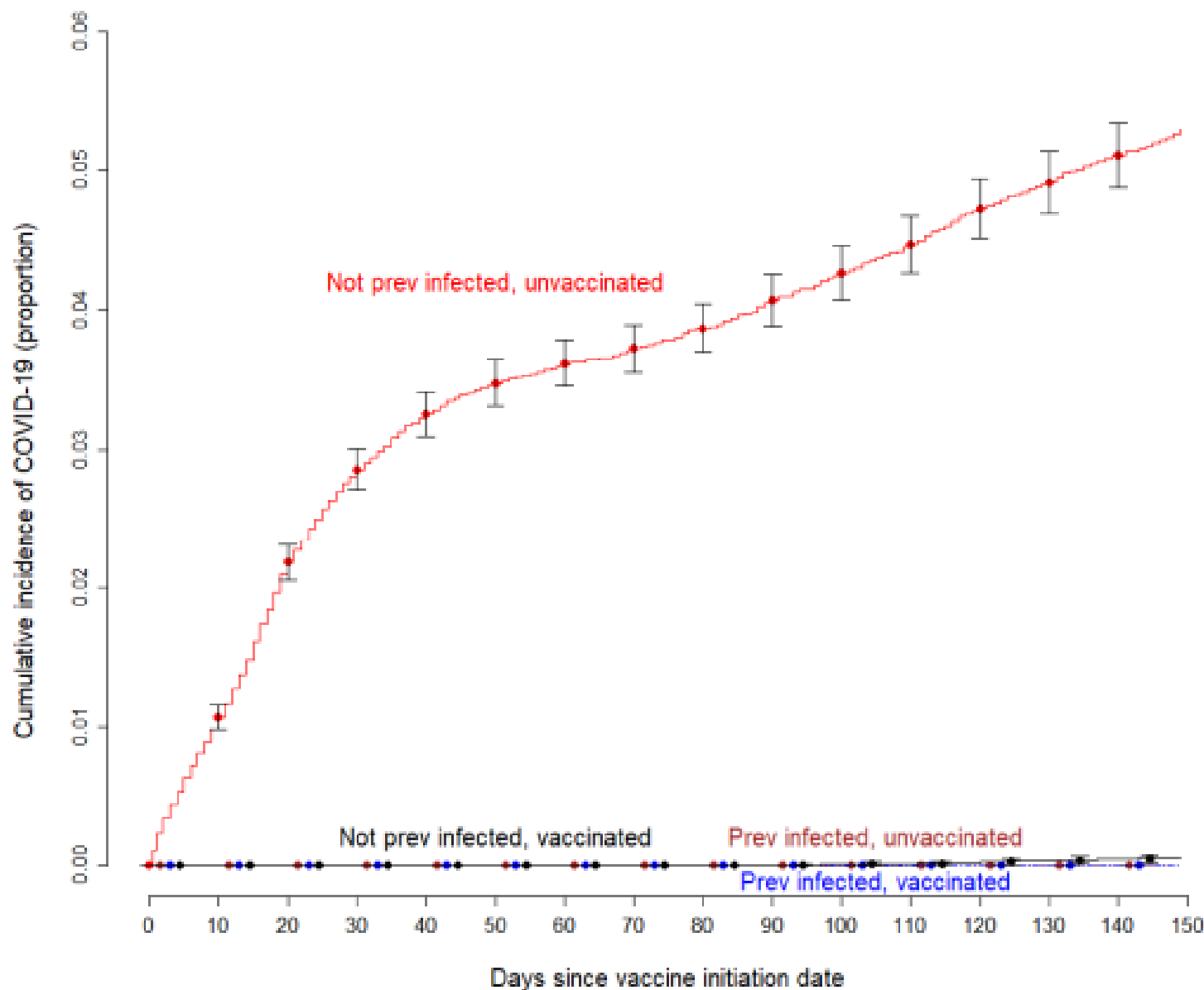
DOSE TRACKING

COUNTY

MAP

AGE

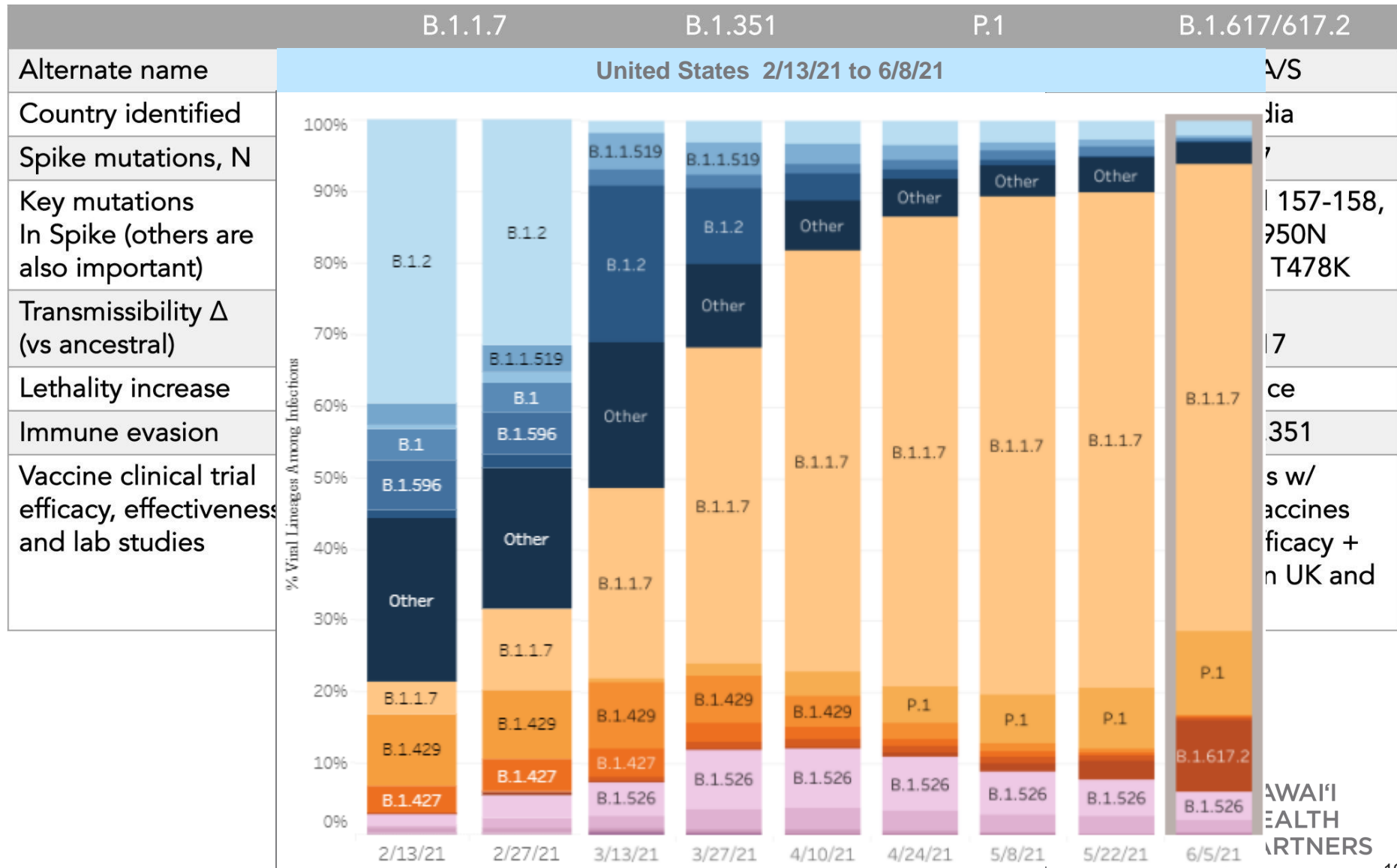
RACE



Numbers at risk:

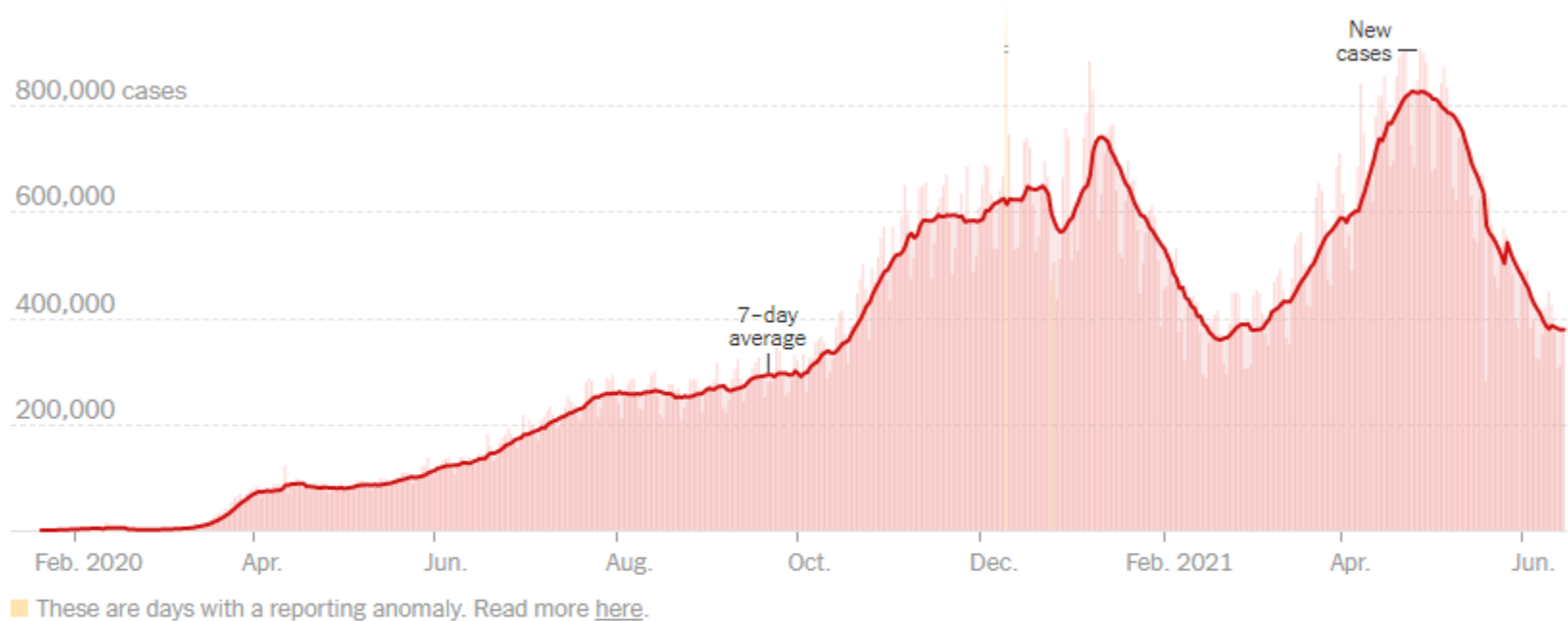
Not prev infected, unvaccinated	49652	48204	47345	39397	21332	20519	19441	17317
Prev infected, unvaccinated	2579	2547	2516	2166	1550	1498	1427	1265
Prev infected, vaccinated	0	0	0	332	926	951	1021	1220
Not prev infected, vaccinated	7	7	19	7392	24989	25384	26251	28836

Variants of Concern



Worldwide

New reported cases



	AVG. ON JUN. 15	14-DAY CHANGE	TOTAL REPORTED
Cases	378,028	-21%	176,630,053
Deaths	10,818	-6%	3,822,553

[About this data](#)

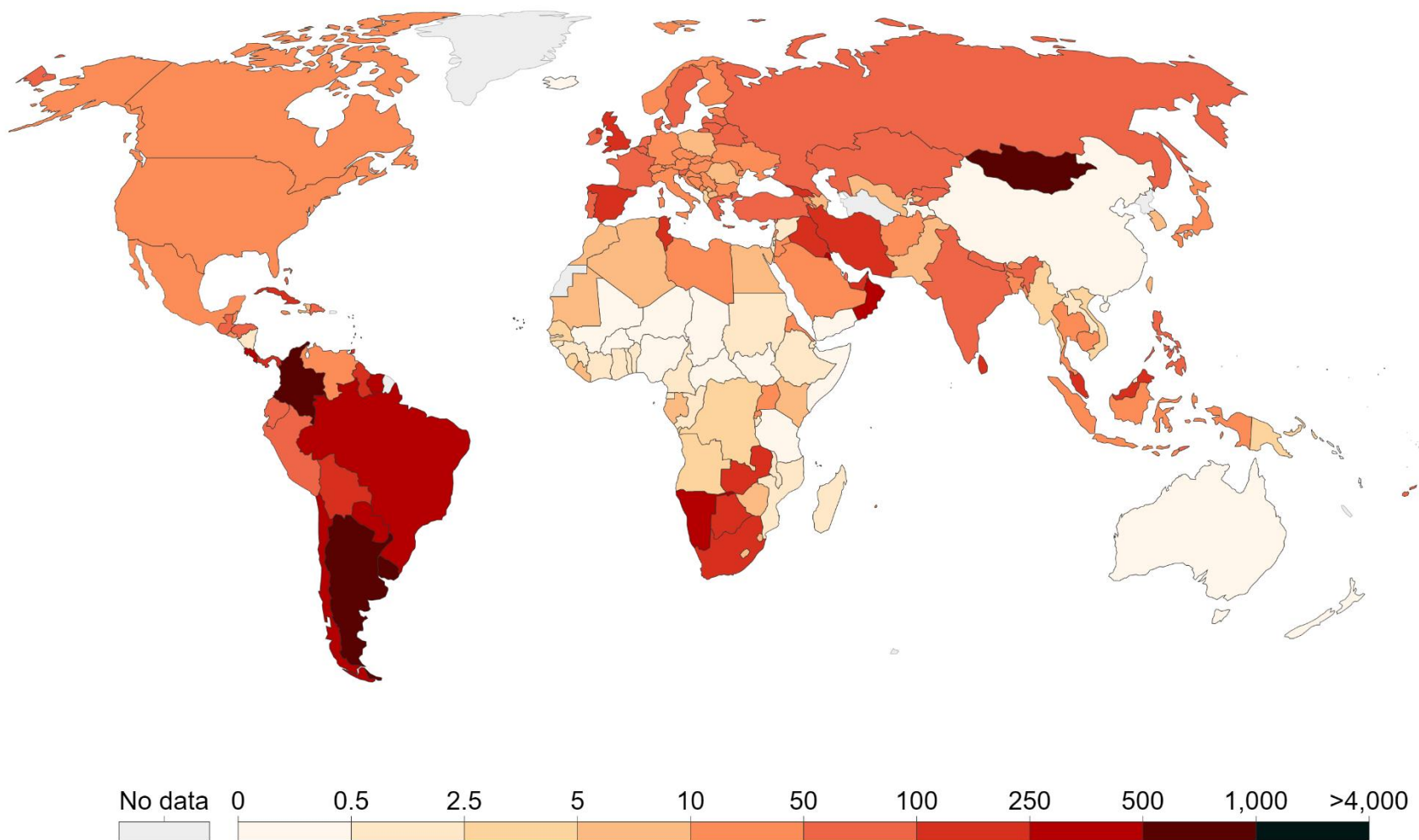
<https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html>

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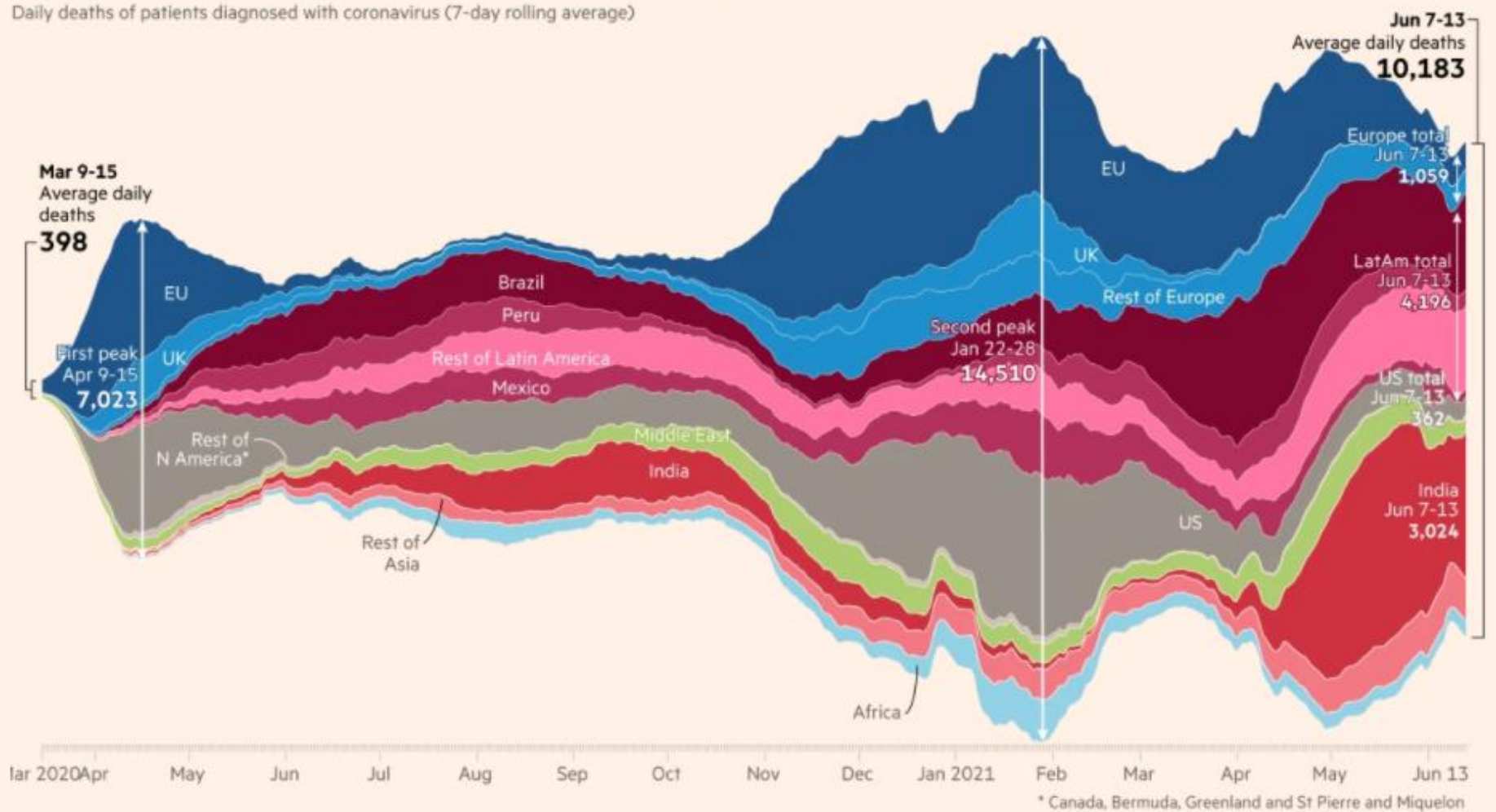
Daily new confirmed COVID-19 cases per million people

Shown is the rolling 7-day average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.



Surges in India and Latin America pushes daily Covid death toll higher

Daily deaths of patients diagnosed with coronavirus (7-day rolling average)



<https://www.ft.com/content/a2901ce8-5eb7-4633-b89c-cbdf5b386938>

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COVID-19 Origin Theories

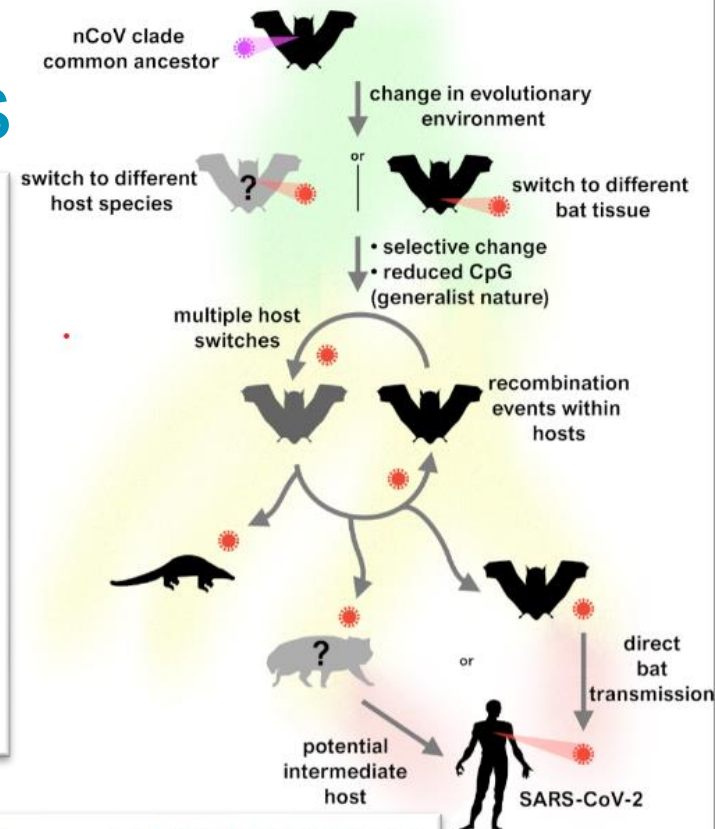


Biden Orders Intelligence Inquiry Into Origins of Virus

The directive came as health officials and scientists have renewed calls for a more rigorous examination.

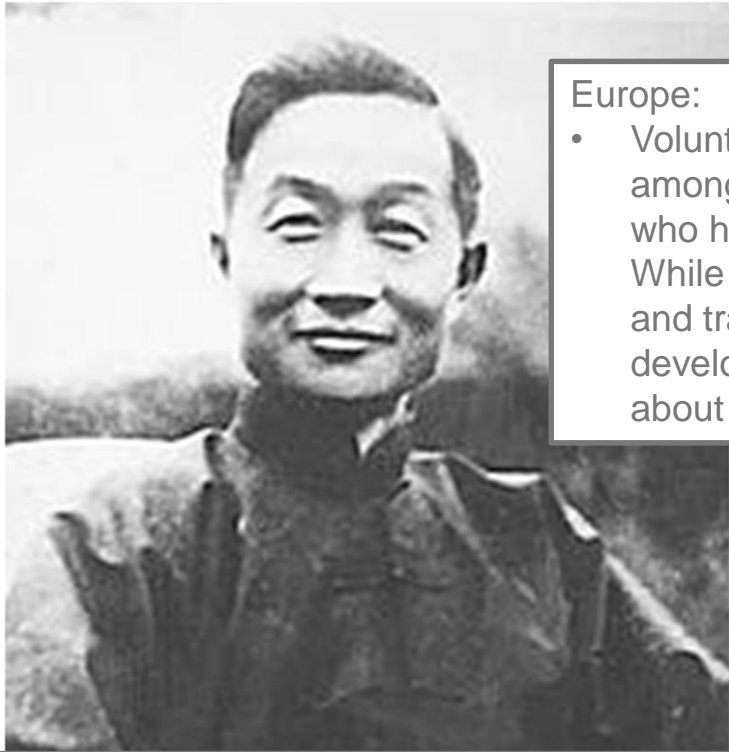


https://www.youtube.com/watch?v=IdYDL_RK--w



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Y.C. James “Jimmy” Yen



Europe:

- Volunteered in WW1 for the Y.M.C.A. among 20,000 illiterate Chinese laborers who had been imported to dig trenches. While writing letters home for them by day and translating news for them at night, he developed a basic Chinese vocabulary of about 1,300 characters.



China:

- Trained illiterate farmers to record births and deaths, vaccinate against smallpox and other diseases, give first aid and health education talks, and help communities keep their wells clean.
- These services were delivered Barefoot Doctors in communities where the infant mortality was more than 200 deaths per 1,000 live births and life expectancy was only 35 years. Estimated 90% reduction in endemic Schistosomiasis.

World:

- Barefoot Doctor concept gained attention around the world, served as a guiding concept for CHW programs in many countries, including Honduras, India, Indonesia, Tanzania, and Venezuela.

Updates on Long COVID and the HPH Long COVID Care Program



Bennett Loui, MD

Primary Care Provider – Internal Medicine,
Straub Medical Center, Hawai'i Pacific Health

Chief of Internal Medicine, Hawai'i Pacific
Health Medical Group

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PALI MOMI
STRAUB
WILCOX

MEDICAL GROUP

Long COVID

- Background

- Post-COVID conditions are associated with a spectrum of physical, social, and psychological consequences, as well as functional limitations
- Impact on societal health and economy is extensive
- Knowledge about these conditions is emerging

- Definitions

- Acute COVID-19: symptom onset to 2-4 weeks
- Long COVID: 4+ weeks after onset
 - Long Hauler
 - Post-Acute COVID19 Syndrome
 - Post COVID Conditions (CDC)
 - Post Acute Sequelae of SARS-CoV2 (NIH PASC Initiative)

Acute COVID-19

Post-acute COVID-19

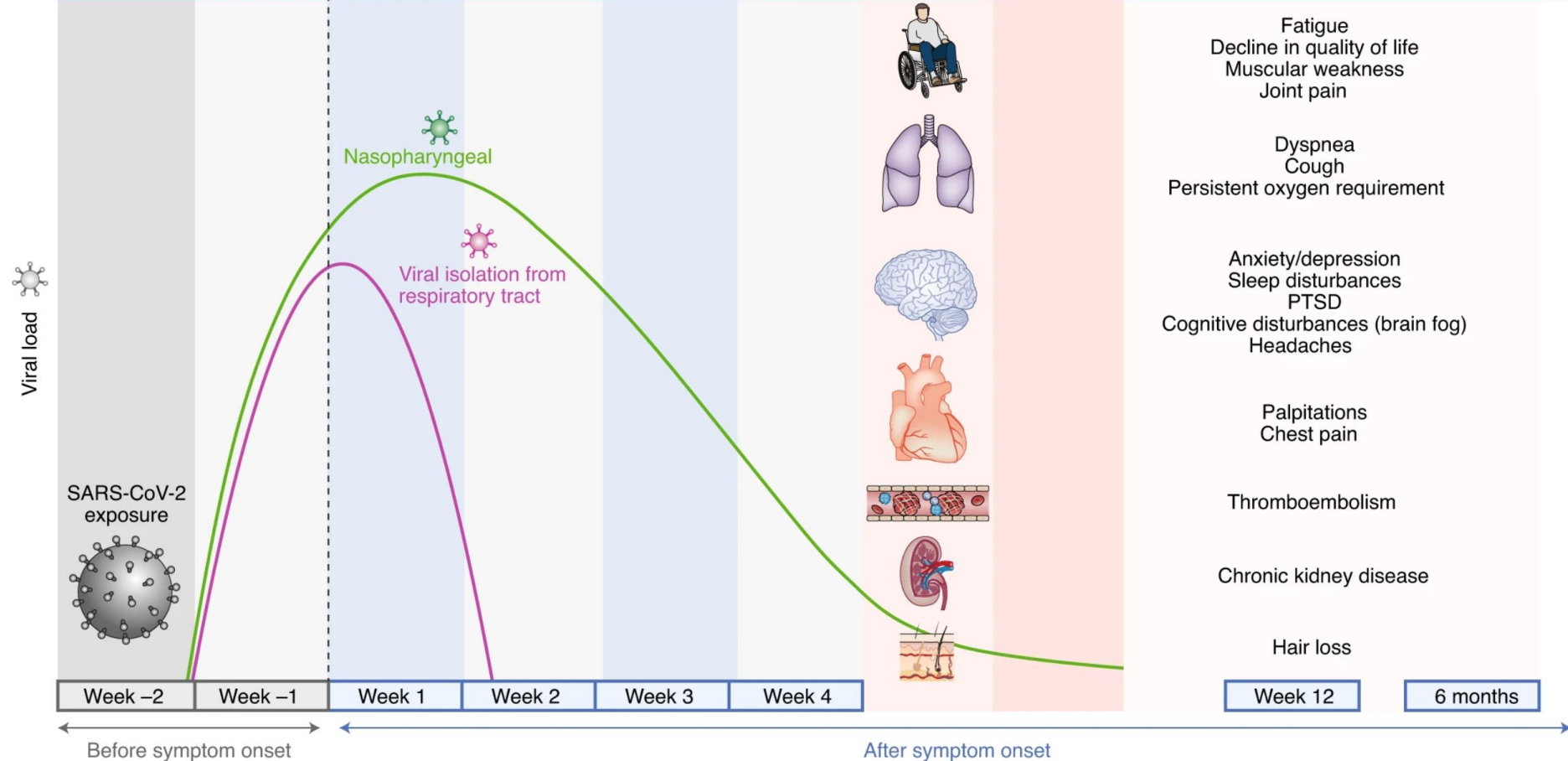
Subacute/ongoing COVID-19

Chronic/post-COVID-19

Detection unlikely

PCR positive

PCR negative



Nalbandian, A., Sehgal, K., Gupta, A. *et al.* Post-acute COVID-19 syndrome. *Nat Med* **27**, 601–615 (2021).
<https://doi.org/10.1038/s41591-021-01283-z>

Long COVID Epidemiology

- Prevalence reports vary due to differing methods
 - which symptoms, how reported, which patients
- Michigan
 - 60 days post discharge following hospital treatment of COVID: 32.6% of patients reported persistent symptoms
- Wuhan
 - 6 months post discharge: majority still reported 1+ symptoms
- UK COVID Symptom Study App
 - 28 days post diagnosis: 13% had symptoms
 - 8 weeks: 4.5% had symptoms
- Fairhealth claims review (6/15/2021)
 - 1,959,982 COVID patients, 30+ days after onset/diagnosis:
 - 23% sought evaluation for conditions relatable to LC
 - Asymptomatic COVID patients: 19% sought evaluation
 - Limitation- not compared to non-COVID patients

1. Chopra et al Ann Intern Med <https://doi.org/10.7326/m20-5661> (2020)

2. Huang et al Lancet 397, 220-232 (2021)

3. <https://www.fairhealth.org/>

Long COVID Epidemiology

- High risk for Long COVID
 - Severe acute illness (ICU)
 - High BMI
 - Older age
 - Women
 - History of respiratory disease
 - History of anxiety or depression
- Proposed pathophysiologic mechanisms
 - Persistent viral reservoir
 - Inflammatory injury
 - Microvascular injury, hypercoagulability
 - Immune system dysregulation
 - Post-intensive care syndrome (PICS)

Long COVID Symptoms and Conditions by System

- **General**
 - *Symptoms of Fatigue, post-exertional malaise (PEM), fever*
- **Pulmonary**
 - *Symptoms of difficulty breathing, cough*
 - Hypoxemia, fibrosis
 - PFTs and imaging may not show abnormalities
- **Cardiovascular**
 - *Symptoms of palpitations, chest pain*
 - Stress cardiomyopathy (echocardiogram)
 - Myocarditis (cardiac MRI)
 - Dysautonomia, Catecholaminergic state (Holter/Zio)
 - Abstinence from athletics
- **Neurological**
 - *Symptoms of brain fog, dizziness, headache, anosmia*
 - Hypoxic-ischemic injury, microvascular thrombosis, viral CNS infection
 - Brain imaging often normal
- **Psychiatric**
 - Depression or anxiety (25-56%), PTSD, insomnia

1. Mazza et al *Brain Behav. Immun.* 89, 594-600 (2020)

Long COVID Symptoms and Conditions by System

- Hematologic
 - PE, VTE <5%, prophylaxis under investigation
- Dermatologic
 - Hair loss (20%)
- Rheumatologic
 - Reactive arthritis
- Renal
 - New CKD (13%)
- Endocrine
 - DKA, thyroiditis/hypothyroidism
- MIS-C
 - Multisystem Inflammatory Syndrome in Children
 - May present 4 weeks or more after COVID infection
- Social/Occupational
 - Loss of ability to work
 - Financial stress

1. Patell et al *Blood* **136**, 1342–1346 (2020) 2. Garrigues et al *J. Infect.* **81**, e4–e6 (2020) 3. Huang et al *Lancet* **397**, 220–232 (2021)

Long COVID Management Themes

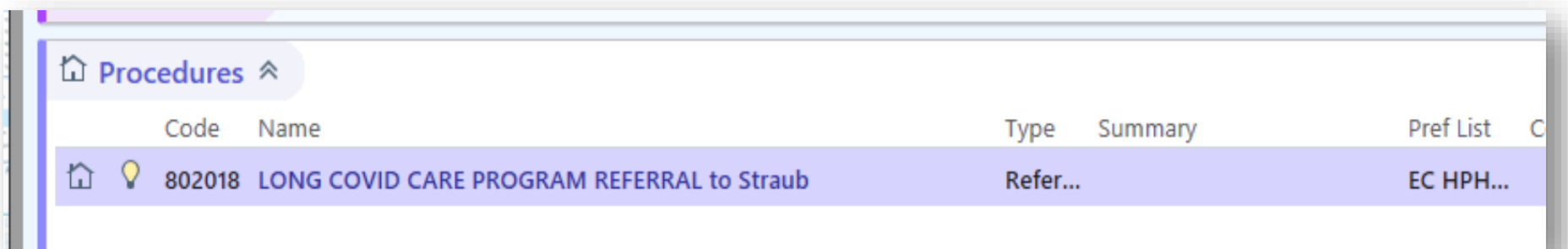
- Laboratory and diagnostic testing abnormalities may be absent
- Consider conservative diagnostic approach in the first 4-12 weeks
- Patients need reassurance and validation
- Set achievable goals, focus on specific symptoms and functions, engage with support groups
- Current understanding is incomplete and guidance will change

Long COVID Guidance and Support

- Studies worldwide and reviews are numerous
- CDC Post-COVID Conditions Interim Guidance
 - Posted this week and presented today 6/17/2021
 - <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-index.html>
 - Provides a framework for healthcare providers in their initial assessment, evaluation, management, and follow-up of persons with possible post-COVID conditions
- Patient advocacy
 - COVID Advocacy Exchange
 - Facebook groups
 - Survivor Corps

Long COVID Care Program (LCCP)



- Goal is to support the care of patients experiencing persistent symptoms after the acute phase of COVID-19
- Referrals
 - Handoff from HHP Covid Virtual Monitoring Program (now closed)
 - Referral from a HHP PCP or Specialist providers
 - Now open to referrals from community providers
 - Epic order: **LONG COVID CARE PROGRAM REFERRAL to Straub**
 - Fax form available at HPH website





Code	Name	Type	Summary	Pref List	C
802018	LONG COVID CARE PROGRAM REFERRAL to Straub	Refer...		EC HPH...	


LONG COVID CARE PROGRAM REFERRAL to Straub


✓ Accept ✗ Cancel

Referral: To provider:  

To dept: 


Reason: 

Priority: 

Type: 

Reason for Referral









Active symptoms or concerns

Date of COVID-19 diagnosis 

Is patient on oxygen

Pertinent specialty providers on care team, if applicable

Comments:

Dx Assoc.:

	Assoc	Encounter Diagnoses	Codes	Qualifier	Comment
1	<input type="checkbox"/>	Post-COVID-19 condition	B94.8		
2	<input type="checkbox"/>	Palpitations	R00.2		
3	<input type="checkbox"/>	Loss of sense of smell	R43.0		
4	<input type="checkbox"/>				

Next Required

✓ Accept ✗ Cancel

HAWAII PACIFIC HEALTH LONG COVID CARE PROGRAM REFERRAL

Fax: 808-957-0685 | Phone: 808-462-5459

From: _____ Date: _____

Phone: _____ Fax: _____ No. of Pages (including this page): _____

Referring PCP: _____

PATIENT INFORMATION:

Patient Name: _____

DOB: _____ Phone: _____

Address: _____

Insurance Provider: _____ Member ID _____

Referral/Authorization Attached? ☐ Yes ☐ No

Date of COVID-19 Diagnosis: _____

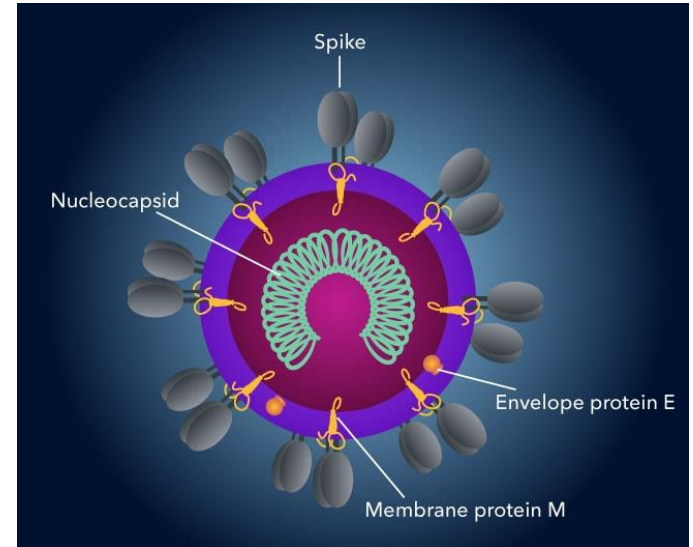
Reason for Referral / Lasting Symptoms:

- ☐ On O2
- ☐ Shortness of Breath
- ☐ Fatigue or Tiredness
- ☐ Joint Pain
- ☐ Chest Pain
- ☐ Cough
- ☐ Difficulty with Thinking and Concentration
- ☐ Depression
- ☐ Muscle Pain
- ☐ Headache
- ☐ Intermittent Fever
- ☐ Fast-beating or pounding heart, or palpitations
- ☐ Other _____

Pertinent notes regarding COVID diagnosis, treatment, or symptoms attached? ☐ Yes ☐ No

Referrals to Long COVID Care Program

- Positive COVID-19 test not required but clinical suspicion should be high
- Consider Antibody test
 - SARS-CoV2 IgG (anti-N protein) does NOT turn positive after mRNA/J+J vaccinations
 - Usually develops by 14 days after onset of symptoms
 - Duration of detectable antibody uncertain
 - Rare cross-reactivity with other coronaviruses has been reported

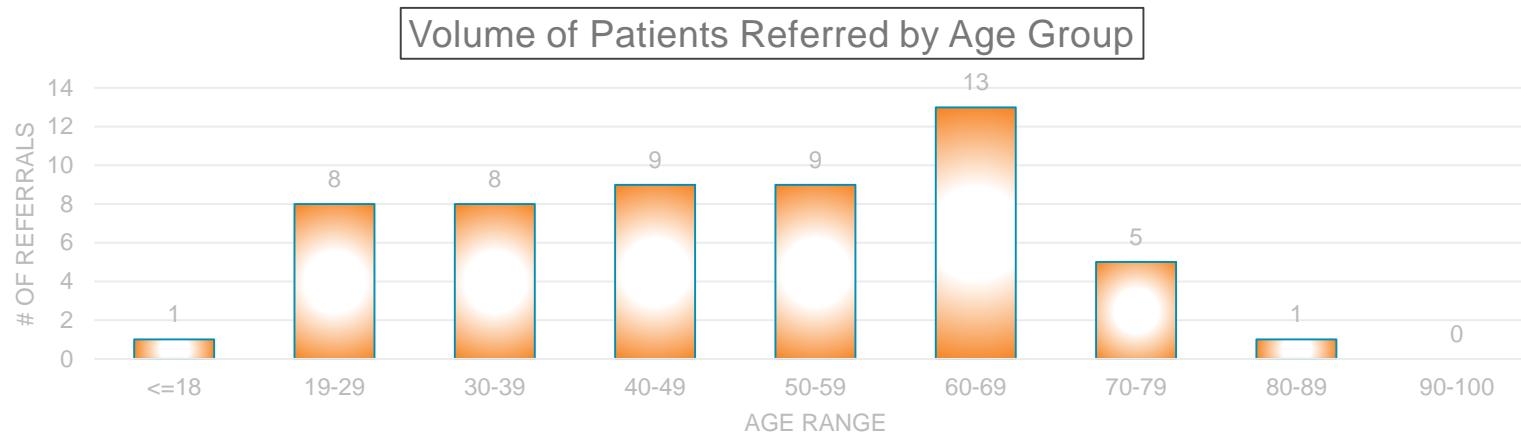


Long COVID Care Program Process

- Evaluation and Monitoring by Telephone or Video visits
 - LCCP NP coordinates closely with PCP
 - Intensity of monitoring individualized based on clinical needs
- Interdisciplinary Collaboration
 - Leaders in key medical specialties have been engaged
 - Cardiology, Pulmonology, Neurology, Psychology, Infectious Disease
 - Advise management, create protocols, facilitate referrals
 - Pediatric patients are evaluated by a general Pediatrician with specialist assistance as needed
 - Coordination with Case Management, PT/OT and Complex Care Team

LCCP Patients Referred

54 patients, 51 from HPHMG



Age of COVID-19 Cases*, Hawaii 2021

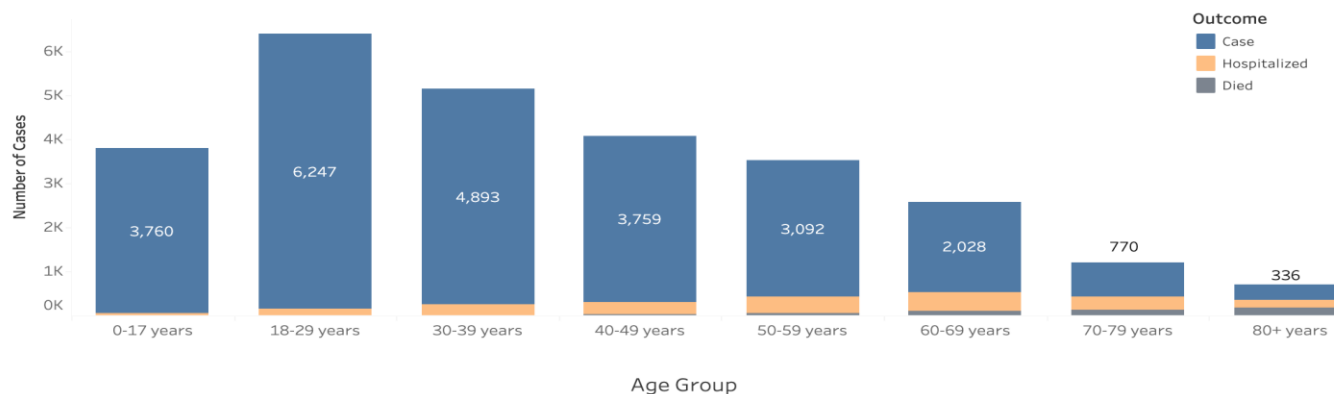
Last updated Monday, June 7, 2021 (updated weekly)

Total Cases+**

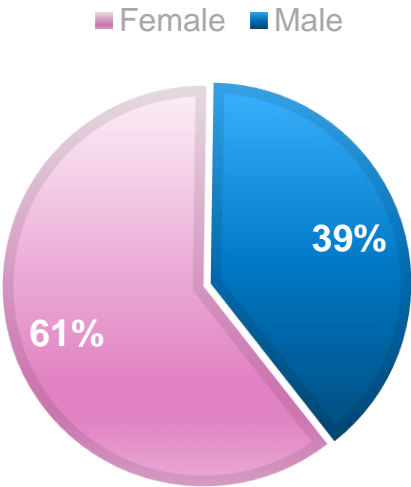
27,393

Percent of Cases That Were Hospitalized or Died by Age Group

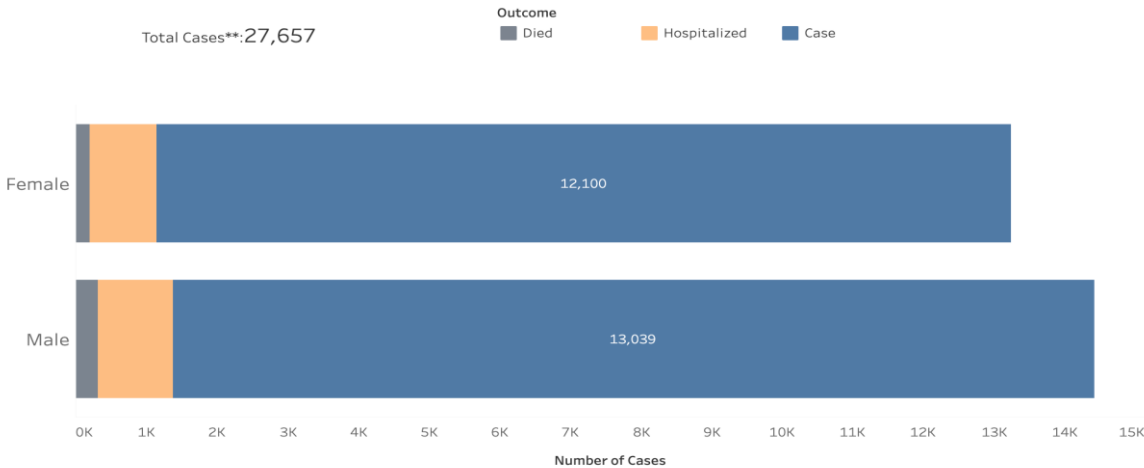
0-17 years	18-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70-79 years	80+ years
1%	2%	5%	7%	12%	21%	36%	52%



LCCP Patients Referred



Gender of COVID-19 Cases*, Hawaii 2021
Last updated Monday, June 14, 2021 (updated weekly)



LCCP Experience: Most Commonly Addressed Conditions



LCCP Management

- Conservative diagnostic approach in weeks 4-12
 - Labs
 - Imaging
 - Other evaluation
 - EKG, Echocardiogram, Holter/Zio, PFT
- Home O2 weaning
- Breathing exercises (Stasis, Johns Hopkins)
- Advocacy group resources
- Discuss vaccinations
 - COVID-19, Pneumovax
- Referrals
 - PT
 - Social work
 - Specialist providers

LCCP Outcomes

- Follow up intensity
 - Monitoring at intervals typically between 1 and 6 weeks
 - Most patients continue to be followed
 - Some have been discharged for follow up with PCP
- A database of LC patients is being maintained for future outreach
- Feedback from providers and patients have been very positive

LCCP: The Future

- COVID-19 case rates decreasing and LCCP referral rates are decreasing
- Many may not be familiar with LC or the LCCP
 - 37K Hawai'i cases, 34M USA cases, 170M Worldwide to date
- We are promoting awareness internally and to community
 - List of COVID patients by PCP distributed to providers March 2021
 - Website, TV, Print media, Webinars
- LCCP will continue to update knowledge and resources to support providers

Long COVID: The Future

- How to prevent Post COVID? Vaccinate.
- How to treat Long COVID? Maybe vaccinate too.
 - Specific treatments may not yet exist, but the effect of vaccination is being studied
 - 40% of respondents to an internet poll reported symptom improvement <https://www.survivorcorps.com/yale>
 - Yale has launched a formal study <https://www.yalemedicine.org/news/vaccines-long-covid>
- Active and future research on Long COVID is critical to improving understanding and guiding clinical practice

Thank you!

HPH Long COVID Care Program Team

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Mary Yoshida RN
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Huidy Shu MD
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Myocarditis Associated with the COVID-19 Vaccine



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Pediatric and Adult Congenital Cardiologist, Hawai'i Pacific Health Medical Group

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**HAWAI'I
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HEALTH**

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PARTNERS

Coronavirus (COVID-19) Update: FDA Authorizes Pfizer-BioNTech COVID-19 Vaccine for Emergency Use in Adolescents in Another Important Action in Fight Against Pandemic

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For Immediate Release: May 10, 2021

[Español](#)

Today, the U.S. Food and Drug Administration expanded the emergency use authorization (EUA) for the Pfizer-BioNTech COVID-19 Vaccine for the prevention of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) to include adolescents 12 through 15 years of age. The FDA amended the EUA originally issued on Dec. 11, 2020 for administration in individuals 16 years of age and older.

COVID-19 Vaccine Statistics

		US (as of 6/3/21)	Hawaii (as of 6/1/21)	HPH (as of 6/2/21)
12-17 years old	At least 1 dose	6,393,198*	33,470	
	2 doses	2,328,858*	10,029	
12-18 years old	At least 1 dose			10,142
	2 doses			3,400

*Number of vaccines administered in the US is a presumed number calculated based on the following information for number of vaccines administered in population aged 12 years and older and 18 years and older presented on the CDC website.

- ≥ 12 years old: 168,954,018 received at least 1 dose, 136,635,500 received 2 doses
- ≥ 18 years old: 162,560,820 received at least 1 dose, 134,306,642 received 2 doses

Vaccines & Immunizations

[CDC](#) > [COVID-19 Vaccination](#) > [Clinical Care](#)



COVID-19 Vaccination

Product Info by US Vaccine +

Clinical Care –

COVID-19 Vaccines

Managing Anaphylaxis

**Myocarditis and
Pericarditis
Considerations**

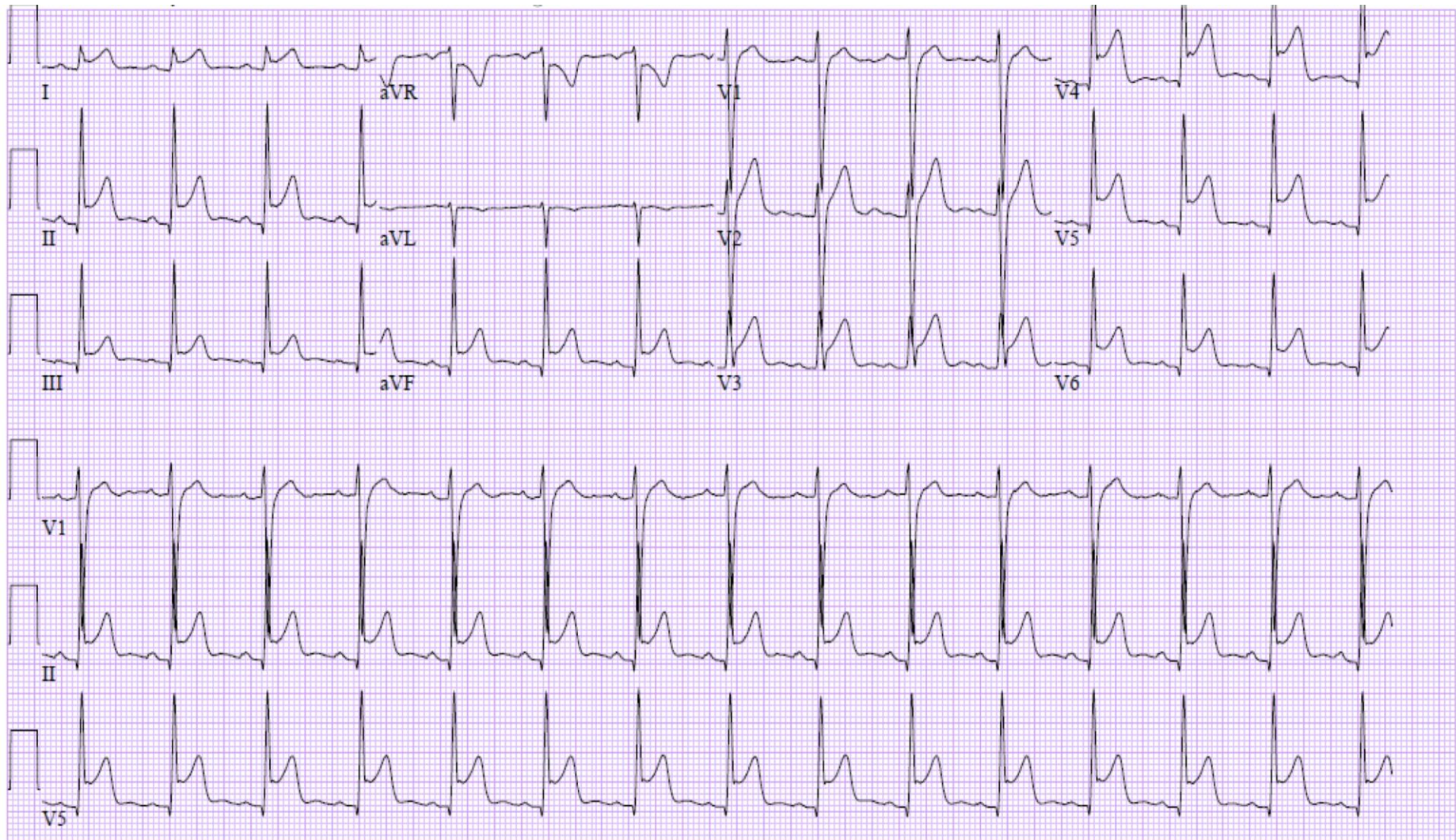
Clinical Considerations: Myocarditis and Pericarditis after Receipt of mRNA COVID-19 Vaccines Among Adolescents and Young Adults

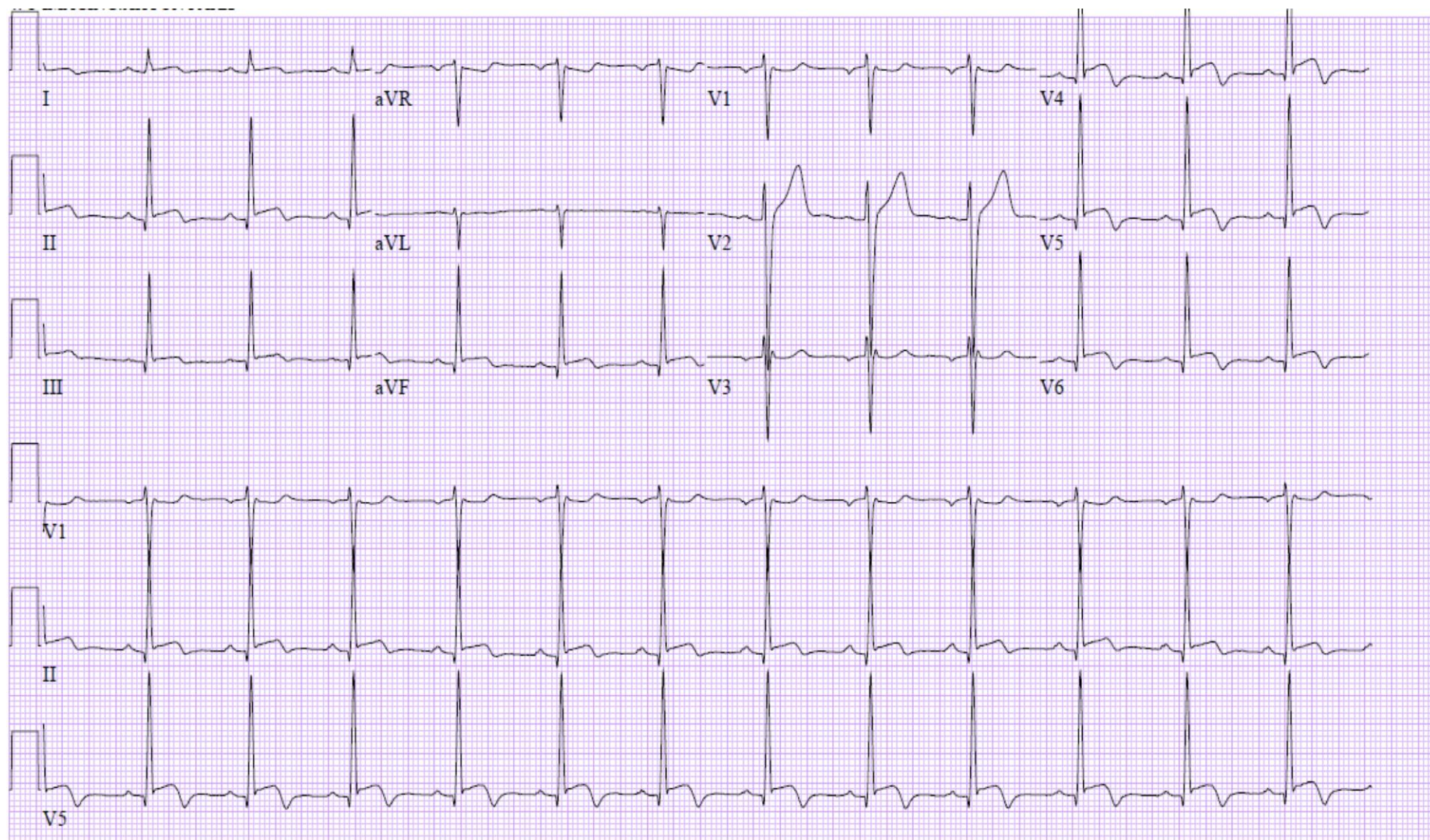
Summary

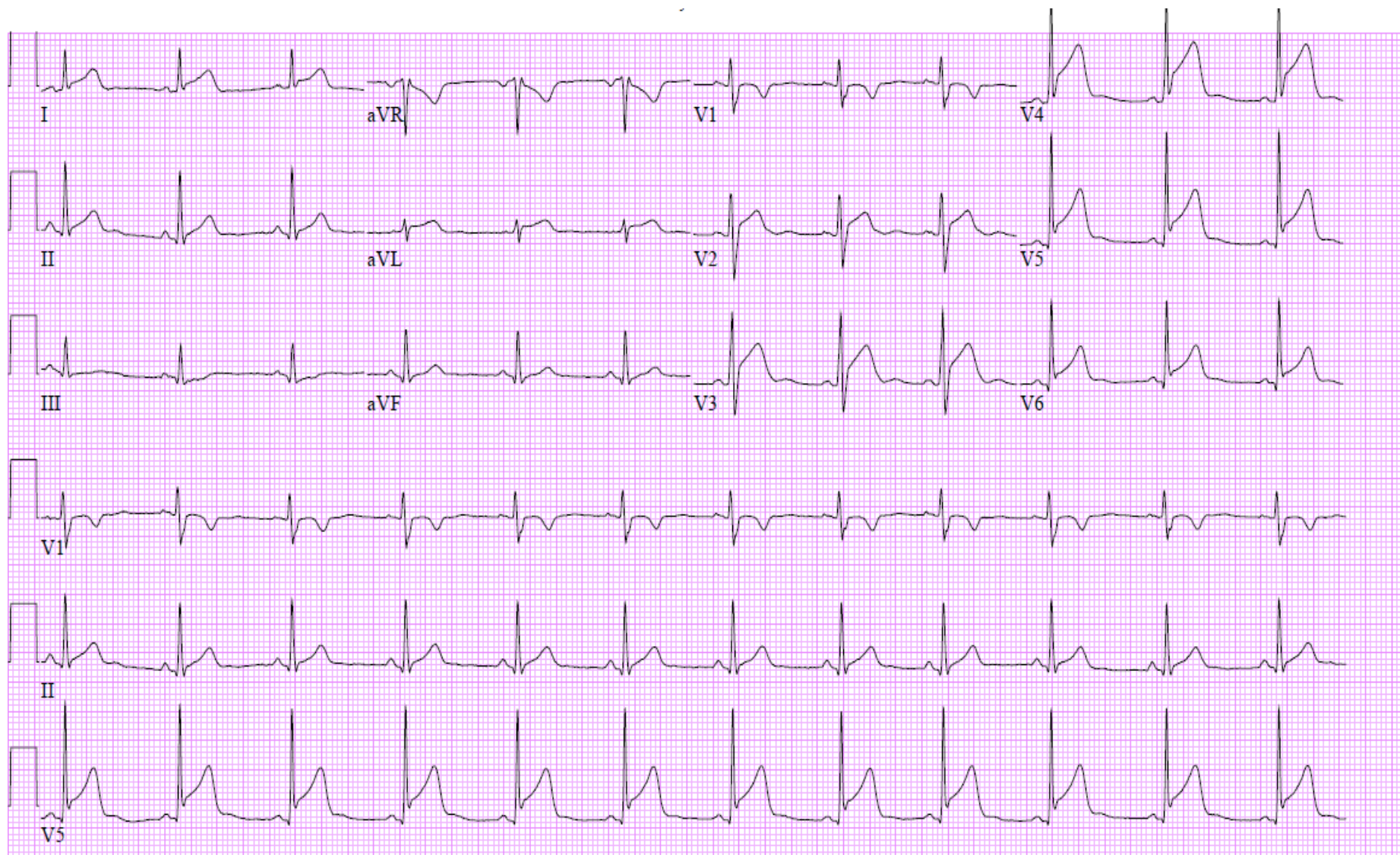
Since April 2021, increased cases of myocarditis and pericarditis have been reported in the United States after mRNA COVID-19 vaccination (Pfizer-BioNTech and Moderna), particularly in adolescents and young adults. There has not been a similar reporting pattern observed after receipt of the Janssen COVID-19 Vaccine (Johnson & Johnson).

3 Cases with Myocarditis Within 3 Weeks

- 15 yo M presenting with acute chest pain
 - 3 days following 1st dose of COVID-19 mRNA vaccine (Pfizer)
 - Had headache, dry cough, tactile fever the day after vaccination.
 - Troponin T: 304 ng/L; CKMB: 54.6 U/L
- 16 yo M with acute chest pain
 - 2 days following 2nd dose of COVID-19 mRNA vaccine
 - No significant symptoms immediately following vaccination
 - Troponin T: 431 ng/L; CKMB: 39.3 U/L
- 17 yo M with acute chest pain
 - 2 days following 2nd dose of COVID-19 mRNA vaccine
 - Had headache, pain over inoculation site, mild fever the day after vaccination
 - Troponin T: 749 ng/L; CKMB: 46.5 U/L

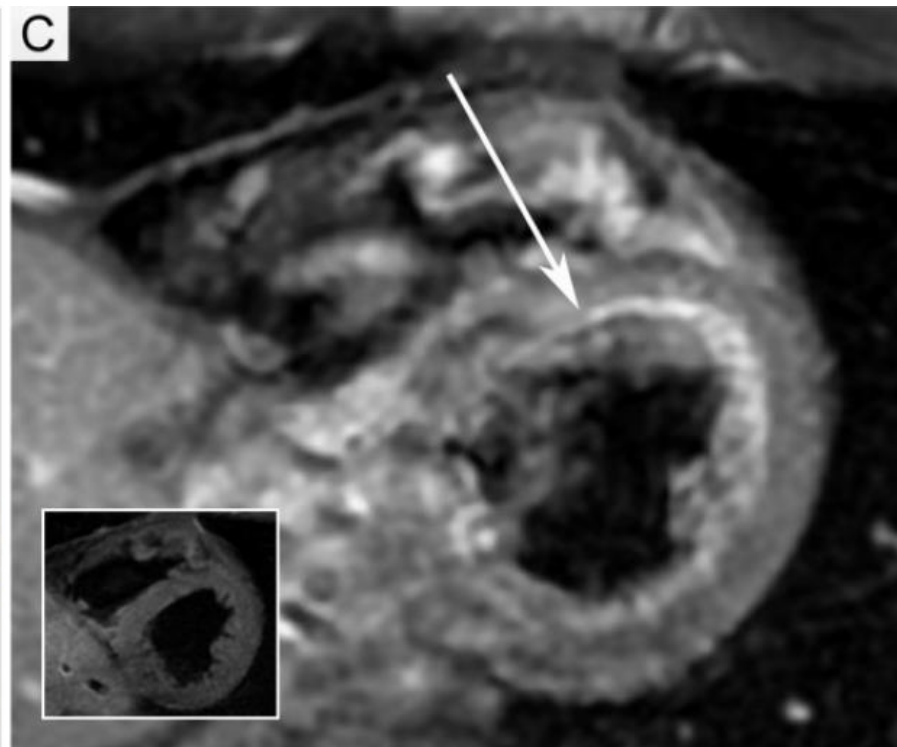
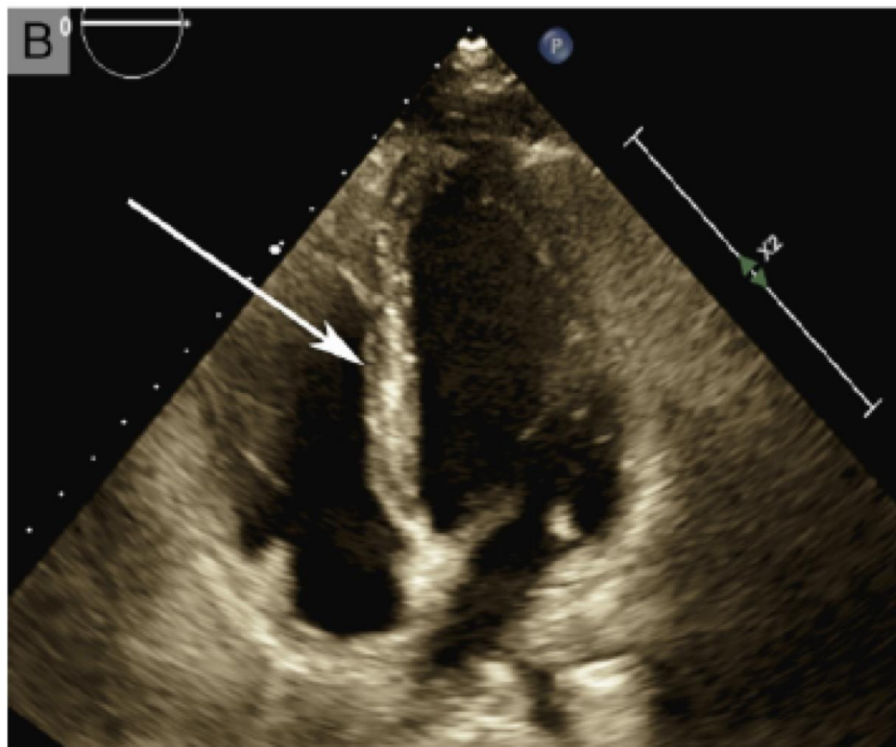






			Patient A	Patient B	Patient C
Demographics	Age, years		15	16	17
	Sex		Male	Male	Male
	Ethnicity/Race		Filipino	Filipino, Caucasian	Hawaiian/Pacific Islander
History of cardiac conditions			None	None	None
BNT162b2 vaccine	Number of doses given		1	2	2
	Days after last vaccine administration to onset of chest pain		3	2	2
Vital signs at presentation	Heart rate, beats per minute		116	108	78
	Blood pressure, mmHg		119/72	131/91	120/71
	Temperature, °C		37.2	37.2	36.6
	Respiratory rate		18	20	20
	SpO2 in room air, %		96	100	98
Cardiac markers (normal range)	Troponin T, ng/L (<20 ng/L)	At presentation	304	431	749
		Peak	832	1210	938
	CKMB, U/L (<4.1 U/L)	At presentation	54.6	39.3	46.5
		Peak	54.6	39.3	46.5
	NT-proBNP, pg/mL (0-125 pg/mL)	At presentation	108	325	55
		Peak	498	364	111
Other laboratory results (normal range)	ESR, mm/hr (0-15 mm/hr)		7	31	N/A
	Procalcitonin (<0.10 ng/mL)		0.15	<0.06	N/A
	CRP, mg/L (<5.0 mg/L)		18.5	24.3	N/A
	SARS-CoV-2 RT-PCR		Negative	Negative	Negative
	SARS-CoV-2 IgG (<1.40 index)		Negative (0.24)	Negative (0.03)	Negative (0.02)
	Respiratory viral panel PCR		Negative	Negative	Negative

	Patient A	Patient B	Patient C
Length of stay, days	3	2	2
Electrocardiogram findings	ST segment elevation in lateral leads, left axis deviation	ST segment elevation in inferolateral leads, T wave inversion	ST segment elevation in lateral leads
Echocardiogram findings	Increased echogenicity of myocardium, LVEF 63%	LVEF 60%	LVEF 63%
Cardiac MRI findings	Not obtained	Global early gadolinium enhancement ratio of 4.0 (positive >4.0), no significant T2 hyperintense myocardial edema, no delayed myocardial enhancement suggestive of myocardial necrosis	Not obtained



Accepted for Publication

Self-limited myocarditis presenting with chest pain and ST segment elevation in adolescents after vaccination with the BNT162b2 mRNA vaccine

Journal: *Cardiology in the Young*

Jihyun Park, Dona Brekke, Andras Bratincsak

Report on myocarditis following the Pfizer vaccine

PEDIATRICS

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Symptomatic Acute Myocarditis in Seven Adolescents Following Pfizer-BioNTech COVID-19 Vaccination

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Christina Gagliardo, MD, James Steward Collins, MD, Robin Shaughnessy, MD,
Rachel Caron, BA, Cristina Fuss, MD, Kathleen Jo E. Corbin, MD, MHS,
Leonard Emuren, MBBS, PhD, Erin Faherty, MD, E. Kevin Hall, MD, Cecilia Di Pentima, MD,
MPH, Matthew E. Oste, MD, MPH, Elijah Paintsil, MD, Saira Siddiqui, MD,
Donna M. Timchak, MD, Judith A. Guzman-Cottrill, DO

Table 1. Demographic and clinical characteristics of seven cases of symptomatic myocarditis after dose #2 of Pfizer-BioNTech COVID-19 vaccine

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7
Age (years)	16	19	17	18	17	16	14
Sex	Male	Male	Male	Male	Male	Male	Male
Race/Ethnicity	White	White	White	White	Latino	White	White
Weight (kg)	68	68	71	69	64	71	92
BMI (kg/m ²)	24	19	21	21	19	22	28
Exposure to COVID-19 in 14 days prior to illness onset	None	None	None	None	None	None	None
Time between vaccine dose #2 and symptom onset (days)	2	3	2	2	4	3	2
Total hospital LOS (days)	6	2	2	4	5	3	4
ICU LOS (days)	4	None	None	4	5	2	2
Symptoms Upon Presentation							
Chest pain	Present	Present	Present	Present	Present	Present	Present
Other pain	Bilateral arm pain	Myalgias	Bilateral arm pain, numbness, paresthesia	--	Bilateral arm pain, abdominal pain	--	--
Fever	38.3° C by history	Subjective, chills	--	Subjective	Subjective	--	38.3° C by history
Fatigue	Present	Present	--	Present	--	--	--
Other	Nausea, vomiting, anorexia, headache	Weakness	--	Nausea	Nausea, vomiting, anorexia, SOB, palpitations	SOB	SOB

--:Not present; Kg: kilograms, BMI: Body Mass Index, LOS: Length of Stay; ICU: Intensive Care Unit; SOB: Shortness of breath.

Table 2. Summary of diagnostics and therapeutics: seven cases of symptomatic myocarditis after dose #2 of Pfizer-BioNTech COVID-19 vaccine

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7
Laboratory Findings on Admission							
Troponin (ng/mL) (normal range)	Troponin I: 2.59 (<0.03)	High-sensitivity troponin T: 232 (< 14)	Troponin I: 5.55 (<0.045)	Troponin T: 1.09 (<0.01)	Troponin T: 3.2 (<0.01)	Troponin T: 0.66 (<0.01)	Troponin I: 22.1 (<0.045)
Brain natriuretic peptide (pg/mL) (normal < 100)	--	--	--	--	--	--	107.9
NT pro-BNP (pg/mL) (normal < 125)	428	--	376	--	978	149	--
Peripheral white blood cell count (thousand/cu mm)	6.97	8.69	11.8	12.6	16.3	5.0	8.11
Absolute lymphocyte count (thousand/cu mm)	1.69	1.39	2.13	2.3	4.1	1.4	1.05
Absolute neutrophil count (thousand/cu mm)	4.65	5.93	7.46	9.5	9.8	2.8	4.73
Platelet count (thousand/cu mm)	198	208	231	236	297	189	208
Albumin (g/dL)	3.9	4.1	4.1	4.4	4.0	3.8	3.5
Aspartate transaminase (units/L)	54	29	41	82	150	59	87
Alanine transaminase (units/L)	30	14	33	20	46	22	38
Ferritin (ug/L)	70	--	90	103	347	65	84

C-reactive protein (mg/dL) (normal < 1.0)	0.99	6.7	2.5	12.7	18.1	1.5	7.7
Erythrocyte sedimentation rate (mm/hr)	18	13	6	40	38	3	10
Prothrombin time (seconds)	--	--	14.0	--	12.1	11.4	14.8
Partial thromboplastin time (seconds)	22.3	--	31.4	--	30.4	27.9	35.6
International Normalized Ratio INR	1.11	--	1.06	--	1.13	1.06	1.2
Other Pertinent Laboratory Findings							
Highest troponin (ng/mL) (normal range)	Troponin I: 12.43 (<0.80)	High sensitivity Troponin T: 388 (<14)	Troponin I: 12.20 (<0.045)	Troponin T: 1.09 (<0.01)	Troponin T: 3.33 (<0.01)	Troponin T: 0.82 (<0.01)	Troponin I: 22.1 (<0.045)
Lowest troponin prior to discharge (ng/mL) (normal range)	Troponin I: 1.42 (<0.80)	--	Troponin I: 5.79 (<0.045)	Troponin T: 0.4 (<0.01)	Troponin T: 0.96 (<0.01)	Troponin T: 0.01 (<0.01)	Troponin I: 8.02 (<0.045)
Highest BNP (normal range)	--	--	--	--	--	--	205 pcg/mL (<100)
Highest NT-pro BNP (normal range)	482 pg/mL (<125)	--	376 pg/mL (<300)	--	978 pcg/mL (<125)	275 pcg/mL (<125)	--
Highest C-reactive protein (mg/dL) (normal < 1.0)	1.23	6.7	2.53	12.7	18.1	1.8	12.7
COVID-19 PCR	Negative	Negative	Negative	Negative	Negative	Negative	Negative
COVID-19 spike antibody (Manufacturer)	--	--	Positive (Roche)	Positive (Roche)	Positive (Roche)	Positive (Roche)	--
COVID-19 nucleocapsid antibody (Manufacturer)	Negative (Abbott)	--	Negative (Roche)	Negative (Roche)	Negative (Roche)	Negative (Roche)	Negative (Abbott)

Respiratory pathogen panel PCR* (Manufacturer)	Negative (BioFire)	Negative (BioFire)	Negative (BioFire)	Negative (BioFire)	Negative (BioFire)	Negative (BioFire)	Negative (BioFire)
Adenovirus diagnostics	Negative serum PCR	--	Negative serology	Negative serum PCR	Negative serum PCR	--	Negative serum PCR
Enterovirus diagnostics	Negative serum PCR	--	Negative serology	Negative serum PCR	Negative serum PCR	Negative serum PCR	Negative serum PCR
Cytomegalovirus diagnostics	Negative serum PCR	--	Negative serology	Negative serum PCR	Negative serum PCR	Negative serum PCR	Negative serology
Epstein-Barr virus diagnostics	--	--	Negative serology	Negative serum PCR	Negative serum PCR	Negative IgM, positive IgG antibody	Negative serology
Other diagnostics	--	--	Negative Parvovirus, Bartonella, and Lyme serology, negative urine drug screen	--	Negative Parvovirus and Bartonella serology, negative HHV-6 serum PCR	Negative Lyme serology, negative <i>Mycoplasma</i> serum PCR, negative Parvovirus serum PCR	Negative Parvovirus IgM, positive Parvovirus IgG antibody, negative <i>Mycoplasma</i> PCR (throat swab)
Diagnostic Imaging Findings							
Cardiac MRI	LGE (subepicardial) involving lateral LV apex, myocardial edema of lateral LV wall, left axillary adenopathy	LGE involving mid LV wall, myocardial edema of basal inferolateral LV wall	LGE (subepicardial) involving basal anterolateral and basal to mid-ventricular inferolateral LV segments, myocardial edema, elevated extracellular volume fraction (29.2%)	Fibrosis, myocardial edema, hyperemia, mild mitral regurgitation (RF ~18%)	LGE (epicardial) involving anterior and lateral LV wall, no myocardial edema	LGE, diffuse myocardial edema	LGE (subepicardial) involving mid and apical LV free wall, myocardial edema, hyperemia

Echocardiogram	Normal	Normal	Borderline basal lateral and basal posterior strain	Normal	Normal	Normal	Mildly depressed RV and LV systolic function (LVEF 47%)
Electrocardiogram	Atrioventricular dissociation with junctional escape rhythm, ST elevation	ST segment elevation (diffuse)	ST elevation (diffuse), T wave abnormality	ST elevation	Sinus bradycardia, T wave abnormality	ST elevation (diffuse)	ST elevation, low voltage of extremity leads
Therapeutics							
Oxygen supplementation	None	None	None	None	None	None	LFNC
Vasoactive medications or inotropic support	None	None	None	None	None	None	None
Anti-inflammatory agents and other relevant medications	NSAID, IVIG, IV methylprednisolone, PO prednisone, famotidine	NSAID, colchicine, aspirin	NSAID, famotidine	NSAID, IVIG, IV methylprednisolone, PO prednisone	NSAID, IVIG, IV methylprednisolone, PO prednisone, aspirin	IVIG, PO prednisone	NSAID, famotidine, furosemide

--:Not done; LGE: late gadolinium enhancement; LV: Left ventricular; RV: Right ventricular, LVEF: Left ventricular ejection fraction; LFNC: Low flow nasal cannula; NSAID: Non-steroidal anti-inflammatory drug; IVIG: Intravenous immunoglobulin; IV: intravenous; PO: *per os* (oral); q12hr: every 12 hours; HHV-6: Human herpesvirus-6

Comparison of Myocarditis to COVID-19 Related Illnesses

	Vaccine related myocarditis
Fever	no
Rash	no
Cough	no
Headache	maybe
Chest pain	YES
GI symptoms	no
Symptoms within a few days from mRNA vaccine	YES
Symptoms within a few days to COVID exposure	no
Symptoms within a few weeks to COVID exposure	no

Comparison of Myocarditis to COVID-19 Related Illnesses

	Vaccine related myocarditis	Acute COVID infection
Fever	no	maybe
Rash	no	maybe
Cough	no	YES
Headache	maybe	maybe
Chest pain	YES	no
GI symptoms	no	no
Symptoms within a few days from mRNA vaccine	YES	no
Symptoms within a few days to COVID exposure	no	YES
Symptoms within a few weeks to COVID exposure	no	no

Comparison of Myocarditis to COVID-19 Related Illnesses

	Vaccine related myocarditis	Acute COVID infection	Multisystem Inflammatory Syndrome in Children
Fever	no	maybe	YES
Rash	no	maybe	YES
Cough	no	YES	maybe
Headache	maybe	maybe	YES
Chest pain	YES	no	no
GI symptoms	no	no	YES
Symptoms within a few days from mRNA vaccine	YES	no	no
Symptoms within a few days to COVID exposure	no	YES	no
Symptoms within a few weeks to COVID exposure	no	no	YES

Comparison of Myocarditis to COVID-19 Related Illnesses

	Vaccine related myocarditis	Acute COVID infection	Multisystem Inflammatory Syndrome in Children
Fever	no	maybe	YES
Rash	no	maybe	YES
Cough	no	YES	maybe
Headache	maybe	maybe	YES
Chest pain	YES	no	no
GI symptoms	no	no	YES
Symptoms within a few days from mRNA vaccine	YES	no	no
Symptoms within a few days to COVID exposure	no	YES	no
Symptoms within a few weeks to COVID exposure	no	no	YES

Laboratory Work-up and Comparison

	Vaccine related myocarditis
ESR / CRP elevation	YES
CK-MB	YES
Troponin	YES
SARS-CoV-2 PCR	no
SARS-CoV-2 IgG	no
Respiratory viral panel	no

Laboratory Work-up and Comparison

	Vaccine related myocarditis	Acute COVID infection	Multisystem Inflammatory Syndrome in Children
ESR / CRP elevation	YES	YES	YES
CK-MB	YES	no	maybe
Troponin	YES	no	YES (20-60%)
SARS-CoV-2 PCR	no	YES	maybe (60%)
SARS-CoV-2 IgG	no	maybe	YES
Respiratory viral panel	no	YES	no

Laboratory Work-up and Comparison

	Vaccine related myocarditis	Acute COVID infection	Multisystem Inflammatory Syndrome in Children
ESR / CRP elevation	YES	YES	YES
CK-MB	YES	no	maybe
Troponin	YES	no	YES (20-60%)
SARS-CoV-2 PCR	no	YES	maybe (60%)
SARS-CoV-2 IgG	no	maybe	YES
Respiratory viral panel	no	YES	no

Imaging Studies

	Vaccine related myocarditis
ST segment elevation	YES
Decreased LV function	no
Coronary dilation	no
Cardiac MRI gadolinium enhancement	YES
Cardiac catheterization	Normal coronaries

Imaging Studies

	Vaccine related myocarditis	Acute COVID infection	Multisystem Inflammatory Syndrome in Children
ST segment elevation	YES	no	no
Decreased LV function	no	no	YES/no
Coronary dilation	no	no	YES
Cardiac MRI gadolinium enhancement	YES	?	?
Cardiac catheterization	Normal coronaries	?	Possible coronary artery dilation

Imaging Studies

	Vaccine related myocarditis	Acute COVID infection	Multisystem Inflammatory Syndrome in Children
ST segment elevation	YES	no	no
Decreased LV function	no	no	YES/no
Coronary dilation	no	no	YES
Cardiac MRI gadolinium enhancement	YES	?	?
Cardiac catheterization	Normal coronaries	?	Possible coronary artery dilation

Comparison of Myocarditis to COVID-19 Related Illnesses

	Vaccine related myocarditis	Acute COVID infection	Multisystem Inflammatory Syndrome in Children
Chest pain	YES	no	no
Symptoms within a few days from mRNA vaccine	YES	no	no
CK-MB	YES	no	maybe
Troponin	YES	no	YES (20-60%)
SARS-CoV-2 IgG	no	maybe	YES
ST segment elevation	YES	no	no
Cardiac MRI gadolinium enhancement	YES	?	?

Differential Diagnosis

- Chest Pain
 - Too vast to consider
 - Q: recent (within 5 days) Pfizer BioNTech or Moderna vaccine
 - A: obtain ECG and labs: troponin and CK-MB
- ST segment elevation, troponin and CK-MB elevation with chest pain
 - Myocardial infarction
 - Acute myocarditis
 - Coronary spasm (angina)
 - Q: Kawasaki disease, familial hypercholesterolemia, 10+ year h/o smoking
 - A: myocarditis

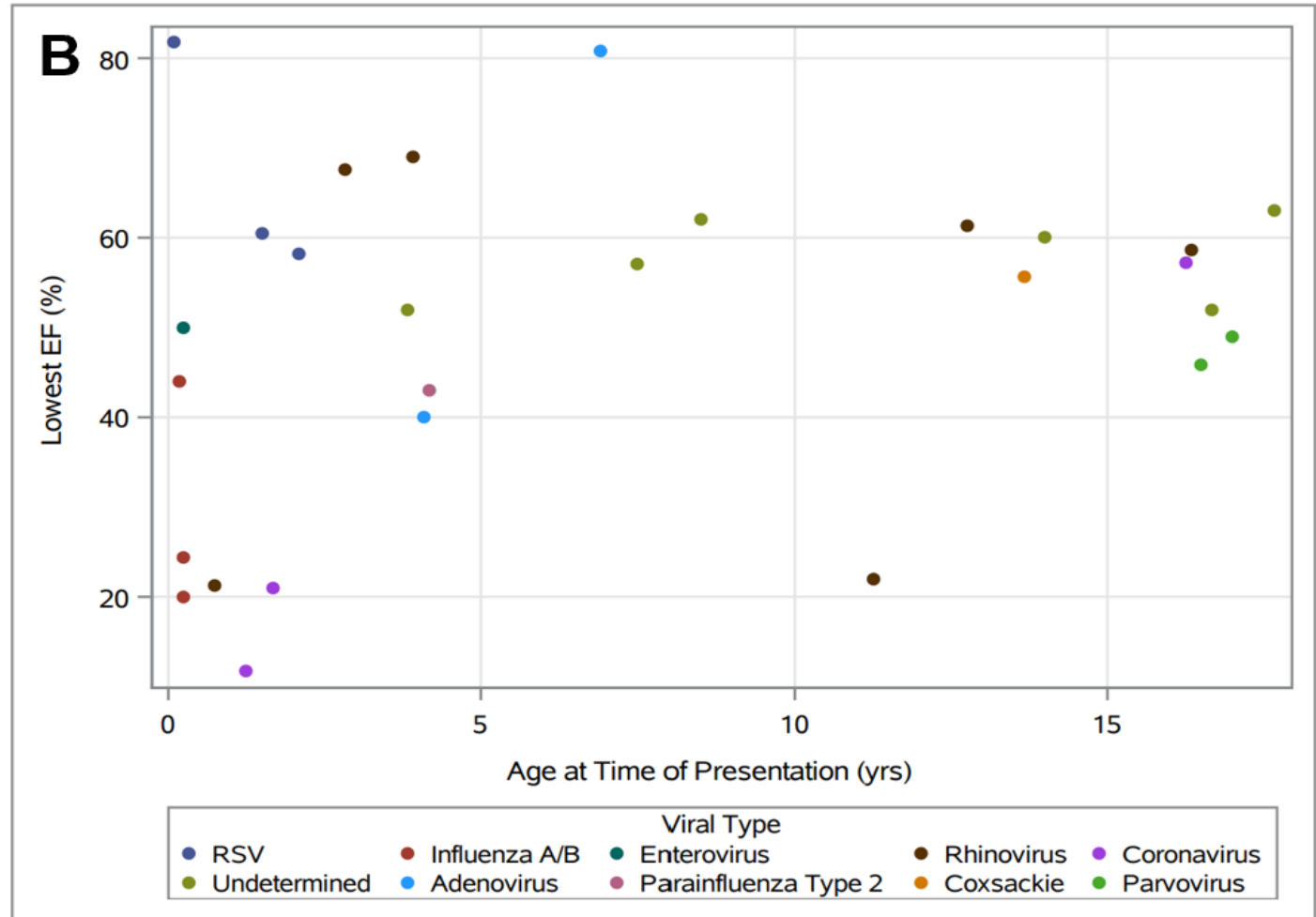
Differential Diagnosis of Myocarditis

- Acute myocarditis
 - Fulminant, focal, viral, MIS-C
 - Q: viral prodrome, h/o COVID infection, cardiac function by echocardiogram
 - A: if echo normal and no h/o recent viral illness, it is likely focal myocarditis due to COVID-19 vaccine
- Consideration, supportive tests
 - Possible viral myocarditis: PCR for typical viruses
 - Possible reactive myocarditis (MIS-C): SARS-CoV-2 nucleocapsid IgG
 - Fulminant myocarditis: monitor vital signs and function
 - Trend cardiac enzymes: CK-MB!

Viral Myocarditis

Viral etiology
across
pediatric age-
range

Common in
adolescents:
Rhino
Parvo
Coxsackie
Corona



Acute Myocarditis in Adolescents

Pediatr Cardiol 26:627–631, 2005

DOI: 10.1007/s00246-004-0864-5

Pediatric
Cardiology

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“Myocardial Infarction” in Adolescents: Do We Have the Correct Diagnosis?

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Acute Myocarditis in Adolescents

Table 1. Chest pain characteristics, cardiac enzymes, and ECG abnormalities

Mean age (years)	16.7
% male	89
Viral prodrome (%)	44
Mean duration of chest pain (hours)	40
% with ST elevation on initial ECG	89
Peak CK-MB, mean (ng/ml)	65.7
Peak troponin I, mean (ng/ml)	14.0
Coronary occlusion at catheterization (%)	0
Coronary distribution of ECG changes	
Anterior (%)	33
Inferior or inferiolateral (%)	67

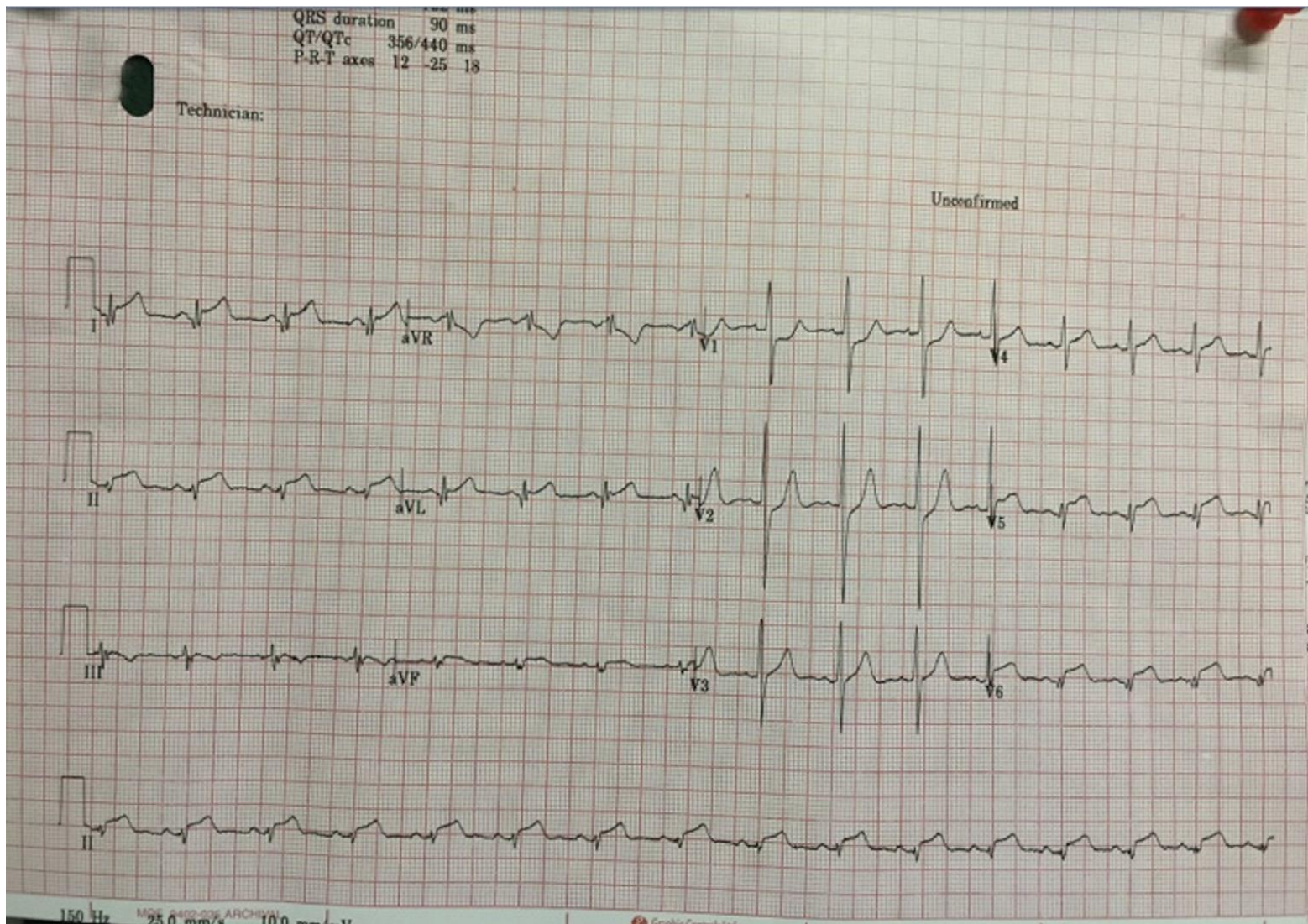
Focal Myocarditis

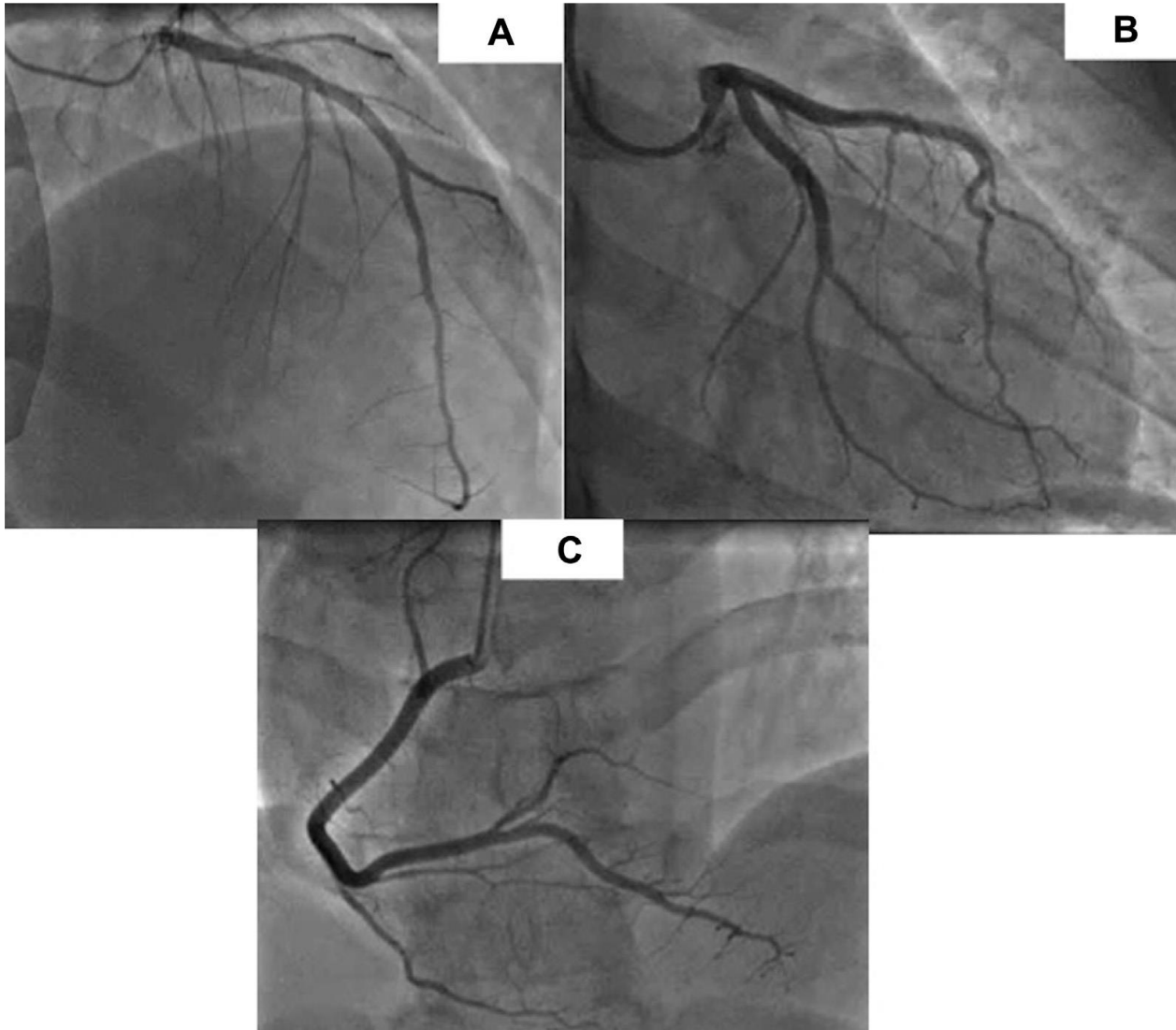
Acute Myocarditis and ST-Segment Elevation



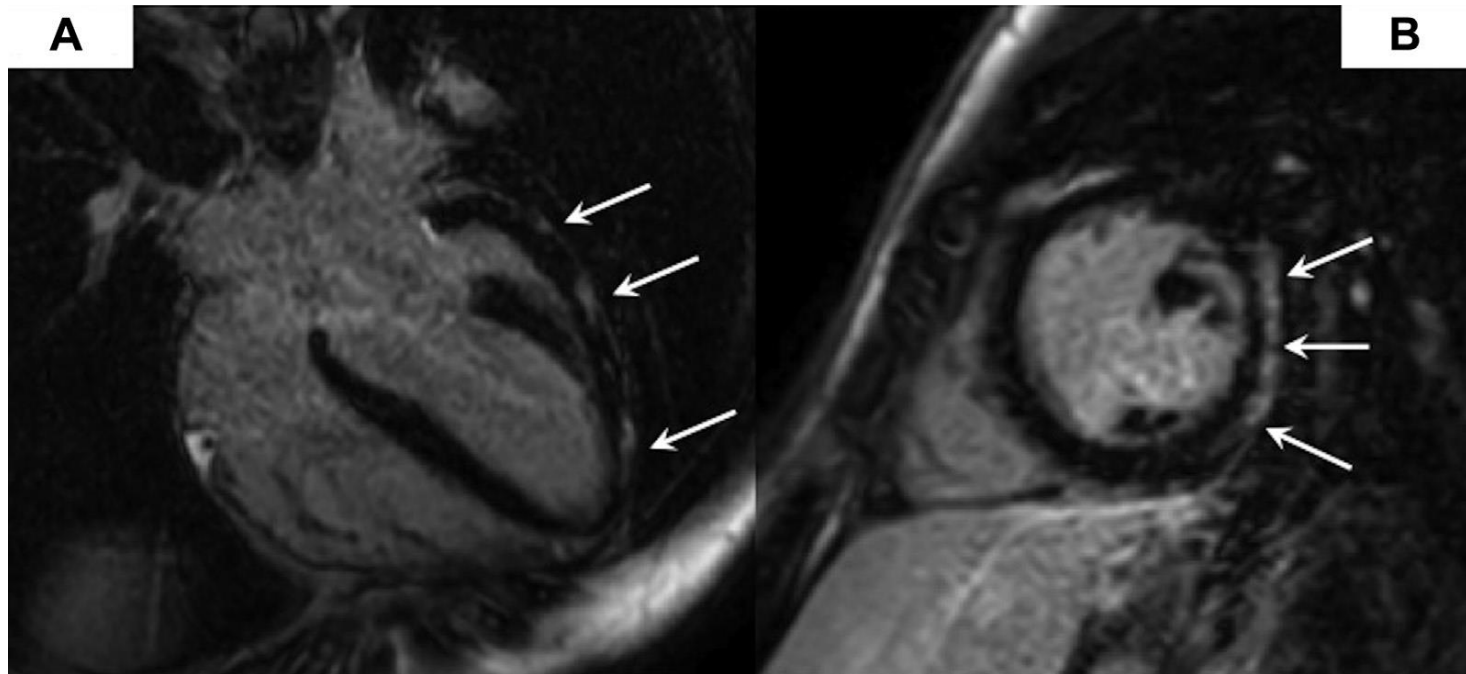
Muhammad Shahid, MRCP, Edward Hoey, MRCP, FRCR, and Sandeep Basavarajaiah, MD, MRCP*

We report a case of focal myocarditis in a young boy mimicking acute ST-segment elevation MI. He presented with chest pain and the EKG changes were consistent with infero-lateral ST-segment elevation MI. Coronary angiogram revealed smooth arteries with no obstruction. Troponin was significantly elevated and the echocardiogram exhibited mildly impaired LV function with hypokinetic inferior and lateral walls. Subsequently performed cardiac magnetic resonance imaging confirmed the diagnosis of myocarditis by exhibiting classic features of delayed gadolinium enhancement in the epi and mid-myocardial regions of the lateral wall sparing the sub-endocardial region. This case exhibits the use of cardiac magnetic resonance imaging for diagnosis in such scenarios as often if the angiogram is normal other differential diagnosis are often speculated without actual evidence © 2016 Elsevier Inc. All rights reserved. (Am J Cardiol 2016;118:1605–1608)

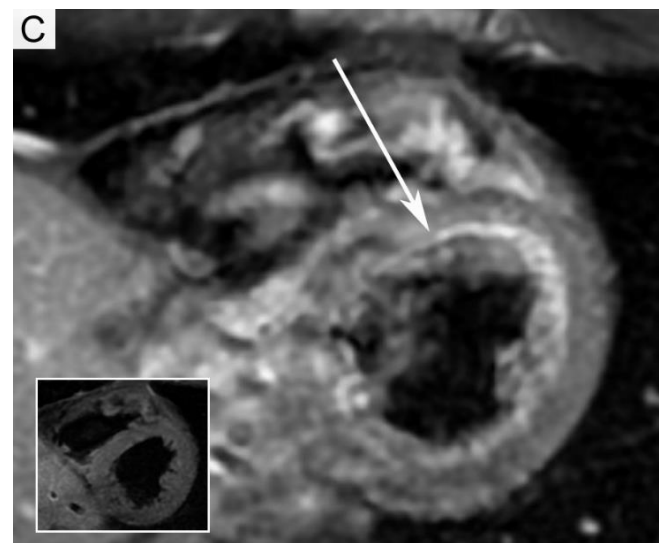
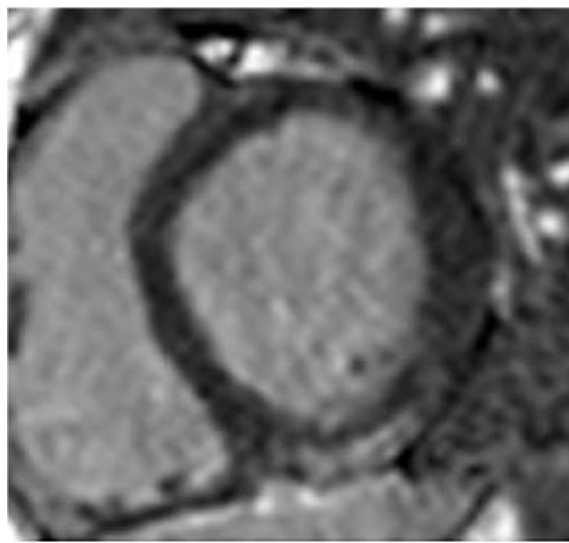
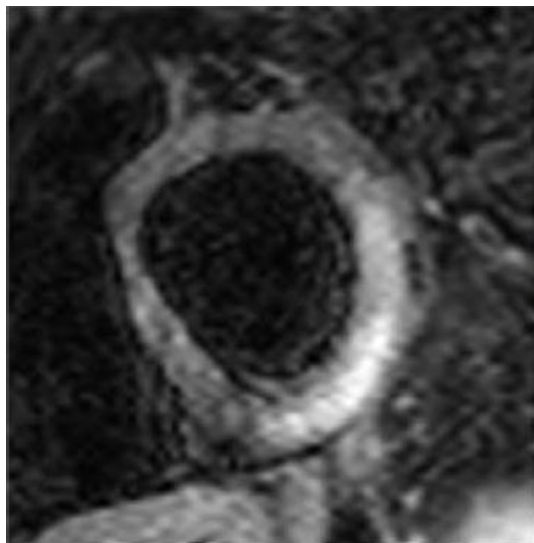


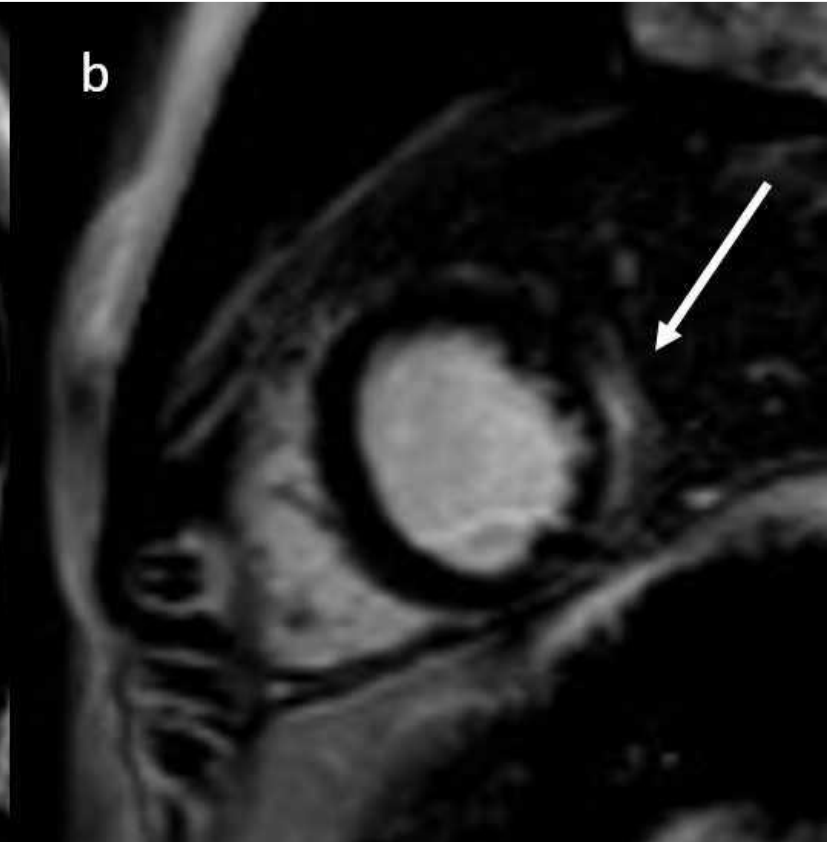


Focal myocarditis



Focal Myocarditis Imaging

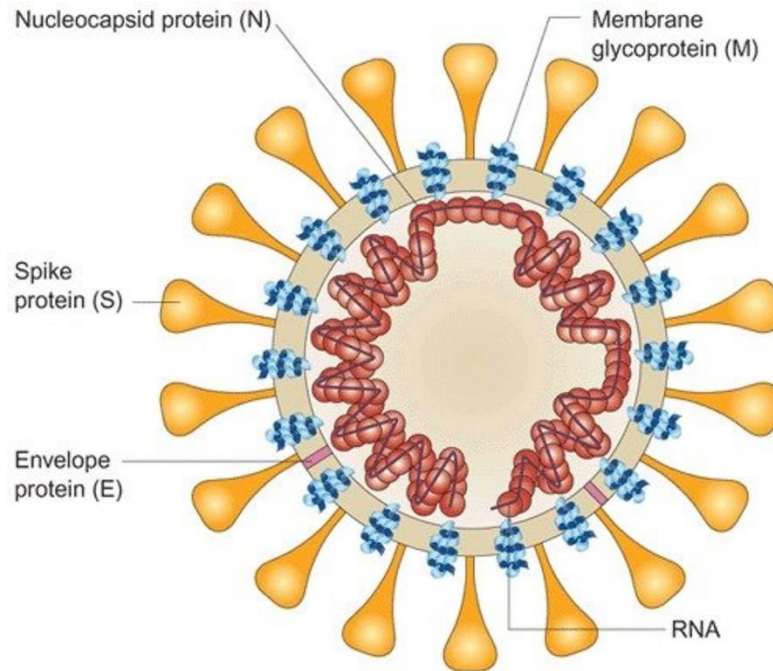




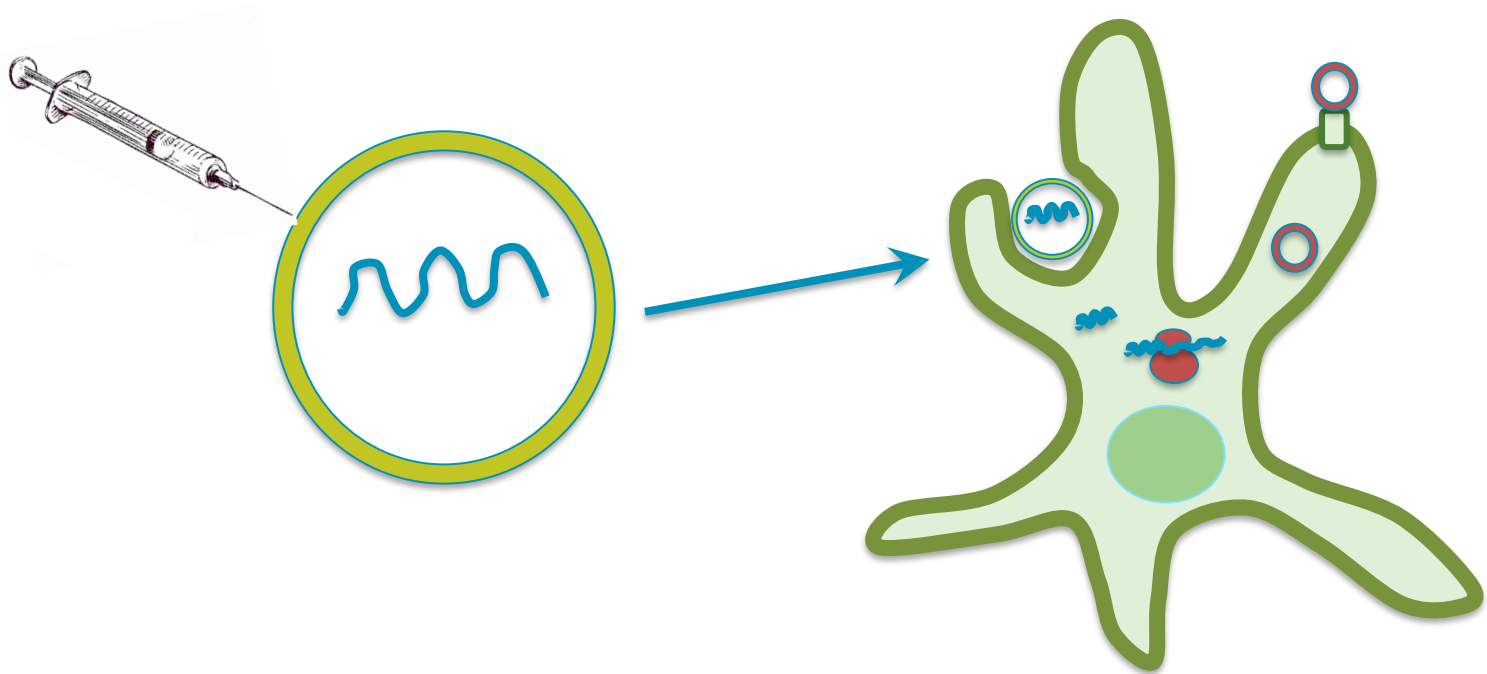
Hypothetical Pathomechanism

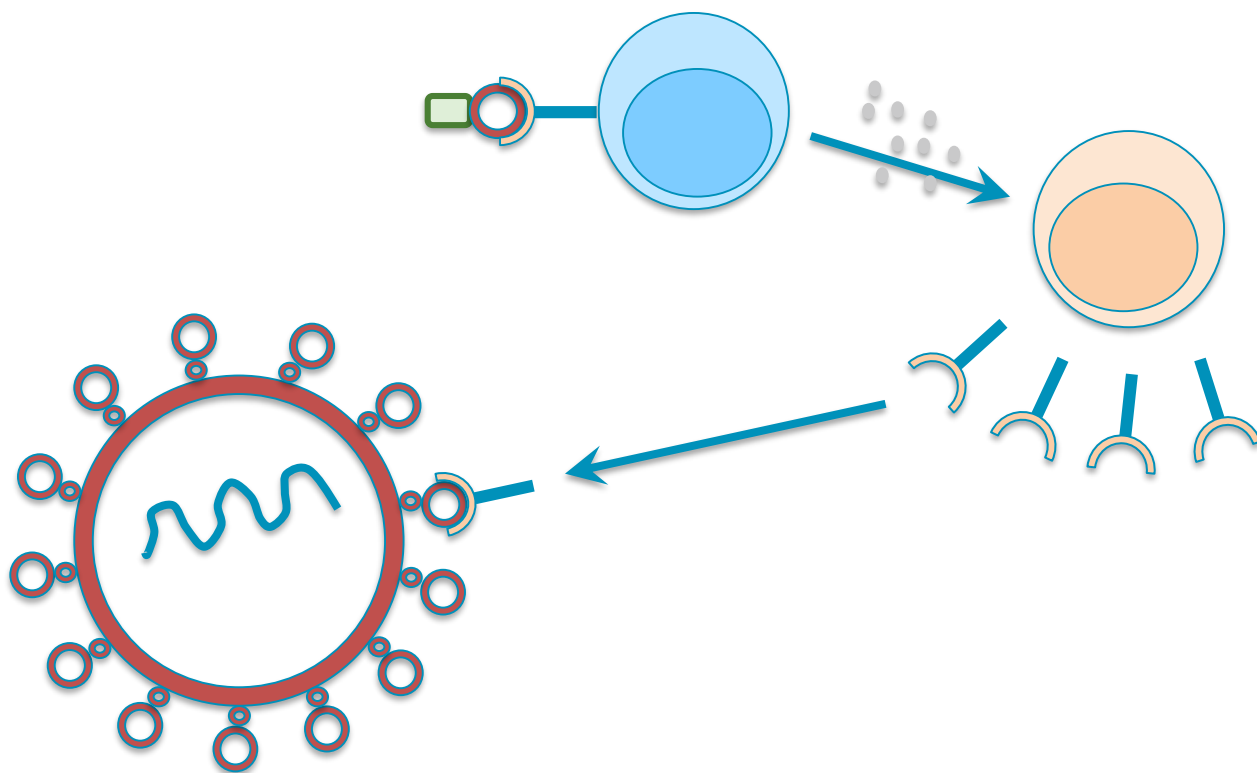


Anatomy of the SARS-CoV-2

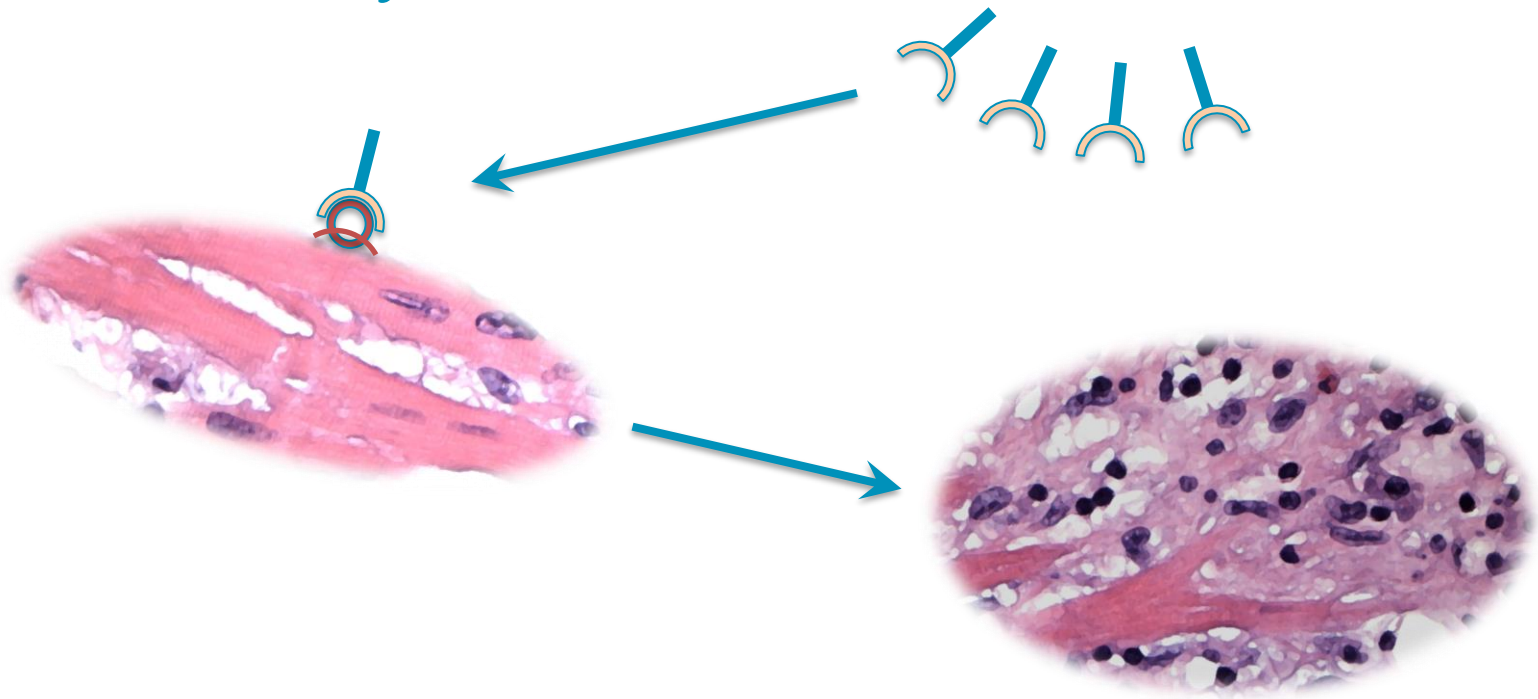


Hypothetical Pathomechanism





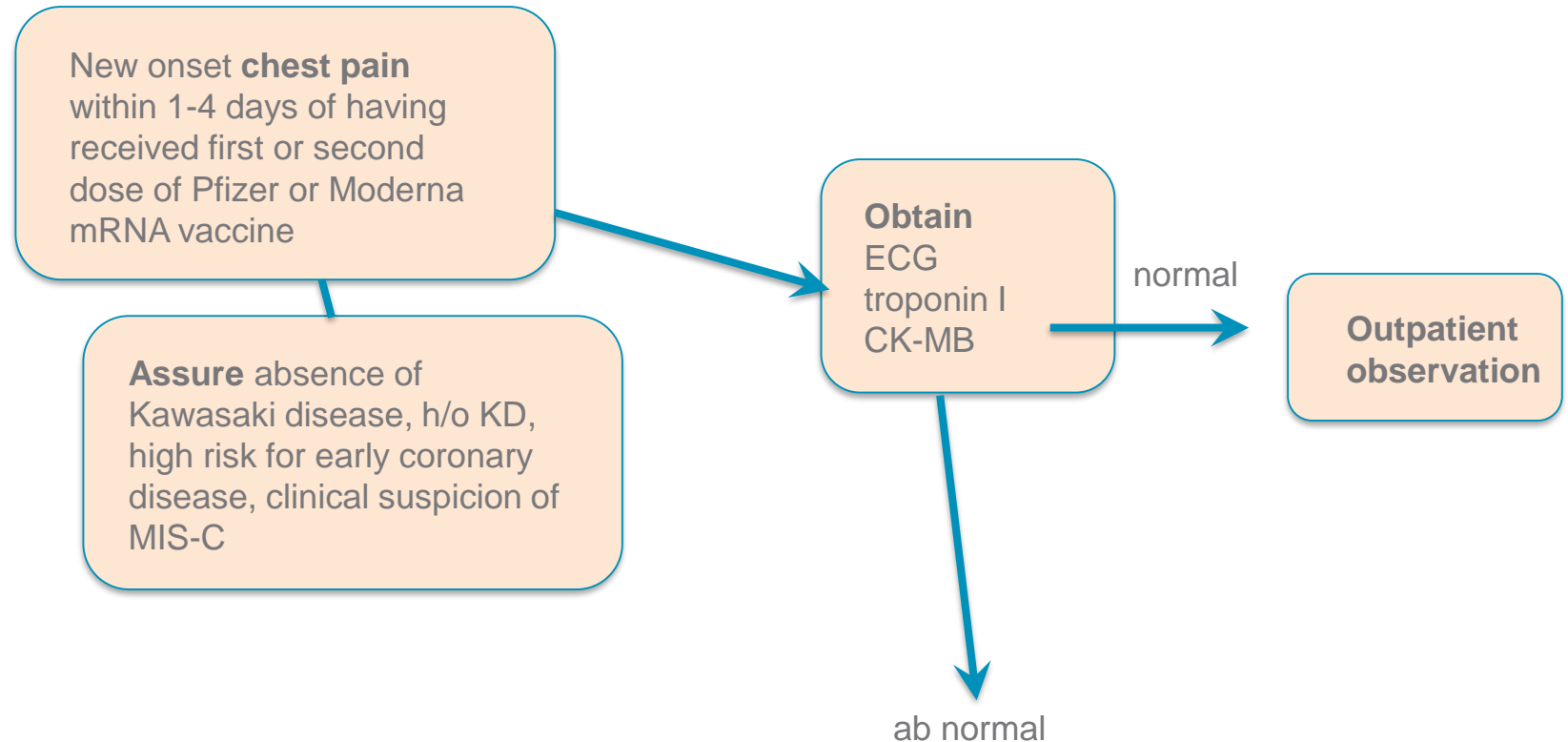
Hypothetical pathomechanism of vaccine associated myocarditis



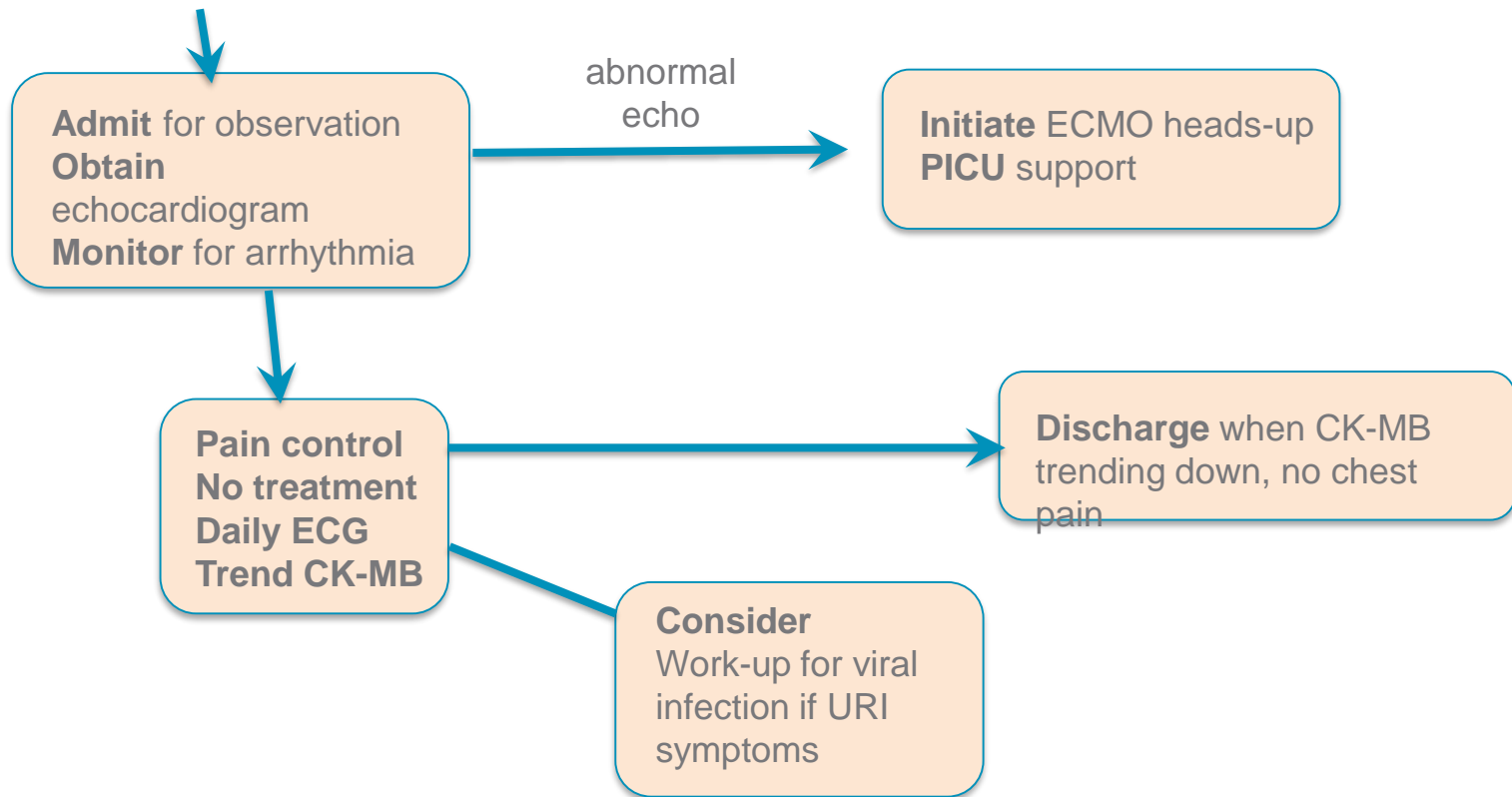
What to expect with focal myocarditis

- Chest pain
- Abnormal ECG
- Troponin and CK-MB elevation
- Normal echocardiogram
- Resolution in 2-5 days
- No ECMO
- No long-term sequelae (?)

Proposed algorithm to assess vaccine related myocarditis



Proposed algorithm to treat vaccine related myocarditis



Summary

- COVID-19 mRNA vaccine can, rarely, cause myocarditis (1:5000)
- The myocarditis presents with chest pain, ST segment elevation and troponin elevation
- There is no indication for detailed viral PCR testing, unless the symptoms and presentation warrant it
- The myocarditis is focal, self limited, does not require medication
- Currently there is no known long-term sequelae



Thank you for
your
attention!

References

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- Wallace M, Woodworth KR, Gargano JW, et al. The Advisory Committee on Immunization Practices' Interim Recommendation for Use of Pfizer-BioNTech COVID-19 Vaccine in Adolescents Aged 12–15 Years — United States, May 2021. *MMWR Morb Mortal Wkly Rep* 2021;70:749–752.
- “Myocardial infarction in adolescents: Do we have the right diagnosis? Desai et al., *Pediatric Cardiology*, 2005.
- Acute myocarditis and ST segment elevation. Shahid et al., *American Journal of Cardiology*, 2016.
- Symptomatic acute myocarditis in seven adolescents following the Pfizer-BioNTech COVID-19 vaccine. Marshall et al., *Pediatrics*, 2021.
- Self-limited myocarditis presenting with chest pain and ST segment elevation in adolescents after vaccination with the BNT162b2 mRNA vaccine. Park et al, *Cardiology in the Young*, 2021.

Q&A

CREATING A HEALTHIER HAWAI'I

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Next Webinar:

HHP Care Model and Disease Management Webinar:

GI – Dr. Timothy Swindoll

Thursday, June 24, 2021
5:30pm – 6:30 pm

Please note: webinar topic is subject to change

Thank you!

- A recording of the meeting will be available afterwards.
- Unanswered question?
 - Contact us at Covid19Bulletin@hawaiiipacifichealth.org