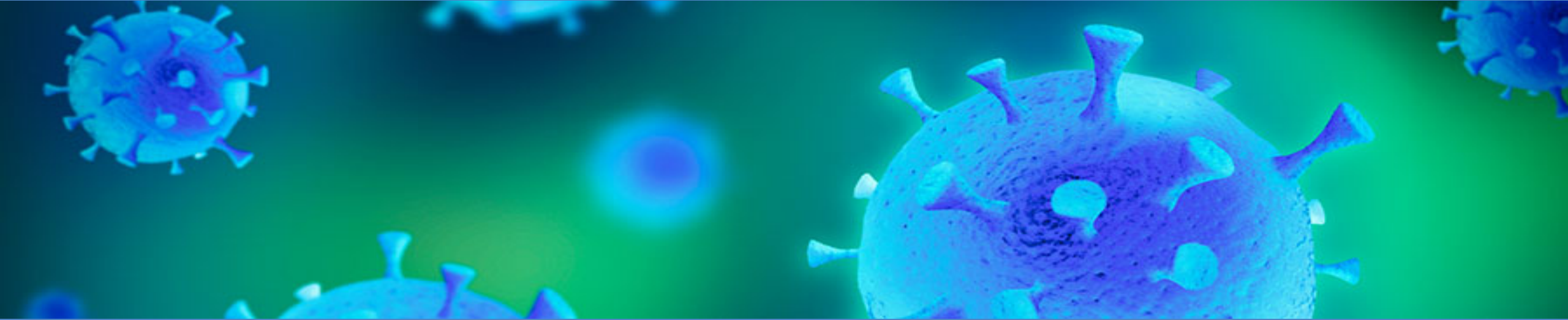


VCHIP / CHAMP / VDH COVID-19 UPDATES



Wendy Davis, MD FAAP - Senior Faculty, Vermont Child Health Improvement Program, UVM
Breena Holmes, MD FAAP – VCHIP Senior Faculty & Physician Advisor, MCH Division, VDH
March 8, 2021



Technology Notes

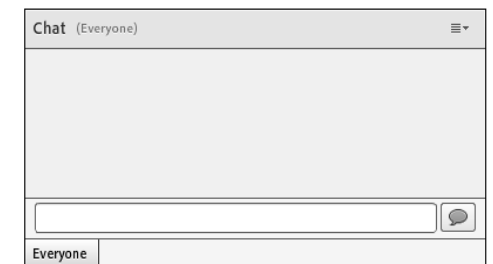
- 1) All participants will be muted upon joining the call.
- 2) If you dialed in or out, **unmute by pressing #6** to ask a question (and press *6 to mute).
If you are having audio difficulties and are using your computer speakers, you may wish to dial in:

Call in number – 1-866-814-9555

Participant Code – 6266787790

Presenters: Please avoid the use of speakerphone and make sure your computer speaker is muted if you dialed in via phone.

- 3) To ask or respond to a question using the **Chat** box, type your question and click the  icon or press Enter to send.



Overview

- Marking the 56th anniversary of Bloody Sunday (March 7)
 - ▣ President Biden signs E.O. promoting voter rights
 - ▣ **International Women's Day: #ChooseToChallenge** (2 E.O.)
 - ▣ **And, Commonwealth Day**
- Reminder – weekly event schedule:
 - ▣ **VCHIP/CHAMP/VDH calls: M/W/F**; Gov. Media Briefings Tues/Fri; VMS call with VDH Commissioner Levine Thursday
- Situation, VDH, federal, AAP Updates
- Practice Issues: **Cardiac Screening/Return to Play Update** (Drs. Flyer & Connolly)
- Q & A/Discussion

[Please note: the COVID-19 situation continues to evolve very rapidly – so the information we're providing today may change quickly]



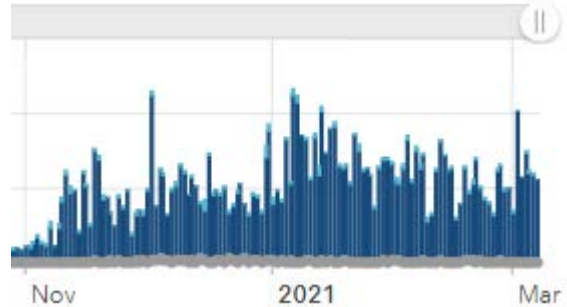
<https://www.usatoday.com/story/news/nation/2021/03/07/virtual-bloody-sunday-remembrances-strong-spiritual-selma-alabama-john-lewis/4623630001/>



<https://www.internationalwomensday.com/theme>

Situation update

New Cases 113 16,199 Total
Currently Hospitalized 27
Hospitalized In ICU 7
Hospitalized Under Investigation 2
Percent Positive 7-day Avg. 1.7%
People Tested 336,468
Total Tests 1,132,778
Recovered 13,474 83.2% of Cases
Deaths 208 1.3% of Cases
Last Updated: 3/8/2021, 10:41:24 AM



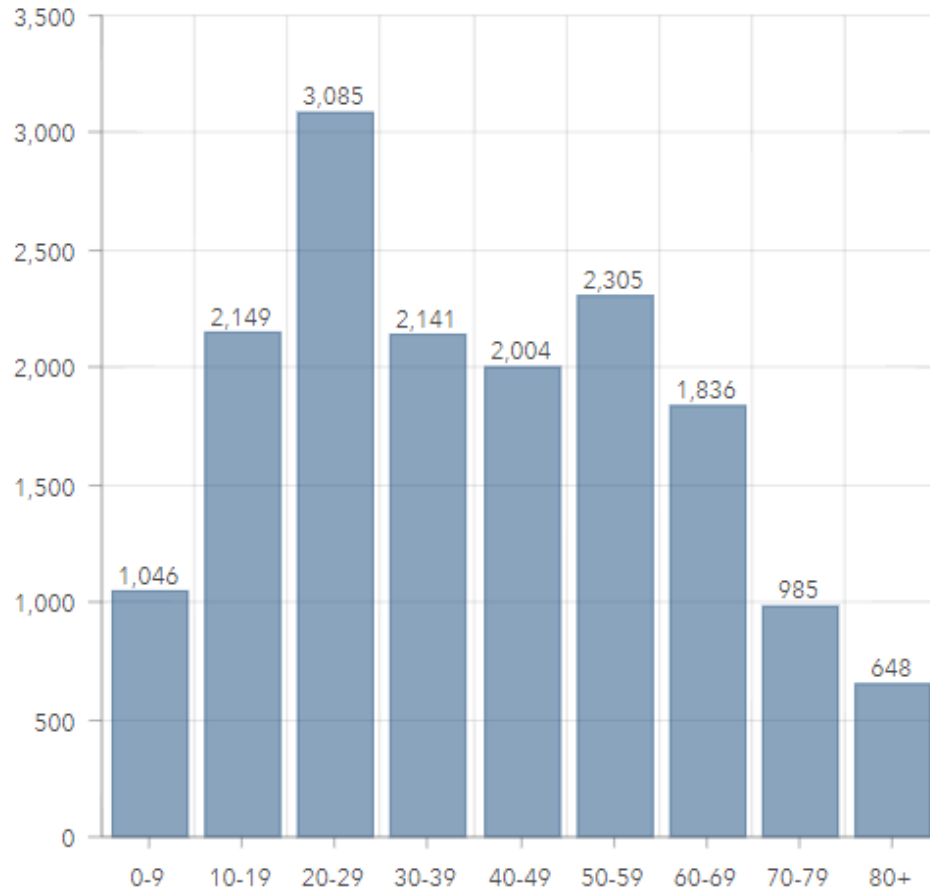
VT New Cases, Probables, Deaths

- U.S. **29 million+** cases; **524,652 deaths**
 - <https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html> (updated 3/8/21)
 - 3/7/21: **40,336 new cases; 682 d.; 40,212 hosp.**
 - Past week: average 58,745 cases/day (decrease of 12% from average 2 weeks earlier)
 - **2.5 million+ deaths worldwide; 116.9 million+ cases)**
- **COVID Tracking Project** – cease data coll. 3/7/21
- **VDH Weekly Data Summary(3/5/21)**
 - **Weekly Spotlight Topic – One Year of COVID-19 in Vermont** – focus on other public health issues that are important to the COVID-19 Data Team.
 - Find previous summaries at: <https://www.healthvermont.gov/covid-19/current-activity/weekly-data-summary>

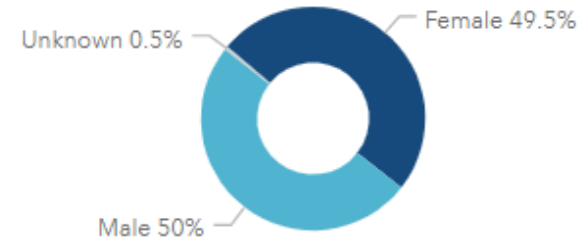
<https://www.healthvermont.gov/covid-19/current-activity/vermont-dashboard>

Situation update

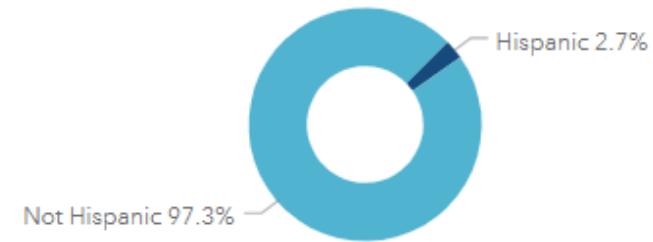
Vermont COVID-19 Cases by Age Group



Vermont COVID-19 Cases by Sex



Vermont COVID-19 Cases by Ethnicity if Known



Vermont COVID-19 Cases by Race if Known



Case Demographics

COVID-19 Cases in VT K-12 Learning Communities (While Infectious)

COVID-19 Cases in Vermont K-12 Learning Communities While Infectious

- <https://www.healthvermont.gov/sites/default/files/documents/pdf/COVID19-Transmission-Schools.pdf>
 - Table updated **Tuesday & Friday** w/data through previous Sunday & Wednesday.

March 3, 2021

Cases in Vermont K-12 Learning Communities While Infectious

Learning Community	Cases Reported In the Past 7 Days	Total Cases
Schools with less than 25 students are reported in the "Total for all Suppressed Schools" row at the end of the table.		
TOTAL FOR ALL SCHOOLS	20	669

February 28, 2021

Cases in Vermont K-12 Learning Communities While Infectious

Learning Community	Cases Reported In the Past 7 Days	Total Cases
Schools with less than 25 students are reported in the "Total for all Suppressed Schools" row at the end of the table.		
TOTAL FOR ALL SCHOOLS	20	657

VT College & University dashboards:

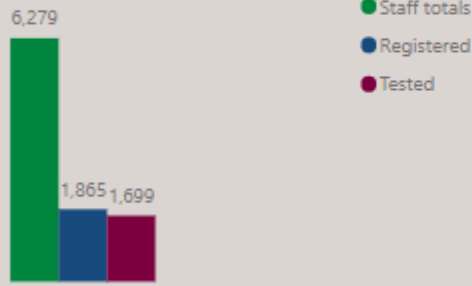
- UVM update: effective March 1, all students to be tested 2X/week (3d. In between; reeval 3/13)**
 - Violations of Green and Gold Promise, except for 1st missed test, to be reviewed for suspension in accordance with UVM policy (on-campus res. students will have 48 hours from a final conduct decision of suspension to vacate their residential hall and leave campus); thru 3/31 for now.

AOE School Staff Testing Dashboard

School Staff Testing: Weekly Summary

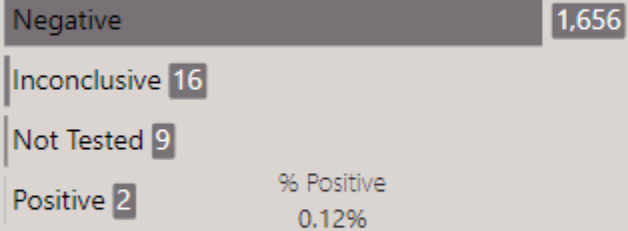


Summary



Week	Staff totals	Registered	Tested
Jan 31	6,279	1,865	1,699

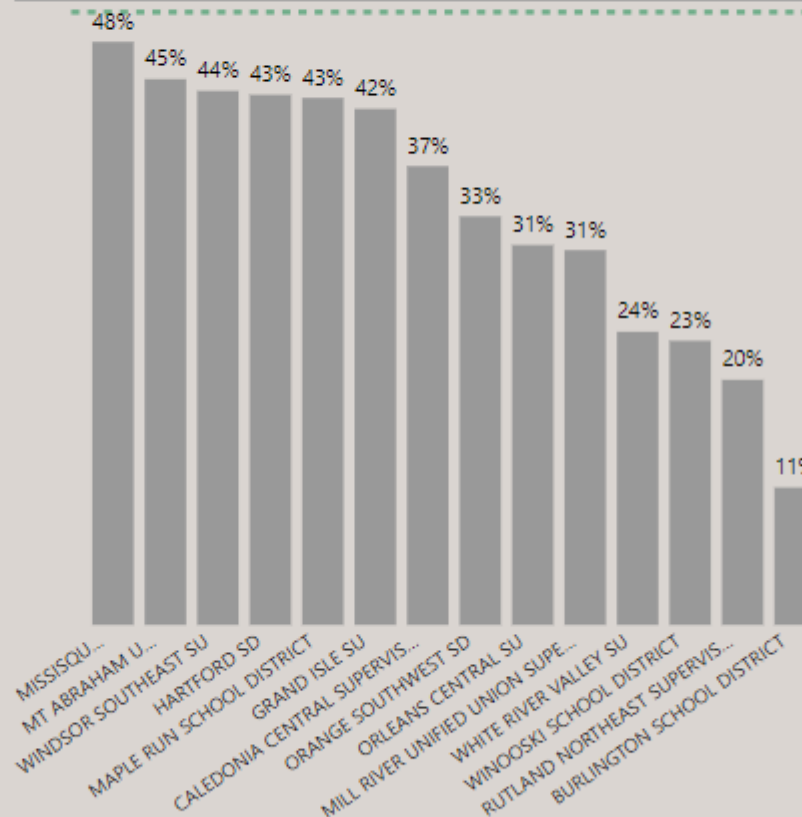
Test Results



Week	Inconclusive	Negative	Not Tested	Positive	Total
Jan 31	16	1,656	9	2	1,683

Select Testing Week: January 31, 2021

% Registered by SD/SU



SD/SU	% Registered
MISSISQUOI VALLEY SCHOOL DISTRICT	48%
MT ABRAHAM UNIFIED SCHOOL DISTRICT	45%
WINDSOR SOUTHEAST SU	44%
HARTFORD SD	43%
MAPLE RUN SCHOOL DISTRICT	43%
GRAND ISLE SU	42%
CALEDONIA CENTRAL SUPERVISORY UNION	37%
ORANGE SOUTHWEST SD	33%
ORLEANS CENTRAL SU	31%
MILL RIVER UNIFIED UNION SUPERVISORY UNION	31%
WHITE RIVER VALLEY SU	24%
WINDSOR SOUTHWEST SD	23%
RUTLAND NORTHEAST SUPERVISORY UNION	20%
BURLINGTON SCHOOL DISTRICT	11%
Total	30%

Data source: Vermont Testing/Vaccine Registration System.
Updated 2/10/2021 8:23:10 AM

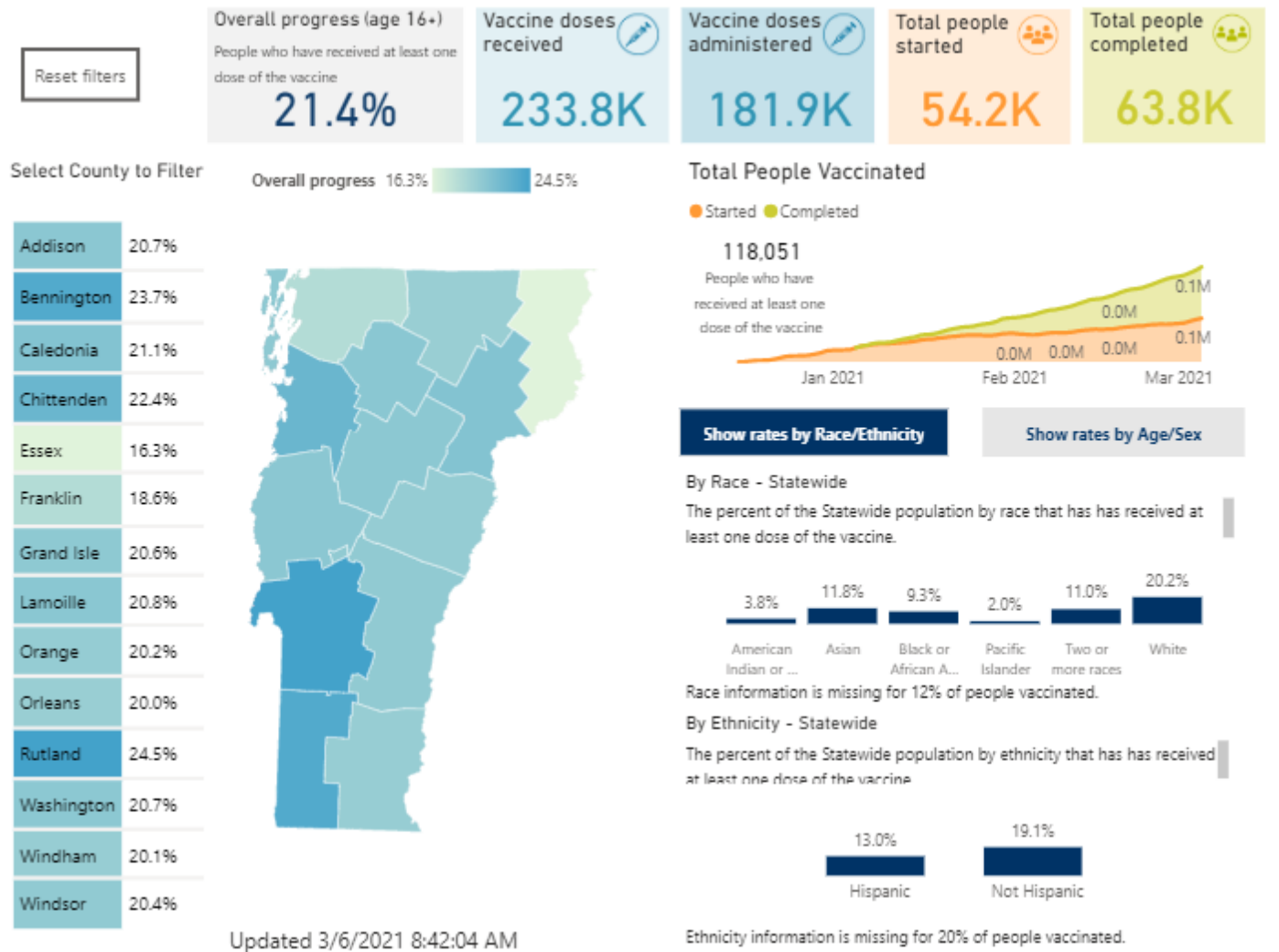
Week of Jan. 31; updated 2/10/21

<https://education.vermont.gov/news/covid-19-guidance-vermont-schools/school-staff-covid19-surveillance-testing/school-staff-covid-19-surveillance-testing-weekly-summary>

VDH COVID-19 Vaccine Dashboard

- Daily updates Tuesday thru Saturday
- Data = counts reported by end previous day; subject to change.
- <https://www.healthvermont.gov/covid-19/vaccine/covid-19-vaccine-dashboard>

NOTE (2/17/21): to align w/CDC reporting, # of doses rec'd. for VA & VNG were removed from # doses rec'd.; accounted for ~8,300 doses.



VDH COVID-19 Vaccine Registration & Sites

<https://www.healthvermont.gov/covid-19/vaccine/getting-covid-19-vaccine>

GETTING THE COVID-19 VACCINE



HEALTH DEPARTMENT APPOINTMENTS

KINNEY DRUGS APPOINTMENTS

WALGREENS APPOINTMENTS

People 55 years or older with high-risk conditions can make appointments now. See the [list of conditions](#).

People 65 years and older can still make appointments. People who work in the education and public safety system are also eligible for vaccination. [Get more information about getting appointments here.](#)

There are enough appointments for everyone who is eligible. Appointments are required. Clinics cannot accept walk-ins.

To make an appointment online with the Health Department:

1. [Create an account](#) (anyone can do this anytime!)
You may already have an account if you were tested for COVID-19 at a Health Department site.
2. [Make an appointment](#) when you are eligible to get the vaccine.

Can't make an appointment online or need help with an online appointment? Contact our call center at **855-722-7878**.

VERMONT | COVID-19 Event Portal

Search Events Login

Welcome to the COVID-19 Event Portal. Through this portal you can register for a COVID-19 vaccination clinic or COVID-19 testing event sponsored by the Vermont Department of Health. You will also be able to log in and view your test results once they are available.

To register:

1. Create an account.
2. Check your email to verify your account and get your Patient ID (check your spam folder if you don't see the email).
3. Log In with your Patient ID.
4. Register for a testing or vaccination event.

Create an Account

* First Name
Enter First Name

* Last Name
Enter Last Name

* Phone Number
Enter Phone Number

* Email Address
Enter Email

Photo Login Create New Account Store Locator Refills

Home Pharmacy + Savings + Shop + About Us + Contact Us + Careers

COVID-19

Currently, the State of Vermont is offering COVID-19 vaccines to individuals age 75+ BY ON... schedule an ap...

Schedule your COVID-19 vaccination today.



mont

idents
website to

VDH COVID-19 Vaccine Registration & Sites (cont'd.)

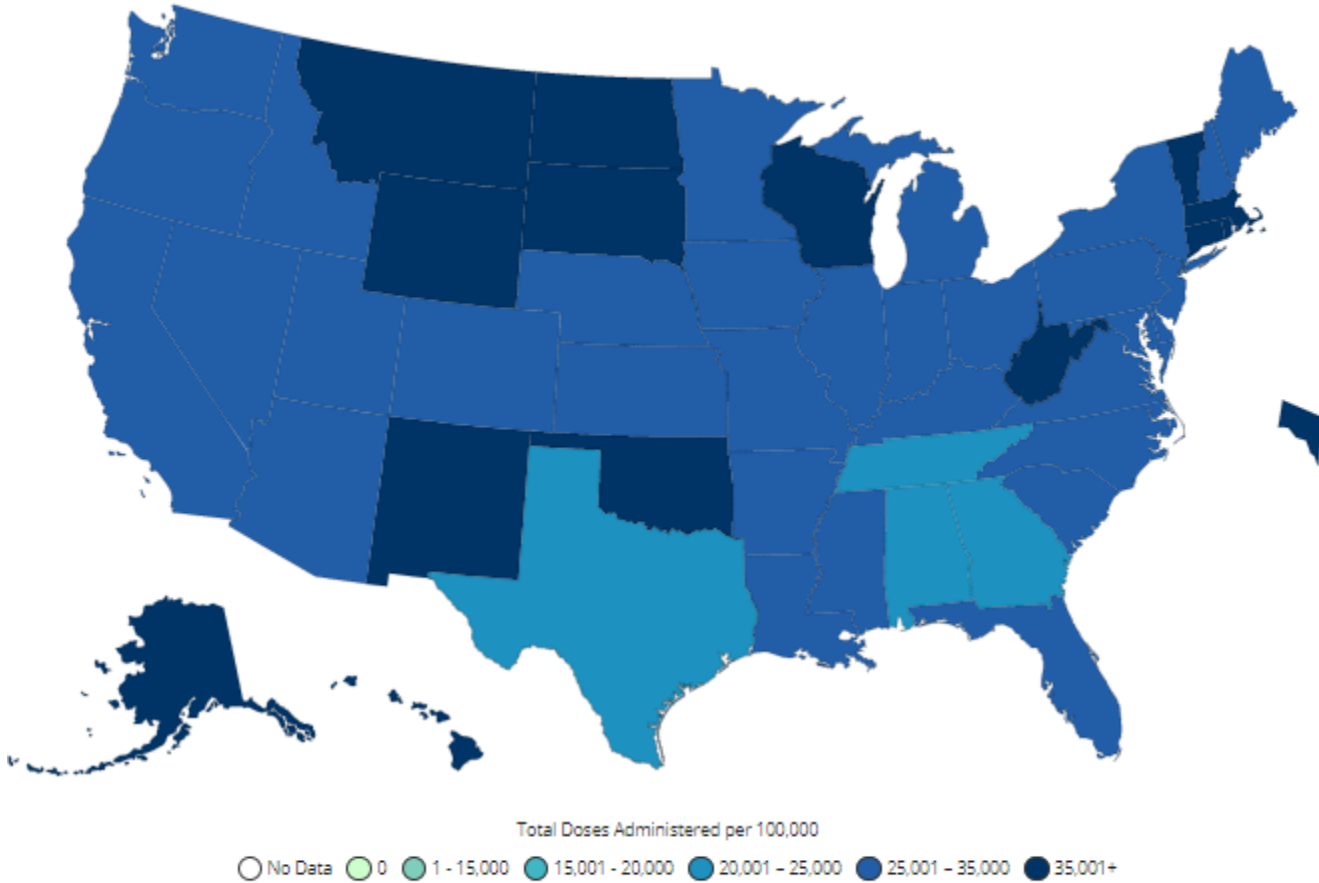
- Appointments from 3/8/21 – 5/22/21
 - ▣ **214,104 total appointments clinics** (health care, VDH (Local/District Health Office POD, and some pharmacies – e.g., Costco, Walmart)
- **Online (preferred) for most and phone** appointment scheduling:
 - ▣ 1-855-722-7878
 - ▣ *If you need to speak with someone in a language other than English, call this number, and then press 1.*
- **Call Center Hours:**
 - ▣ Monday-Friday, 8:15 a.m. – 5:30 p.m.
 - ▣ Saturday and Sunday, 10:00 a.m. – 3:00 p.m.

VDH Updated Vaccine Toolkit

- Updated to reflect **Phase 5a** (TODAY) & **Phase 5b** (March 15)
 - ▣ Helpful info re: what's needed to register, factsheet, videos, FAQ. NEW video specifically to help people w/high-risk health conditions.
 - ▣ Updated alert materials in **Digital Vaccine Toolkit for Partners; intended for general public, *not* for newly eligible educational and public safety systems that have different vaccination processes.**
- **Updated:** Eligibility-specific, “alert” messaging (now 55+, soon 16+ hi-risk)
 - ▣ Social media posts; blog/newsletter; email; letter
- General, “evergreen” messaging: posts re: preparing for vax eligibility, safety and efficacy of vaccines, and importance of getting vaccinated.
 - ▣ Social media posts; blog/newsletter; posters (8.5”x11” and 11”x17”); vaccine fact sheet: “Things You Should Know About COVID-19 Vaccines.” (available in multiple languages).

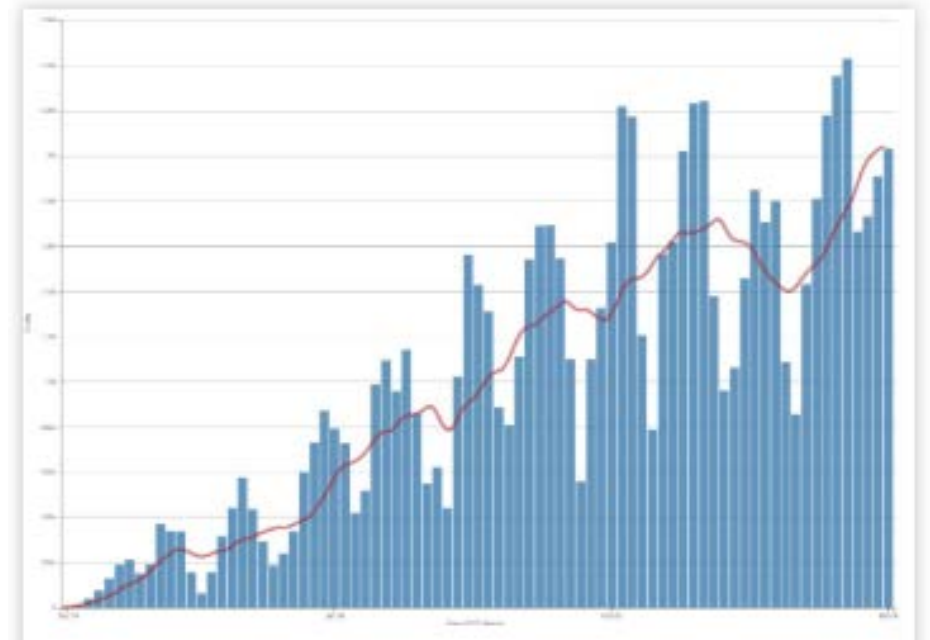
From the CDC Vaccine Tracker

Total Doses Administered Reported to the CDC by State/Territory and for Select Federal Entities per 100,000 of the Total Population



Daily Change in Number of COVID-19 Vaccinations in the United States Reported to CDC

— 7-Day moving average



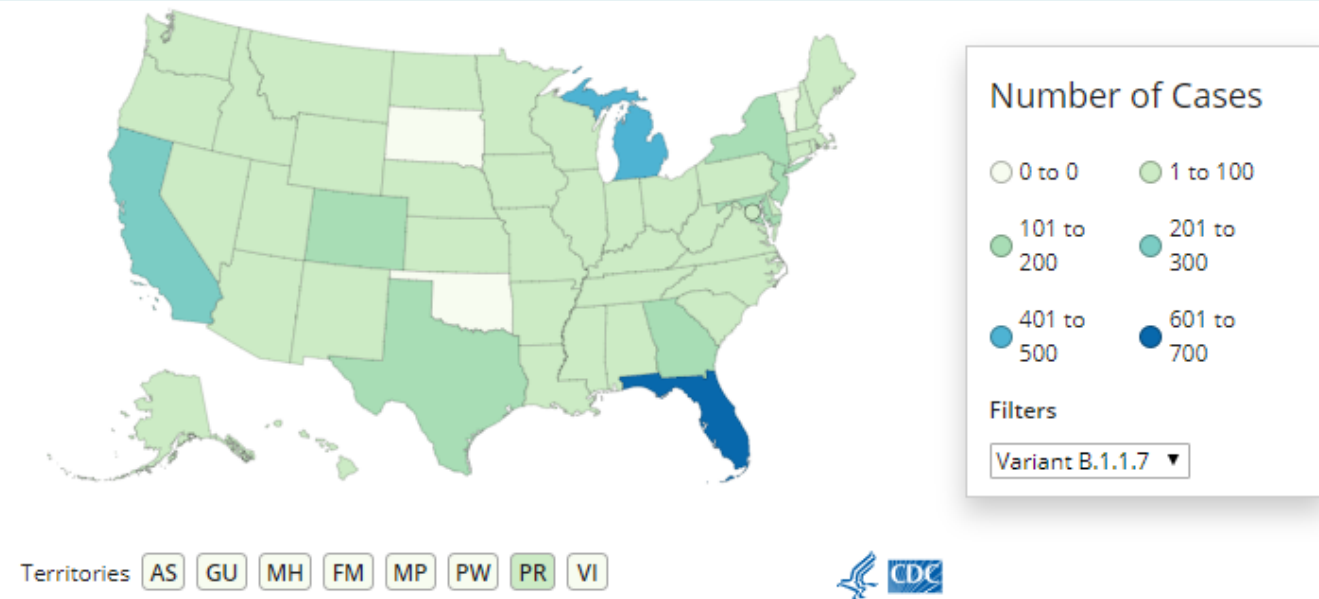
<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html>

<https://covid.cdc.gov/covid-data-tracker/#vaccinations>

From the CDC: U.S. COVID-19 Cases Caused by Variants

Variant	Reported Cases in US	Number of Jurisdictions Reporting
B.1.1.7	3037	49
B.1.351	81	20
P.1	15	9

Emerging Variant Cases in the United States*+



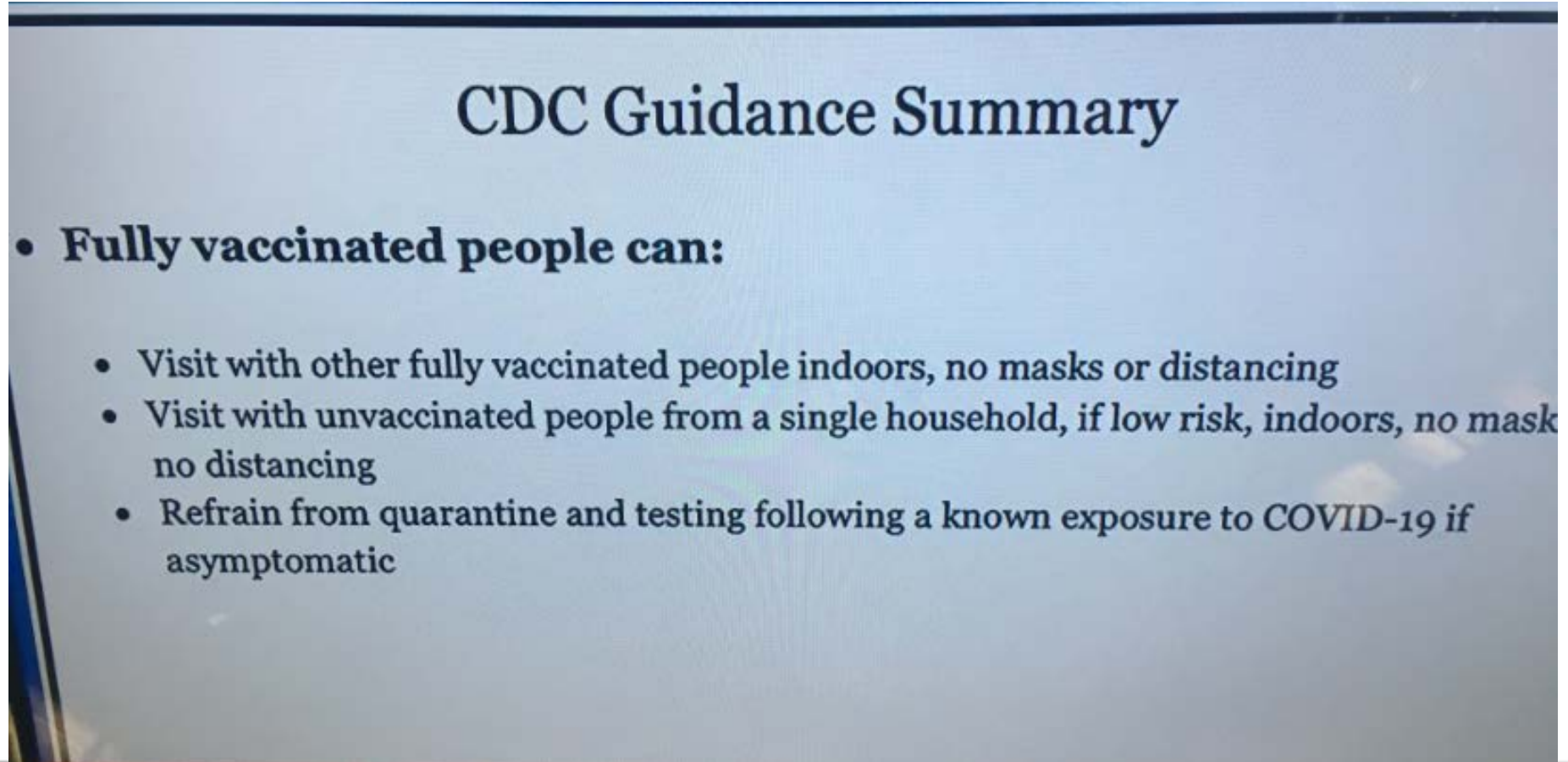
This Just In from the CDC

Initial guidance for fully vaccinated individuals (≥ 2 wks. post-final dose):

- CDC Dir. Walensky – focusing on activities in **private settings** (e.g., homes)
 - ▣ Fully vaccinated w/other fully vaccinated household (HH): may visit in small gatherings indoors **without** masks or physical distancing.
 - ▣ Fully vaccinated visiting w/unvaccinated HH – consider risks to unvaccinated & their HH members: may visit w/**one other unvaccinated HH** as long as unvaccinated not at risk for severe disease – different if unvaccinated high-risk in 2nd HH
- Fully vaccinated w/**multiple** unvaccinated HHs – mask/distance/outdoors
- Fauci: investigational therapeutics – direct-acting antivirals (identify vulnerable targets after study of viral replication)
 - ▣ Targeted drug design based on experience w/HIV, hep C/B, herpes viruses, influenza
- Nunez-Smith (Equity TF Chair): update on ongoing inequities (outcomes/interventions by race & ethnicity; data only for 53% 1st dose)

This Just In from the CDC

Initial guidance for fully vaccinated individuals (Walensky – cont'd.)

A screenshot of a presentation slide titled "CDC Guidance Summary". The slide has a light blue background with a dark blue border. The text is in a dark blue, sans-serif font. It lists three bullet points under the heading "Fully vaccinated people can:".

CDC Guidance Summary

- **Fully vaccinated people can:**
 - Visit with other fully vaccinated people indoors, no masks or distancing
 - Visit with unvaccinated people from a single household, if low risk, indoors, no mask no distancing
 - Refrain from quarantine and testing following a known exposure to COVID-19 if asymptomatic

In Case You Missed It/Coming Soon

VCHIP-VDH COVID-19 call presentation Friday, 3/5/21:

- **COVID-19 Vaccines and Variants:** Drs. Ben Lee & Bill Raszka
- From the Washington Post: **Scientists underestimated the coronavirus — and are racing to keep up with evolution (3/7/21)**
 - ▣ Variants have become a global preoccupation & a potential threat to vaccines
 - ▣ <https://www.washingtonpost.com/health/2021/03/07/scientists-underestimated-coronavirus-are-racing-keep-up-with-evolution/>

CDC COCA Calls

- Tuesday, March 9, 2021; 2 – 3 PM ET – **What Every Clinician Should Know about COVID-19 Vaccine Safety and Effectiveness and How to Address Patient Questions and Concerns**
 - ▣ <https://emergency.cdc.gov/coca/calls/index.asp>



From the CDC: MMWR Early Releases

- Association of State-Issued Mask Mandates and Allowing On-Premises Restaurant Dining with County-Level COVID-19 Case and Death Growth Rates — U.S., March 1–Dec. 31, 2020 (March 5, 2021)
 - Mask mandate assoc. w/decrease in daily COVID-19 case & death growth rates w/in 20 d. of implementation. Allowing on-premises rest. dining assoc. w/increase in daily COVID-19 case growth rates 41–100 d. after impl. & increase in daily death growth rates 61–100 days after implementation.
 - <https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7010e3-H.pdf>
- Estimated SARS-CoV-2 Seroprevalence Among Persons Aged <18 Years — Mississippi, May–September 2020 (March 5, 2021)
 - Serologic testing of residual blood specimens collected May-Sept. 2020, suggested ~16.3% of young persons in MS might have been infected with SARS-CoV-2 by mid-September 2020 (but few reported).

■ <https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7009a4-H.pdf>

From the AAP

Coming Soon:

- ❑ **Updated interim guidance** on COVID-19 Testing; PPE; Face Masks (previously cloth face coverings); Telehealth; Family presence; COVID-19 Vaccine; Clarification in Return to Sports

Happening Now:

- ❑ **American Rescue Plan Act of 2021**
- ❑ Impact on child poverty
- ❑ Funding to address school facility improvements for in-person learning during COVID-19; vaccine hesitancy
- ❑ AAP advocacy led to the Senate adding an additional \$80 million for HRSA's Pediatric Mental Health Care Access Program

Practice Issues

Cardiac Screening & Return to Play

Drs. Jonathan Flyer (Pediatric Cardiology) & Kristen Connolly (Timber Lane Pediatrics, Milton)



CARDIAC SCREENING IN PEDIATRIC PATIENTS AFTER COVID19 INFECTION

→ Updates from the AAP, ESPN/JAMA, UVM/VCHIP

Dr. Kristen Connolly– Pediatrician, Timber Lane Pediatrics

Dr. Jonathan Flyer – Pediatric Cardiologist, UVMMMC

March 8, 2021

Return to Play after COVID-19 Infection in Pediatric Patients

- Clinical significance: **Myocarditis evaluation**
 - *Cause of sudden cardiac death during exercise in young athletes*
- Athletic participation: 35-45 million youth (6-18yrs)
 - Cardiovascular disease: #1 cause of mortality in the US (adults).
 - Exercise is a pillar of long-term cardiovascular health.
- COVID Disclaimer: Gray areas exist & Long-term data not yet known
- This is an endorsement for critical thinking & clinical judgment.

WAIT... It's March 8, 2021. How did we get here?

September: ACC
December: AAP
February: UVM / VCHIP
March: AAP update
Revised UVM/VCHIP



AAP= American Academy of Pediatrics

ACC = American College of Cardiology

MISC= multisystem inflammatory syndrome in children

SCD = sudden cardiac death

RISK: Sudden cardiac arrest / Sudden cardiac death

- **RARE EVENT**: children / young adults
 - CDC estimate: 1,500 persons < 25yr of age die each year (SCD)
 - Population data: general or athlete
- ***UNCERTAIN***: Effect of exercise / athletic activity
 - THEORY: increased myocardial demand ?

Cardiac Output = Heart Rate x Stroke Volume

Oxygen Delivery = CO x arterial Oxygen Content

- SV: Structural CHD (obstruction), Myopathy, Ventricular function
- HR: Arrhythmia
- CaO₂: pulmonary disease (alveolar/diffusion), altitude, CHD (shunts)

ISCHEMIA

SCD: Population Data

King County ER Cardiac Arrest Database, 1980-2009 (WA)

- Outcomes of out-of-hospital arrest
- 0 - 35yrs of age
- Retrospective: autopsy / records
- n=361 total (221 deaths)
- 2.3 / 100,000 person years

What were the causes?
In what age groups?

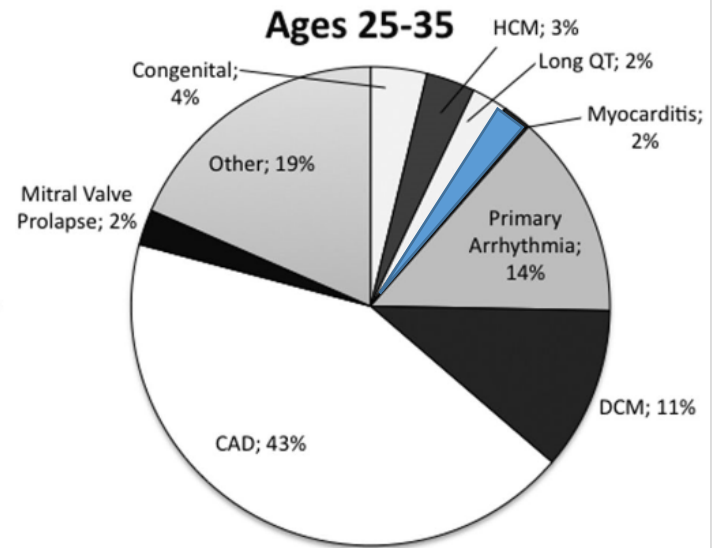
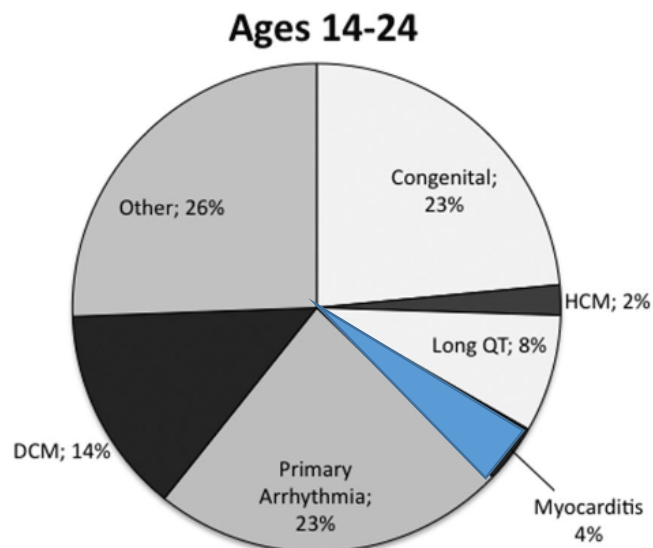
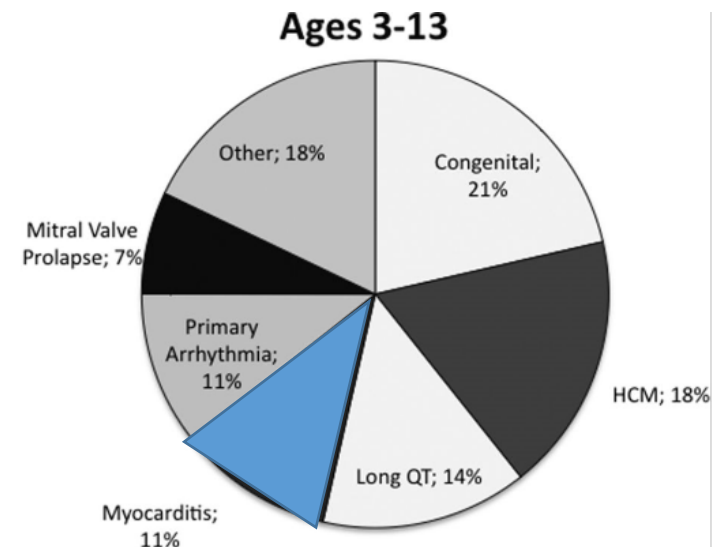
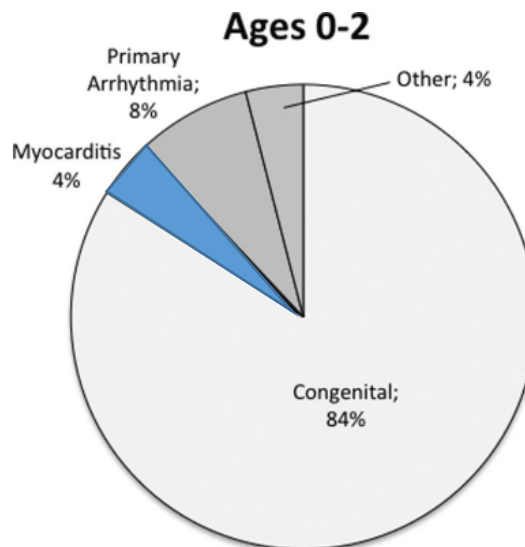
King County ER Cardiac Arrest Database, 1980-2009

Age (yrs)	%	Most Common Cause
0-2	84	Congenital anomalies
3-13	21	Congenital anomalies
14-24	23	Arrhythmia
25-35	43	Coronary artery disease *

*all CAD was in this age group

Myocarditis?

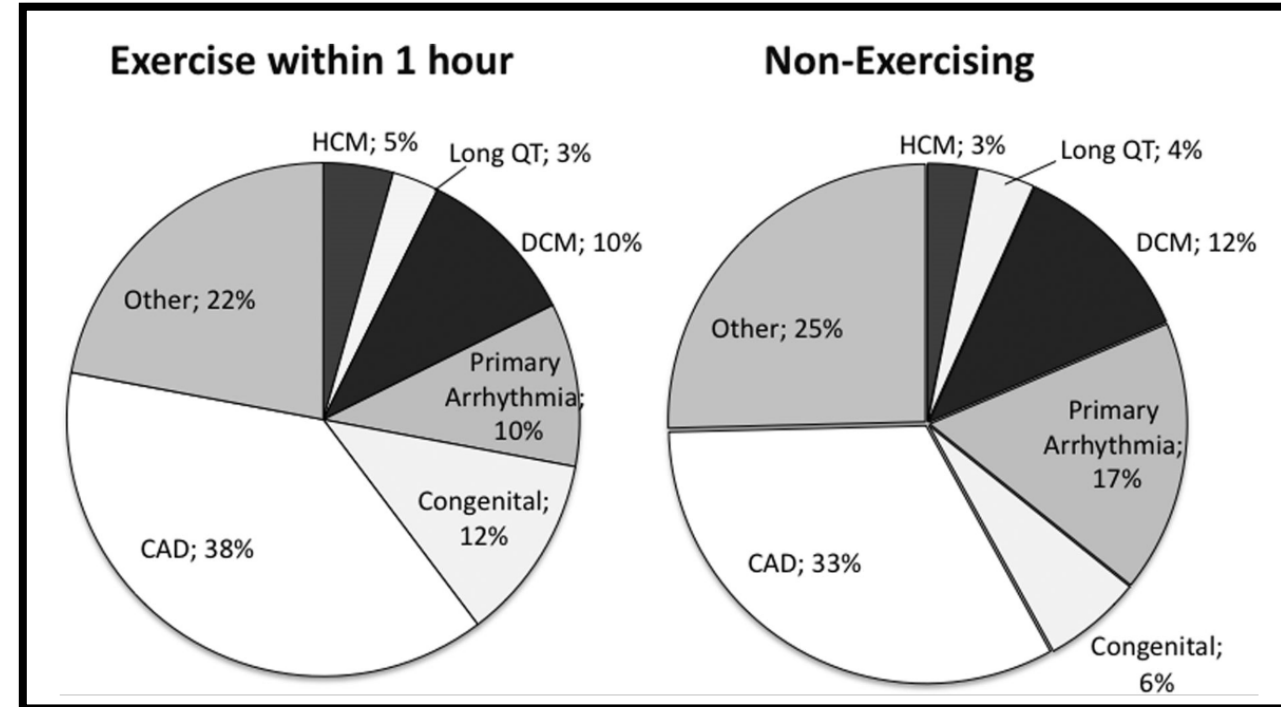
2-11 %



Sudden cardiac arrest / Sudden cardiac death

Relationship to Exertion ?

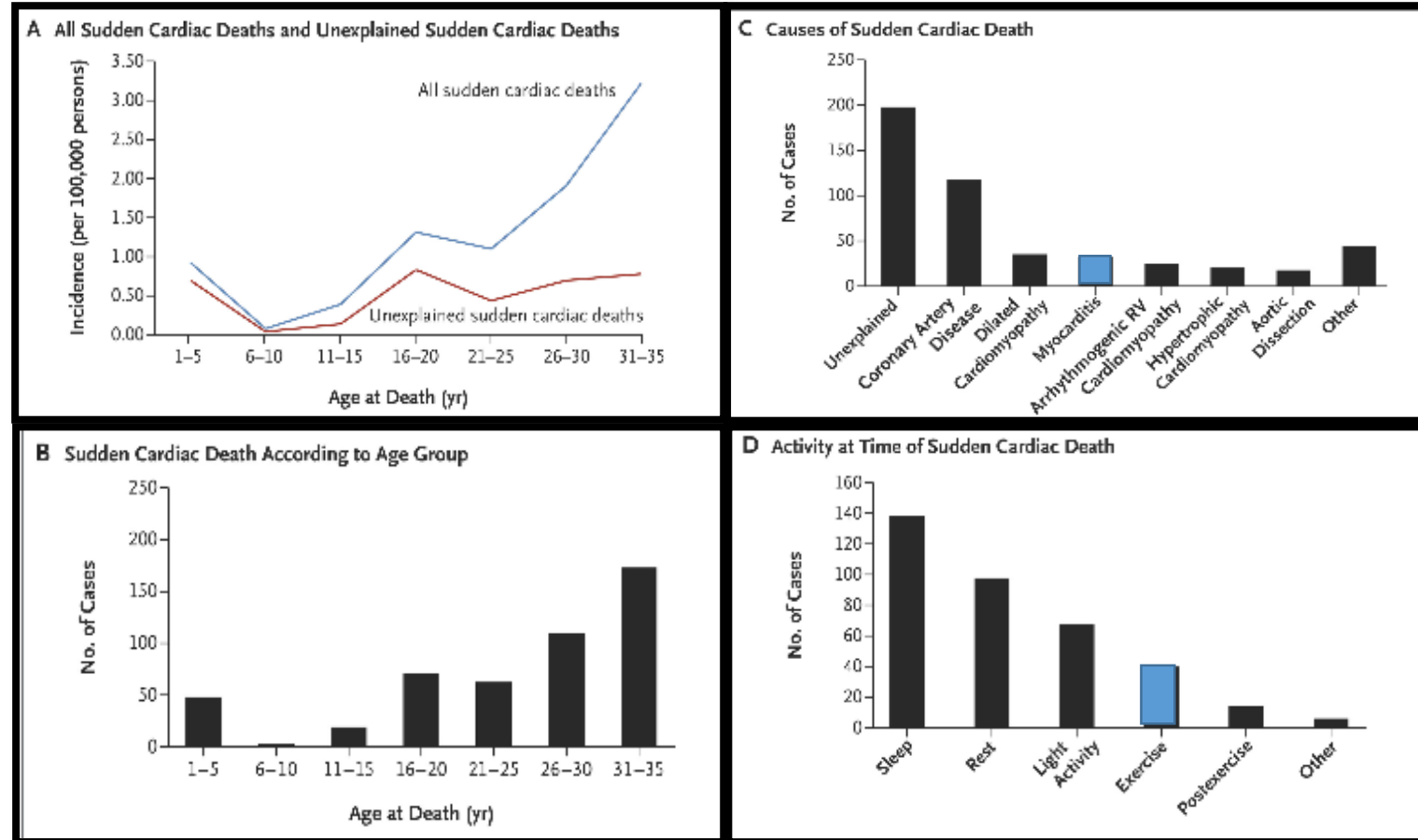
- Determined: n = 302 / 361
- 77 (25%) within 1 hour of exercise
 - 37.7% survival
 - Era effect: CPR protocol change (2005)
 - Minimized interruptions in chest compressions
 - 2004-2005: 25% survival
 - 2005-2009: 58% survival
- 10 cases of myocarditis
 - Cardiomyopathy group
 - Not broken by out for exercise by dx



SCD Population Data

Australia/NZ (2010-2012)

- ages 1-35 yrs
- Clinical, demographic, and autopsy data
- n = 490 cases
- 1.3 per 100,000 people
 - Increased to 3.2 (31-35yrs)
- 38% sleeping, 27% rest, 15% during/after exercise
- 40 % no cause identified



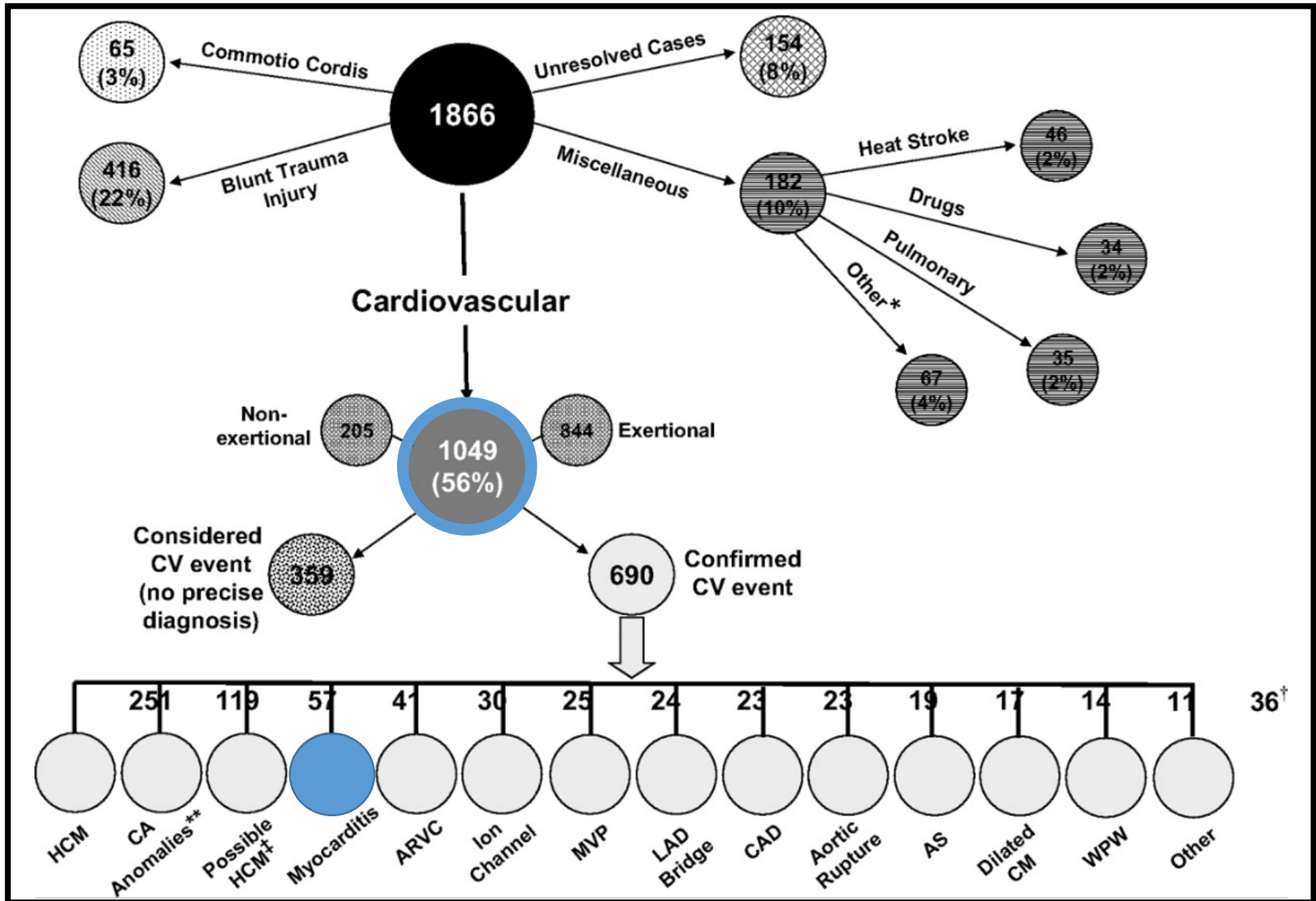
Sudden Cardiac Death *in Young Athletes*

WHEN IT HAPPENS: *tragic & highly visible event*

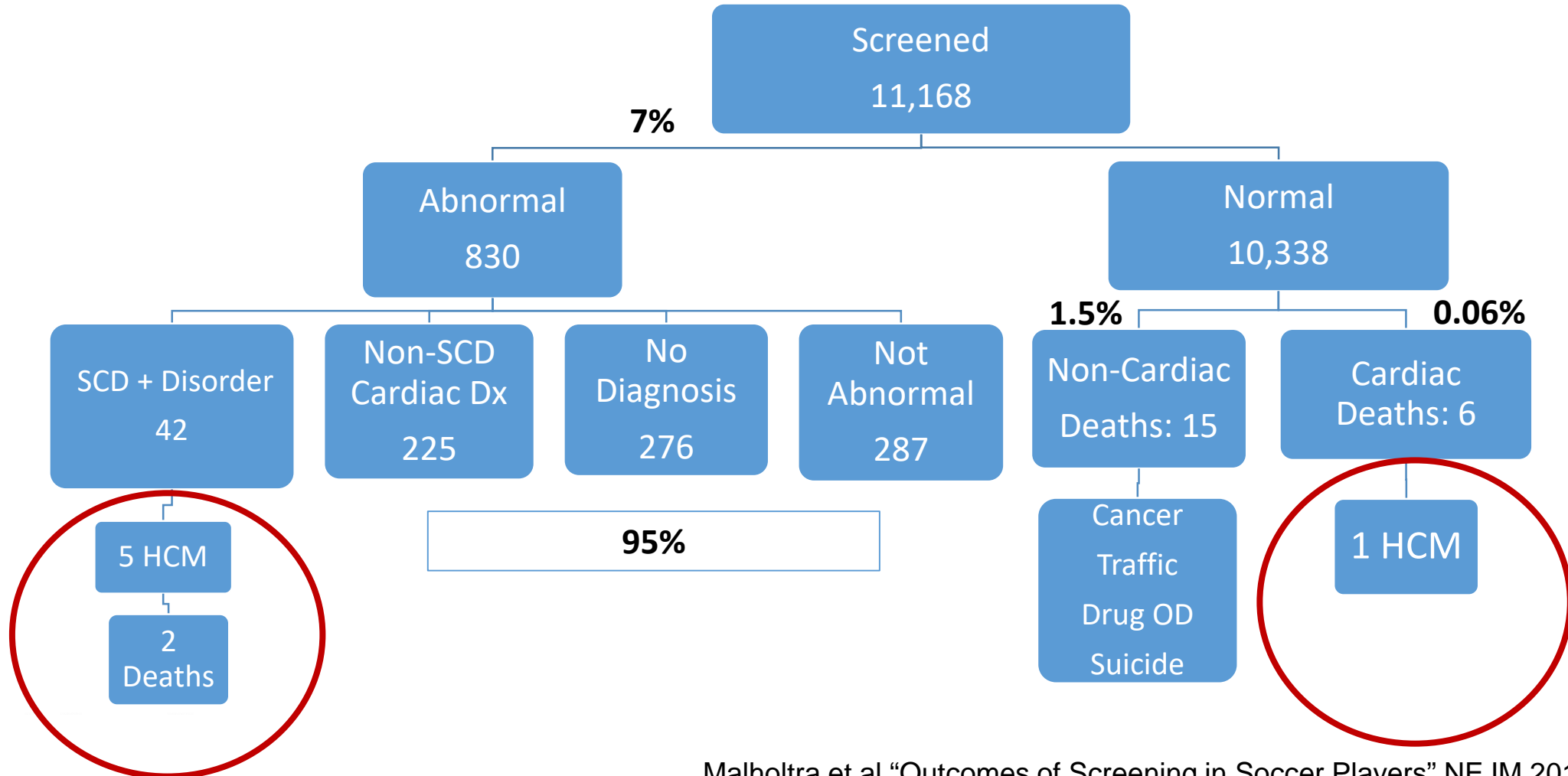
“Sudden Deaths in Young Competitive Athletes, Analysis of 1866 Deaths in the United States”

- 1980-2006, US athletes, 38 sports
- US National Registry of SCD in Athletes (Minneapolis Heart Institute)
- 19+/- 6yrs of age; 54% in high school students
- 66 deaths/year

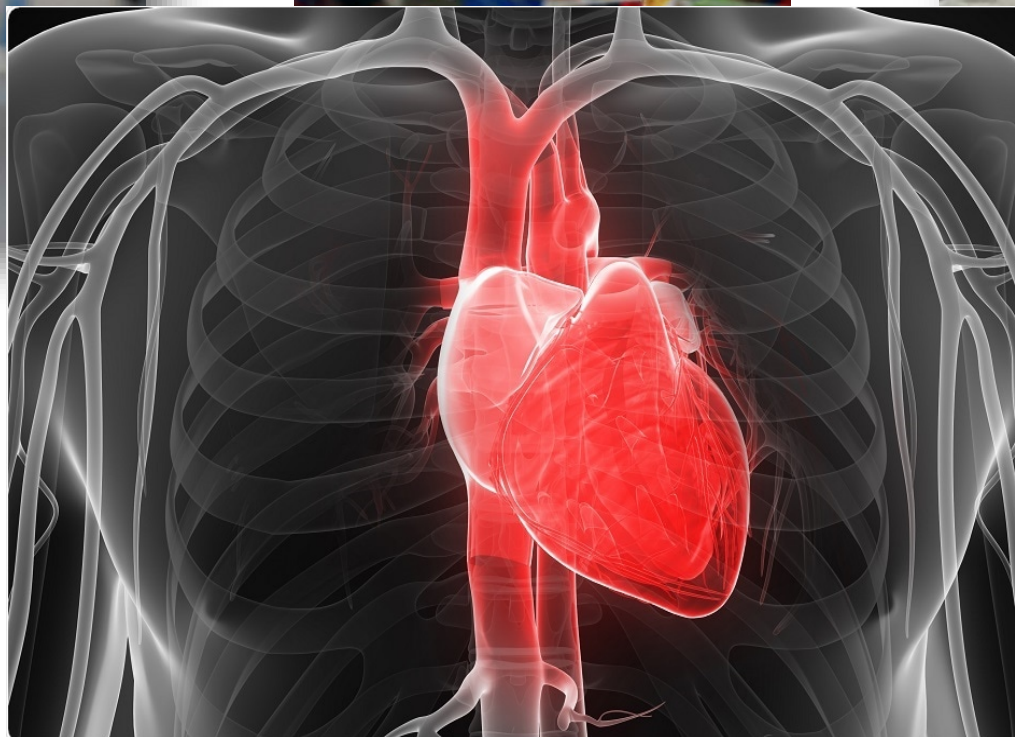
- Top causes: 56% cardiovascular disease, 22% blunt trauma, 2% heat stroke



1996-2016: English Soccer Players (15-17yrs) Screening for Sudden Cardiac Death (SCD)



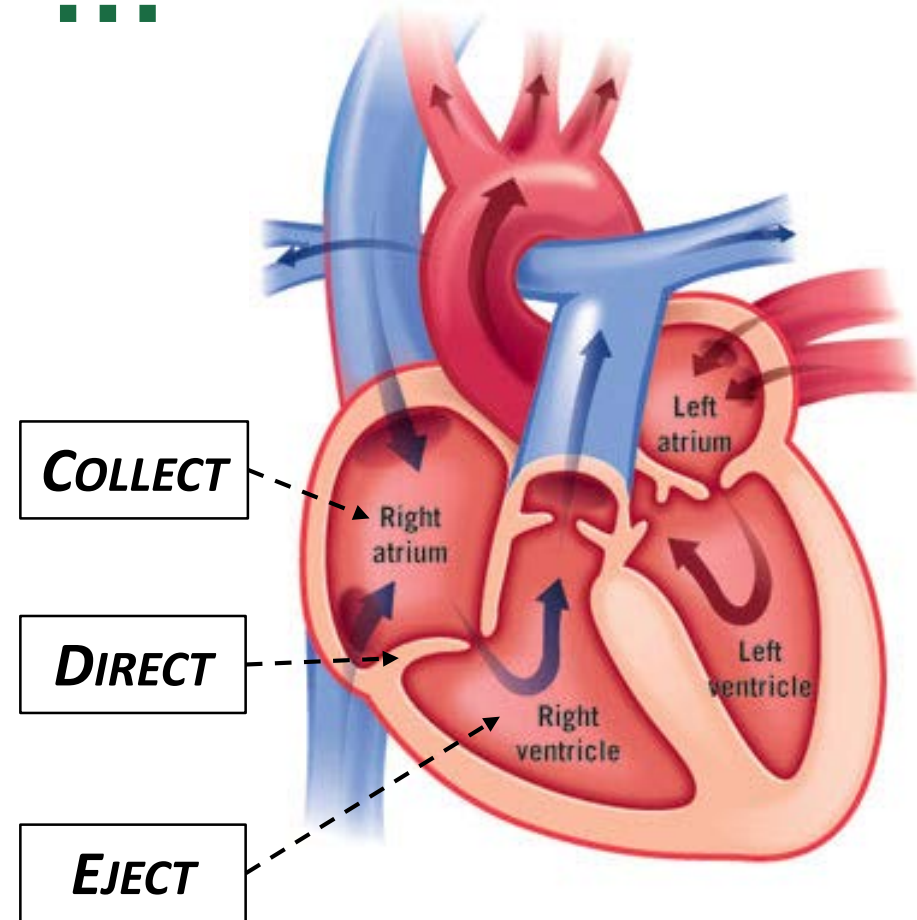
HEART = MUSCLE



PUMP... PUMP... PUMP...

MOVE : BLOOD

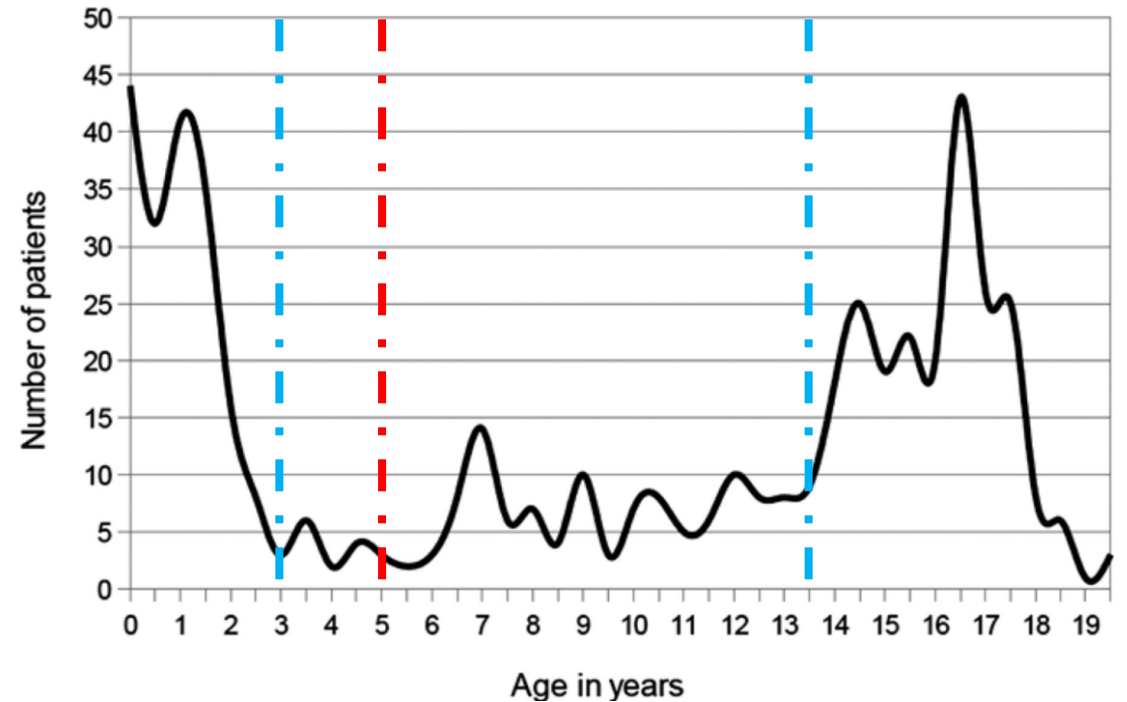
- **Collect: Atria**
- **Direct: Valves & Walls**
- **Eject: Ventricles**



Myocarditis

- Inflammatory disease of the myocardium (heart muscle)
- Myocardial inflammation → ventricular dysfunction
 - heart failure (symptoms)
 - hemodynamic compromise
 - life-threatening arrhythmias

• *INCREASED morbidity and mortality risk.*



Myocarditis... so many causes

INFECTION

- VIRAL, bacterial, fungi, and more.

INFECTION

INFECTION

Toxins

Hypersensitivity

Systemic disorders

- Kawasaki Disease (!)

Causes of myocarditis

Infectious causes	Infectious causes (cont.)	Noninfectious causes
Viral	Spirochetal	Cardiotoxins
Adenovirus	Leptospirosis	Alcohol
Arbovirus	Lyme disease	Anthracyclines
Coxsackie B virus	Relapsing fever	Arsenic
Cytomegalovirus	Syphilis	Carbon monoxide
Dengue	Mycotic	Catecholamines
Echovirus	Aspergillosis	Cocaine
Epstein-Barr virus	Blastomycosis	Cyclophosphamide
Hepatitis B and C	Candidiasis	Heavy metals (copper, lead, iron)
Herpesvirus	Coccidioidomycosis	Methysergide
HIV	Cryptococcosis	Hypersensitivity reactions
Influenza A and B	Histoplasmosis	Antibiotics (penicillins, cephalosporins, sulfonamides)
Mumps	Mucormycosis	Clozapine
Parvovirus	Nocardia	Diuretics (thiazide, loop)
Poliomyelitis	Sporotrichosis	Dobutamine
Rabies	Rickettsial	Insect bites (bee, wasp, spider, scorpion)
Rubella	Q fever	Lithium
Rubeola	Rocky mountain spotted fever	Methyldopa
Vaccinia (smallpox vaccine)	Typhus	Snake bites
Varicella	Protozoal	Tetanus toxoid
Variola	Amebiasis	Systemic disorders
Yellow fever	Chagas disease (South American trypanosomiasis)	Celiac disease
Bacterial	Leishmaniasis	Collagen-vascular diseases
Actinomycosis	Malaria	Granulomatosis with polyangiitis
Bartonella	Sleeping sickness (African trypanosomiasis)	Hypereosinophilia
Brucellosis	Toxoplasmosis	Inflammatory bowel disease (Crohn disease, ulcerative colitis)
Chlamydia	Helminthic	Kawasaki disease
Cholera	Ascariasis	Sarcoidosis
Clostridial	Echinococcosis	Thyrotoxicosis
Diphtheria	Filariasis	Radiation
Gonococcal	Paragonimiasis	
Haemophilus	Schistosomiasis	
Legionella	Strongyloidiasis	
Meningococcal	Trichinosis	
Mycoplasma		
Pneumococcal		
Psittacosis		
Salmonella		
Staphylococcal		
Streptococcal		
Tetanus		
Tuberculosis		
Tularemia		

Continuum (Phases): Disease Process

1) Viral infection

- A. Prodrome: fever, myalgia, respiratory/GI sx, malaise -- days prior to heart failure symptoms
- B. May result in direct **myocyte injury**

2) Autoimmunity and inflammatory : Supportive Care

- A. Host immune system activated (primary viral infection)
- B. **Myocyte injury**: T-cell & cytokine activation → inflammation
- C. **Myocyte injury → impaired ventricular function, heart failure, and/or arrhythmias.**
- D. For most: viral elimination → decreases acute immune response → left ventricular function improves
 - A. 2-4 weeks, typically without sequelae
 - B. A minority of patients will develop life-threatening arrhythmias, conduction disturbances, or circulatory collapse.

3) Dilated cardiomyopathy:

- A. small subset of patients, unclear why there is chronic dilation
- B. Continued medical management, if needed cardiac transplant (~4%)¹

Mortality: Children

- **Acute phase illness: 7.3 %** ¹
- **Late Deaths**
 - Persistent ventricular dysfunction, heart failure, or complications following heart transplantation

Risk Factors

- Fulminant presentation
- Severely depressed left ventricular function
- Mechanical support: ECMO or VAD
- Need for inotropes
- Tachyarrhythmias

COVID-19 as a Possible Cause of Myocarditis and Pericarditis

Feb 05, 2021 | Massimo Imazio, MD

Expert Analysis

Figure 1

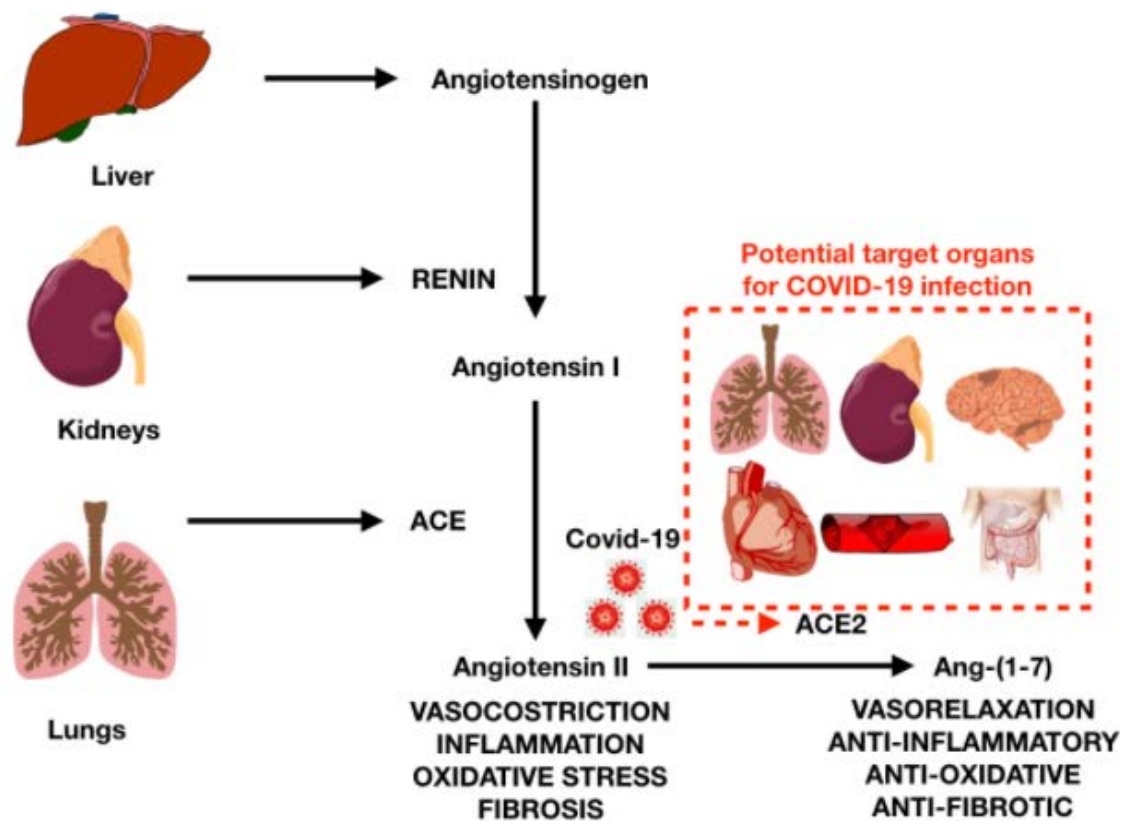


Table 1: Reported Cardiovascular Complications in COVID-19

Complication	Incidence	Notes
Acute cardiac injury*	8-22% Up to 22% in ICU Up to 59% in those who died	Most commonly reported cardiovascular complication
Pulmonary Thrombosis, Arterial and Venous Thromboembolism	16-49% in ICU (case series)	Deep-vein thrombosis, PE, ischemic stroke, arterial thromboembolism
Heart Failure	Few data: 52% in those who died and 12% in those who recovered	Mechanisms not completely clear, probably related to myocardial lesion and septic shock
Acute coronary syndromes	Case reports: 44.4% with ST segment elevation on ECG had clinical diagnosis of MI, 50% underwent coronary angiography with detection of obstructive disease in 2/3.	High variability in presentation and prevalence of non-obstructive disease, poor prognosis
Arrhythmia	16.7% overall; 44.4 in severe illness, 8.9% in mild cases	Both tachyarrhythmia and bradyarrhythmia can occur (limited data)
Myocarditis	Case reports	At present demonstration of SARS-Cov-2 in one report but in macrophages, not myocardial cells
Pericardial Diseases	Case reports	Pericardial effusions

Cardiovascular Considerations for Patients, Health Care Workers, and Health Systems During the COVID-19 Pandemic

COVID + “significant implications for the cardiovascular care of patients”

- 1) those with COVID-19 and pre-existing cardiovascular disease have an increased risk of severe disease and death.
- 2) infection has been associated with multiple direct and indirect cardiovascular complications including acute myocardial injury, myocarditis, arrhythmias, and venous thromboembolism.
- 3) therapies under investigation for COVID-19 may have cardiovascular side effects.
- 4) the response to COVID-19 can compromise the rapid triage of non-COVID-19 patients with cardiovascular conditions. (QI = balancing measure)

Case Report

Acute Fulminant Myocarditis in a Pediatric Patient With COVID-19 Infection

Diego Lara, Thomas Young, Kamill Del Toro, Victor Chan, Cora Ianiro, Kenneth Hunt and Jake Kleinmahon

Pediatrics August 2020, 146 (2) e20201509; DOI: <https://doi.org/10.1542/peds.2020-1509>

Adolescent

- Elevated troponins
- Severely depressed ventricular function
- *Complete heart block*


Atrio-Ventricular Block in Children With Multisystem Inflammatory Syndrome

Citation: Dionne A, Mah DY, Son MBF, et al. Atrio-ventricular block in children with multisystem inflammatory syndrome. *Pediatrics*. 2020; doi: 10.1542/peds.2020-009704

- 25 ICU pts (median 9.7yrs)
- Normal troponin
 - + Ventricular dysfunction
 - 1st degree AVB: 5 pts
 - 4 progressed to 2 or 3rd AVB
 - No interventions required

Circulation

Acute Heart Failure in Multisystem Inflammatory Syndrome in Children in the Context of Global SARS-CoV-2 Pandemic

Zahra Belhadjer, Mathilde Méot, Fanny Bajolle, Diala Khraiche, Antoine Legendre, Samya Abakka, Johanne Auriau, Marion Grimaud, Mehdi Oualha, Maurice Beghetti, Julie Wacker, Caroline Ovaert, Sebastien Hascoet, Maëlle Selegny, Sophie Malekzadeh-Milani, Alice Maltret, Gilles Bosser, Nathan Giroux, Laurent Bonnemains, Jeanne Bordet, Sylvie Di Filippo, Pierre Mauran ... [See all authors](#) 

Originally published 17 May 2020 | <https://doi.org/10.1161/CIRCULATIONAHA.120.048360> | Circulation. 2020;142:429–436

- 2 months (France & Switzerland, March – April 2020)
- MIS-C: new syndrome associated with COVID
 - Shares some similarities with atypical Kawasaki disease
 - Myocardial effect: acute heart failure
 - Myocardial “stun” ? Edema? Inflammatory damage?



Multisystem Inflammatory Syndrome in Children (MIS-C) Interim Guidance

[Critical Updates on COVID-19](#) / [COVID-19 Interim Guidance](#) / [Multisystem Inflammatory Syndrome in Children \(MIS-C\) Interim Guidance](#)

What is the case definition of multisystem inflammatory syndrome in children (MIS-C)?

The CDC issued a [Health Advisory](#) on May 14, 2020, that outlines the following case definition for MIS-C:

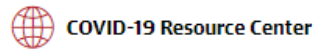
- An individual aged <21 years presenting with fever,¹ laboratory evidence of inflammation,² and evidence of clinically severe illness requiring hospitalization, with multisystem (≥ 2) organ involvement (cardiac, renal, respiratory, hematologic, gastrointestinal, dermatologic, or neurological); **AND**
- No alternative plausible diagnoses; **AND**
- Positive for current or recent SARS-CoV-2 (COVID-19) infection by RT-PCR, serology, or antigen test; or COVID-19 exposure within the 4 weeks prior to the onset of symptoms.

Outcomes of Cardiovascular Magnetic Resonance Imaging in Patients Recently Recovered From Coronavirus Disease 2019 (COVID-19)

Valentina O. Puntmann, MD, PhD¹; M. Ludovica Carerj, MD^{1,2}; Imke Wieters, MD³; [et al](#)

» [Author Affiliations](#) | [Article Information](#)

JAMA Cardiol. 2020;5(11):1265-1273. doi:10.1001/jamacardio.2020.3557



- Cohort study: 100 ADULT patients (unselected), with recent COVID19
 - Frankfurt, Germany: April - June 2020
 - Severe symptoms, with Recent recovery (no active cardiac symptoms)
 - Cardiac MRI (median time from recovery, 71days; IQR 64-92)
 - 78% cardiac findings; 60% ongoing inflammation (non-pre-existing conditions)
 - 32% late gadolinium enhancement, 22% pericardial enhancement
 - Higher troponins, lower LVEF

Meaning These findings indicate the need for ongoing investigation of the long-term cardiovascular consequences of COVID-19.

March 4, 2021

Prevalence of Inflammatory Heart Disease Among Professional Athletes With Prior COVID-19 Infection Who Received Systematic Return-to-Play Cardiac Screening

Matthew W. Martinez, MD^{1,2,3,4}; Andrew M. Tucker, MD^{4,5}; O. Josh Bloom, MD, MPH⁶; [et al](#)

» [Author Affiliations](#) | [Article Information](#)

JAMA Cardiol. Published online March 4, 2021. doi:10.1001/jamacardio.2021.0565

Question

What is the prevalence of inflammatory heart disease identified through recent RTP cardiac screening recommendations in PROFESSIONAL ATHLETES with prior COVID19 infection ?

Major North American Sports Leagues



RTP American College of Cardiology Guidelines (adult)¹

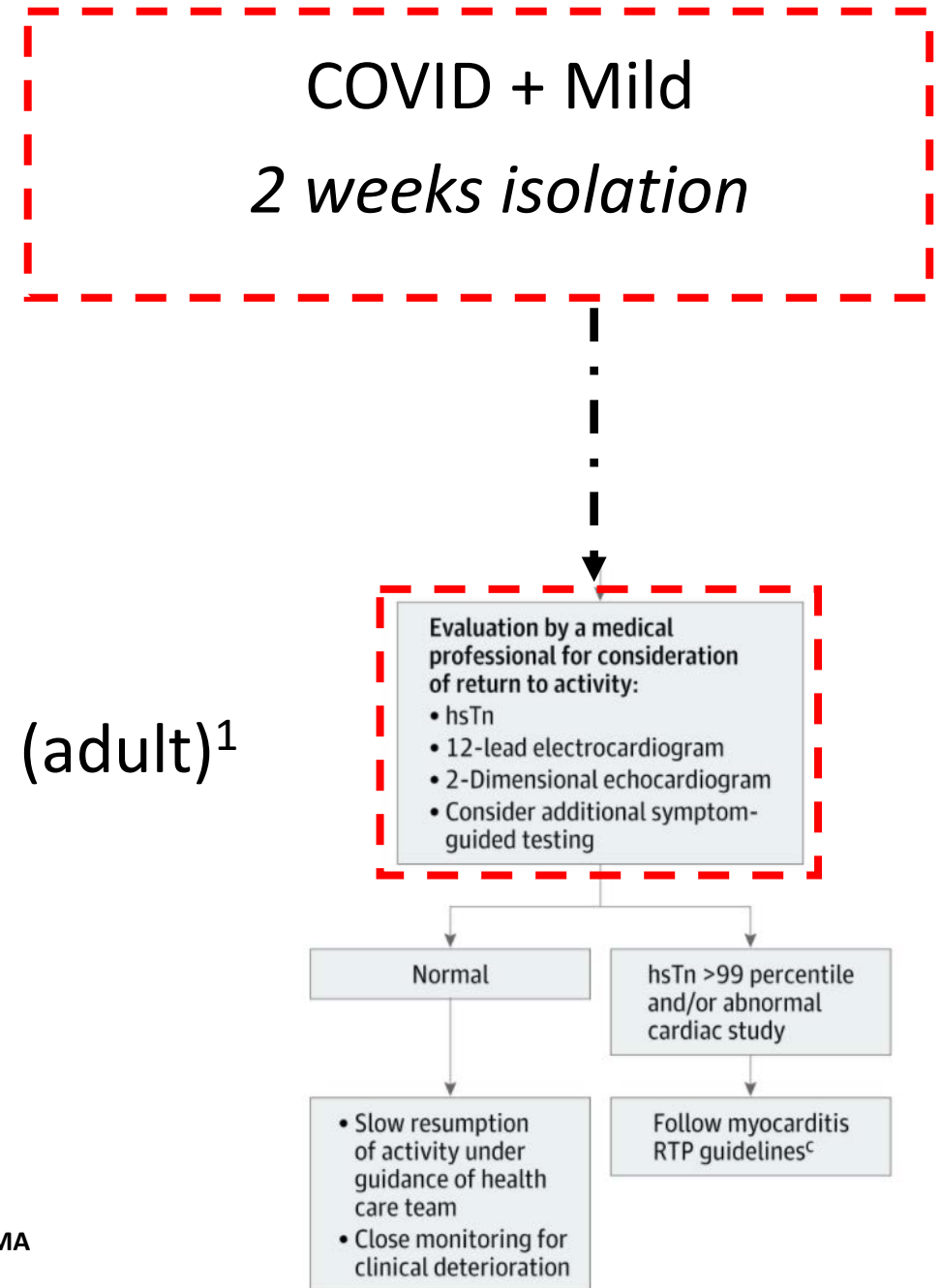
+ COVID test

Troponin

EKG

Echo

1. A Game Plan for the Resumption of Sport and Exercise After Coronavirus Disease 2019 (COVID-19) Infection. JAMA Cardiology. 2020;5(10):1085-1086



Who: 789 professional athletes (98% male), 25yrs (mean)
 most: 349 NFL, 181 MLB



Symptoms – Moderate 58% vs None/Mild 42%

PCR 75%, Antibody testing 25%

0% Severe: No hospitalizations (CV symptoms)

Timeframe: 19 days (mean) *after + test*

Abnormal results: 30 (3.8%)

Abnormal test	n (%)
Troponin*	6 (0.8)
EKG**	10 (1.3)
Echo**,+	20 (2.5)

* >99% reference range
 ** acute cardiac injury
 † ventricular dysfunction

Additional testing determined on case-by-case basis by team physician

cMRI

0.6% (5 of 789)

5 Athletes with inflammatory heart disease diagnosed per AHA/ACC guidelines
 3 With myocarditis
 2 With pericarditis

With implementation of current expert consensus-based adult cardiovascular risk stratification practices, safe RTP to professional sporting activity was achieved.

- **Low prevalence (0.6%): clinically detectable inflammatory heart disease**
 - ALL 5 athletes with inflammatory heart disease had MODERATE symptoms.
- Low, but not inconsequential: **false + tests**
- Generalizable to all ages? ... **pediatric**, collegiate, masters-level athletes

...stay tuned...

THANK YOU

The University of Vermont

LARNER COLLEGE OF MEDICINE

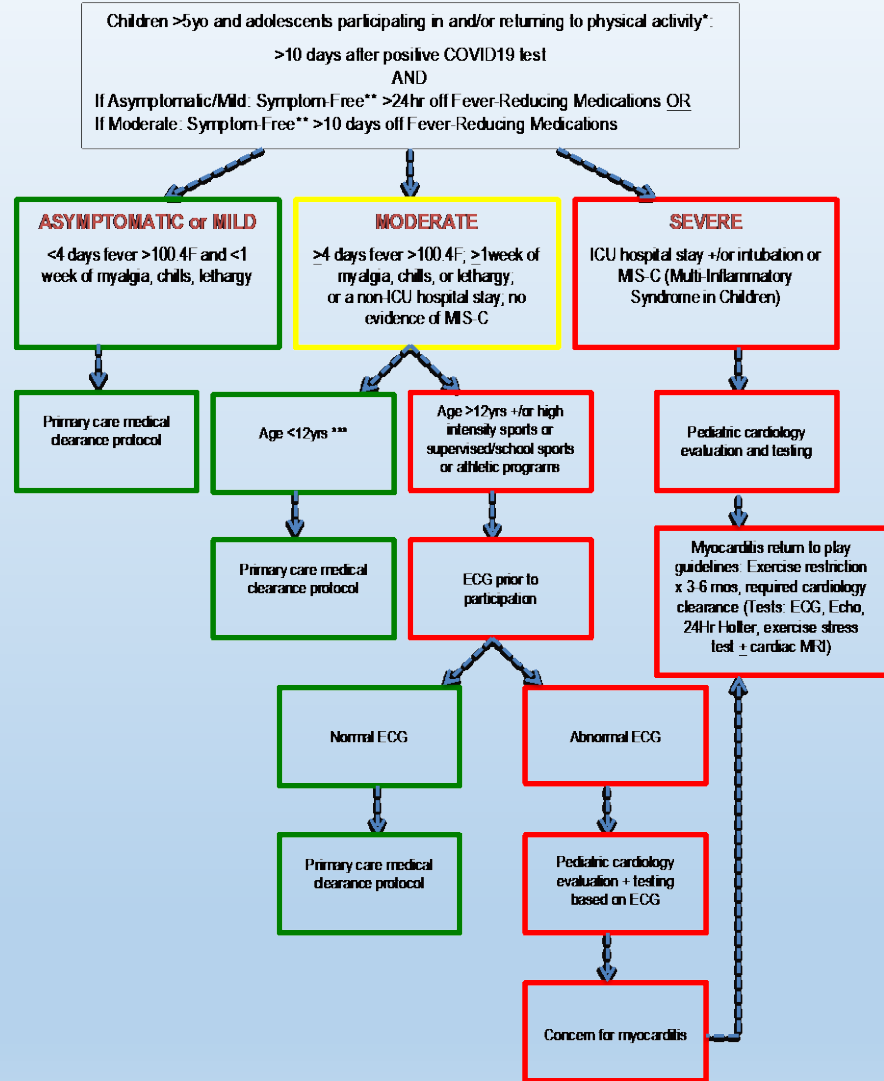


UPDATES ON PEDIATRIC CARDIAC SCREENING AFTER COVID19

Dr. Kristen Connolly – Timber Lane Pediatrics
Dr. Jonathan Flyer – UVMHC Pediatric Cardiology

March 8, 2021

CARDIAC SCREENING IN PEDIATRIC PATIENTS AFTER COVID19 INFECTION



Adapted from the American College of Cardiology (ACC) and American Academy of Pediatrics, reviewed by UVMHC Pediatric Cardiology March 3, 2021
<https://www.acc.org/latest-in-cardiology/articles/2020/07/13/1337/returning-to-play-after-coronavirus-infection>
<https://services.aap.org/journals/2019-novel-coronavirus-covid-19-interim-guidance-return-to-sports/>

*Guidance is informed by expert opinion and may apply to individuals who participate in any physical activity, organized or not, including but not limited to organized sports and physical education class. Clinical judgment is strongly encouraged in support of a shared decision making process between health care provider and family. Evaluation may also be considered if COVID19 diagnosis was made within the past 3mos.
 **Symptom-free excludes loss of taste and smell, which may persist.
 ***ECG <12yrs may be considered in certain circumstances (eg. higher intensity sports) as determined by family/clinician.

CHANGES: Who to screen

- Children ≥ 5 yo and adolescents participating in and/or returning to physical activity*
- Must be >10 days from positive COVID19 test
AND
- If asymptomatic/mild: symptom-free (excluding loss of taste/smell) >24 hr off fever-reducing medications
- If moderate: symptom-free (excluding loss of taste/smell) >10 days off fever-reducing medications

CHANGES: Screening Considerations

- Guidance is informed by expert opinion and may apply to individuals who participate in any physical activity, organized or not, including but not limited to organized sports and physical education class.
- Clinical judgment is strongly encouraged in support of a shared decision making process between health care provider and family.
- Evaluation may also be considered if COVID19 diagnosis was made within the past 3mos.

CHANGES: Risk group stratification

- **ASYMPTOMATIC/MILD:**

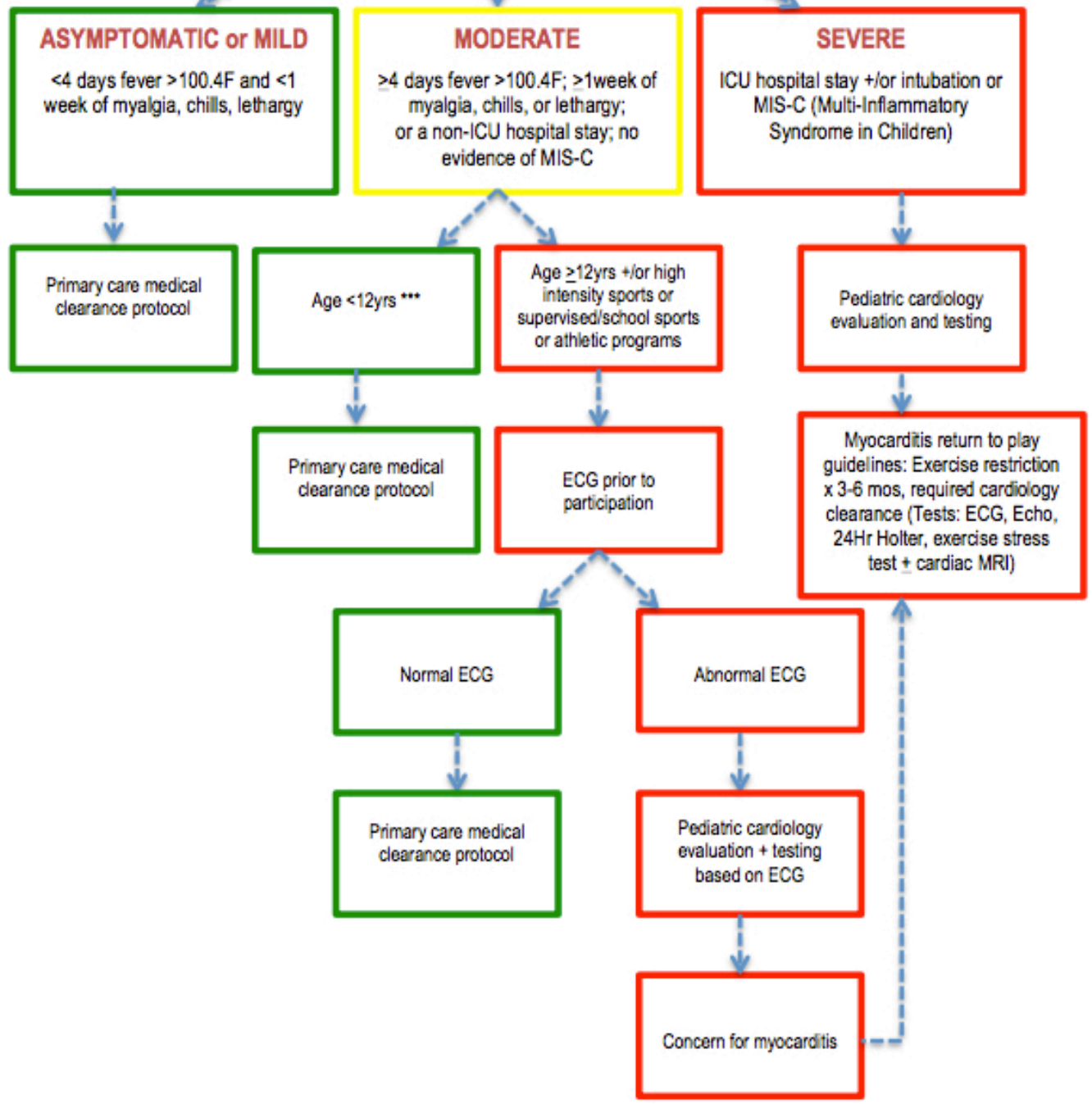
- <4 days fever >100.4F and <1 week of myalgia, chills, lethargy

- **MODERATE**

- ≥ 4 days fever >100.4F; ≥ 1 week of myalgia, chills, or lethargy; or a non-ICU hospital stay; no evidence of MIS-C (multi-inflammatory syndrome in children)

- **SEVERE**

- ICU hospital stay +/- or intubation or MIS-C





MEDICAL CLEARANCE FOR RETURN-TO-PLAY AFTER COVID-19 INFECTION

Name: _____ DOB: _____

Date of Positive COVID Test: _____

Date of Symptom Onset: _____ N/A if asymptomatic:

Date of Last Symptoms: _____ N/A if asymptomatic:

Date of Medical Evaluation: _____

Criteria for Return*:

- >10 days have passed since tested positive for COVID19
- Symptom-free (excluding loss of taste/smell) >24hr off fever-reducing medications (for COVID19 with asymptomatic/mild symptoms) OR Symptom-free excluding loss of taste/smell >10 days off fever-reducing medications (for COVID19 with moderate symptoms)
- Has had a normal ECG (required if >12 years of age and history of moderate symptoms with COVID19 illness)
- No history of ICU hospitalization, intubation, or MIS-C
- 14-element AHA cardiac screening** reviewed (further cardiac work up required if any bolded screening questions positive)

Yes	No
	<p>Chest pain/tightness/pressure related to exertion</p> <p>Unexplained syncope or near-syncope (not including vasovagal cause)</p> <p>Excessive exertional, unexplained shortness of breath/fatigue or new onset palpitations with exercise</p> <p>New heart murmur on exam or persistent tachycardia</p> <p>Abnormal pulses on exam including femoral pulses (to exclude aortic coarctation)</p> <p>History of elevated systemic blood pressure</p> <p>Prior restriction from participation in sports</p> <p>Prior cardiac testing ordered by a physician</p> <p>Family history of premature death <50yrs due to heart disease</p> <p>Disability due to heart disease in a close relative <50yo</p> <p>Family history of HCM/Dilated cardiomyopathy, long QT/ion channelopathies, Marfan syndrome, significant arrhythmias, or genetic cardiac conditions</p> <p>History of heart murmur (excluding innocent/resolved murmurs)</p> <p>Physical stigmata of Marfan Syndrome</p> <p>Abnormal brachial artery blood pressure in sitting position on exam</p>

*<https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-interim-guidance-return-to-sports/>

**14 Element AHA Screening Checklist adapted from Maron BJ, et al. Journal of the American College of Cardiology, 2014. Reviewed by UVMMC Pediatric Cardiology March 3, 2021.

Clearance Determination:

- Student/athlete HAS satisfied the above criteria and IS cleared to start the return to activity progression (return to activity as tolerated if <12yo; ≥7-day graduated return protocol if >12yo +/- or high intensity or supervised/school sports or athletic programs).
- Student/athlete HAS NOT satisfied the above criteria and IS NOT cleared to return to activity progression.

Medical Office Information:

Printed Clinician Name: _____

Clinician Signature: _____

Office Phone number: _____

Office Fax number: _____

Office Address: _____

CHANGES: Medical clearance criteria

- >10 days have passed since tested positive for COVID19
- Symptom-free (excluding loss of taste/smell)
 - >24hr off fever-reducing medications if history of COVID19 with asymptomatic/mild symptoms
 - OR
 - >10 days off fever-reducing medications if history of COVID19 with moderate symptoms
- Normal ECG (if ≥ 12 yo and history of moderate symptoms)
- No history of ICU hospitalization, intubation, or MIS-C
- 14-element AHA cardiac screening reviewed (further cardiac work up required if any bolded screening in positive)

CHANGES: Return-to-play

- Patients <12yo:
 - Return to activity as tolerated after medical clearance (consider 7-day graduated return-to-play protocol if high intensity sports)
- Patients \geq 12yo:
 - 7-day graduated return-to-play protocol recommended for those with history of COVID19 with moderate symptoms

GRADUATED RETURN-TO-PLAY AFTER COVID19 INFECTION*

Indications: Age >12yo +/-or High Intensity or Supervised/School Sports or Athletic Programs

Name: _____ DOB: _____

Date of Medical Clearance to begin post-COVID19 Return-To-Play: _____

Once medically cleared, students/athletes should complete the suggested return-to-play progression without development of chest pain/tightness, palpitations, lightheadedness, significant exertional dyspnea, pre-syncope, or syncope. If any of these symptoms develop, the patient should be referred back to the evaluating provider who signed the medical form.

Calculating Max Heart Rate: 220 – Your Age = Predicted Max Heart Rate (beats/min)

MINIMUM 7-DAY PROGRESSION:

STAGE 1 : Day 1 and Day 2 (2 Days Minimum) - 15min/day or less		
Light activity (walking, jogging, stationary bike). NO resistance training. Intensity < 70% maximum heart rate.		
DATE	ACTIVITY	SYMPTOMS

STAGE 2 : Day 3 (1 Day Minimum) – 30min/day or less		
Add simple movements activities (running drills) at intensity < 80% maximum heart rate.		
DATE	ACTIVITY	SYMPTOMS

STAGE 3 : Day 4 (1 Day Minimum) – 45min/day or less		
More complex training at intensity < 80% maximum heart rate. May add light resistance training.		
DATE	ACTIVITY	SYMPTOMS

STAGE 4 : Days 5 and Day 6 (2 Days Minimum) – 60min/day or less		
Normal training activity at intensity < 80% maximum heart rate.		
DATE	ACTIVITY	SYMPTOMS

STAGE 5 : Return to full activity/participation.		
DATE	ACTIVITY	SYMPTOMS

*Return-To-Play protocol adapted from Elliott N, et al. Infographic. British Journal of Sports Medicine, 2020.

Reviewed by UVMMC Pediatric Cardiology March 3, 2021.

Date Cleared for Full Participation by School/Sports Personnel: _____

Printed name: _____ Signature: _____

CHANGES: What MAY Come Next...

- **ASYMPTOMATIC/MILD:**

- Stay tuned – in-office screening for this group may not be indicated...

- **MODERATE**

- ≥ 4 days fever $>100.4F$; ≥ 1 week of myalgia, chills, or lethargy; or a non-ICU hospital stay; no evidence of MIS-C (multi-inflammatory syndrome in children)

- **SEVERE**

- Patients in this group will have cardiology involved from the get-go...

GOALS

- Brief Overview: provide context for a cardiology discussion
 - Sudden Cardiac Death, Myocarditis, & COVID19 cardiac/athlete data
- Update: clear, evidence-based process map
 - Cardiac screening in pediatric patients after COVID19 infection
- Share: revised forms
 1. Medical clearance to begin return-to-play
 2. Graduated return-to-play protocol

Happening Now



- Big Change Roundup: bigchangeroundup.org
 - ▣ Largest fundraiser for the UVMCH; funds raised support patients and families (e.g.) some child life services; new program startup (e.g., Transgender Program; safe sleep program on Mother Baby Unit); injury prevention initiatives; food insecurity initiative (CSC); support for inpt. families (ferry passes, gas cards, meal vouchers)
- Please help promote personally & through your practices/ orgs.
- **3/19-3/21**: Big Change Roundup Drive Thru Collections (3 loc.)
- **3/26/2021**: Big Change Roundup Final Total Announcement (counted off air/off-site)



Save the Date: Health Equity Interactive Session

- Program of Northern Vermont Area Health Education Center (AHEC)
- Stacie L. Walton, MD, MPH, clinical/academic pediatrician; medical consultant for HCPs/institutions for >25 years; recently retired from Kaiser Permanente (Diversity Champion)
- Details in tonight's email

(Thank you, Melissa Kaufold)

===== SAVE THE DATE =====



QUALITY CARE IS EQUITABLE CARE

The case for culturally and linguistically responsive health care

THURSDAY, APRIL 8, 2021 ♦ 1:00 to 3:15 PM

SESSION THREE- Reducing Implicit Bias in Health Care: Moving Toward Equal Treatment

Save the Date!

- What? **Child maltreatment conference**
- Who? **James Metz, MD MPH** & other expert speakers
- When? **April 29**, 8 am – 12:15 pm via live stream
- How? **Register at:**

<http://campaign.r20.constantcontact.com/render?ca=3cdb8290-cfe5-4dbb-b73b-29ecabed13f0&preview=true&m=1130384660698&id=preview>



**Recognizing and Responding to Child Maltreatment
Promoting Child Abuse Awareness in VT Conference**

**Thursday, April 29, 2021
8:00am -12:15pm
LIVE STREAM**

This conference will help the professional to recognize sentinel injuries, sexual abuse and neglect. Participants will learn about the mental health implications of trauma and abuse and will learn strategies for effective reporting.



James Metz, MD, MPH - Course Director

Assistant Professor, Pediatrics
Division Chief, Child Abuse Medicine
UVM Larner College of Medicine

*"Recognizing Sentinel Injuries" and
"Child Neglect"*

Thought for Today

I CANNOT CONTROL
(So, I can LET GO of these things.)

I CAN CONTROL
(So, I will focus on these things.)

I CANNOT CONTROL:

- IF OTHERS FOLLOW THE RULES OF SOCIAL DISTANCING
- THE AMOUNT OF TOILET PAPER AT THE STORE
- THE ACTIONS OF OTHERS
- HOW LONG THIS WILL LAST
- PREDICTING WHAT WILL HAPPEN
- HOW OTHERS REACT
- OTHER PEOPLE'S MOTIVES

I CAN CONTROL:

- MY POSITIVE ATTITUDE
- TURNING OFF THE NEWS
- FINDING FUN THINGS TO DO AT HOME
- HOW I FOLLOW CDC RECOMMENDATIONS
- MY OWN SOCIAL DISTANCING
- LIMITING MY SOCIAL MEDIA
- MY KINDNESS & GRACE

Clipart: Carrie Stephens Art
TheCounselingTeacher.com

Questions/Discussion

- Q & A Goal: monitor/respond in real time; record/disseminate/revisit later as needed.
- **For additional questions, please e-mail: vchip.champ@med.uvm.edu**
 - ▣ **What do you need** – how can we be helpful (specific guidance)?
- **VCHIP CHAMP VDH COVID-19 website:**
https://www.med.uvm.edu/vchip/projects/vchip_champ_vdh_covid-19_updates
- Next CHAMP call – ***Wednesday, March 10, 2021 – 12:15 – 12:45 pm***
- Generally back to **Monday/Wednesday/Friday** schedule
- Please tune in to VMS call with VDH Commissioner Levine:
Thursday, March 11, 2021 – 12:30-1:00 p.m. – Zoom platform & call information:
- **Join Zoom Meeting:**
<https://us02web.zoom.us/j/86726253105?pwd=VkVuNTJlZFQ2R3diSVdqdJl2ZG4yQT09>
 - ▣ Meeting ID: 867 2625 3105 / Password: 540684
- One tap mobile - +1 646 876 9923,,86726253105#,,,,0#,,540684#