COVID-19 Vaccine Safety Monitoring in Children

Advisory Committee on Immunization Practices (ACIP)

November 2, 2021

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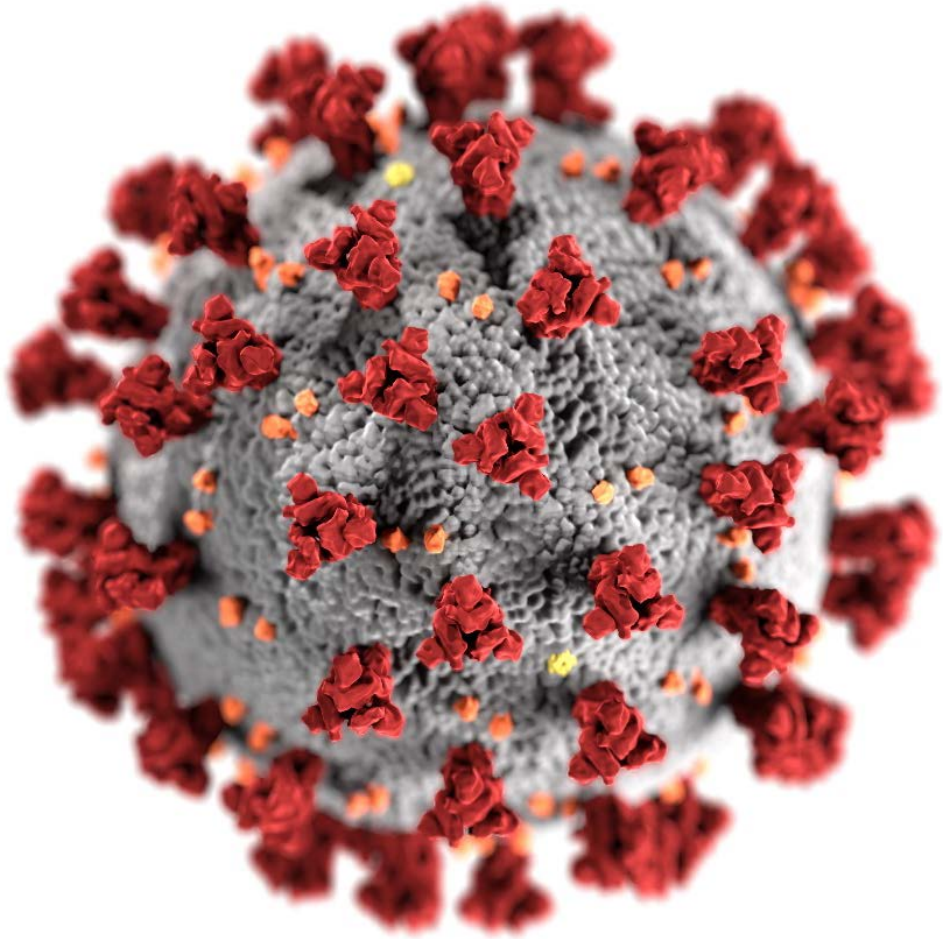
CDC COVID-19 Vaccine Task Force



cdc.gov/coronavirus

Topics

- CDC surveillance systems and processes for monitoring vaccine safety in children*
- FDA, Indian Health Service (IHS), and Department of Defense (DoD) vaccine safety monitoring systems
- COVID-19 Vaccine Safety Technical (VaST) Work Group

* CDC continuously monitors authorized and licensed vaccines administered to children in the United States

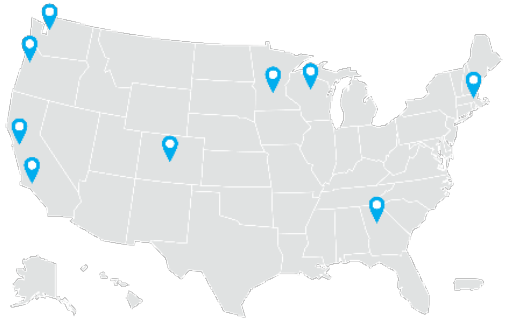
CDC vaccine safety monitoring

- COVID-19 vaccines are being administered under **the most intensive vaccine safety monitoring effort in U.S. history**
- Strong, complementary systems are in place—both new and established

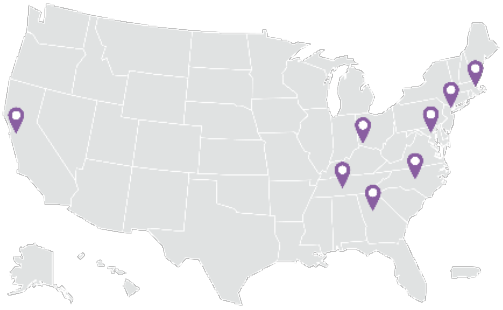
v-safe

VAERS

VSD



CISA Project

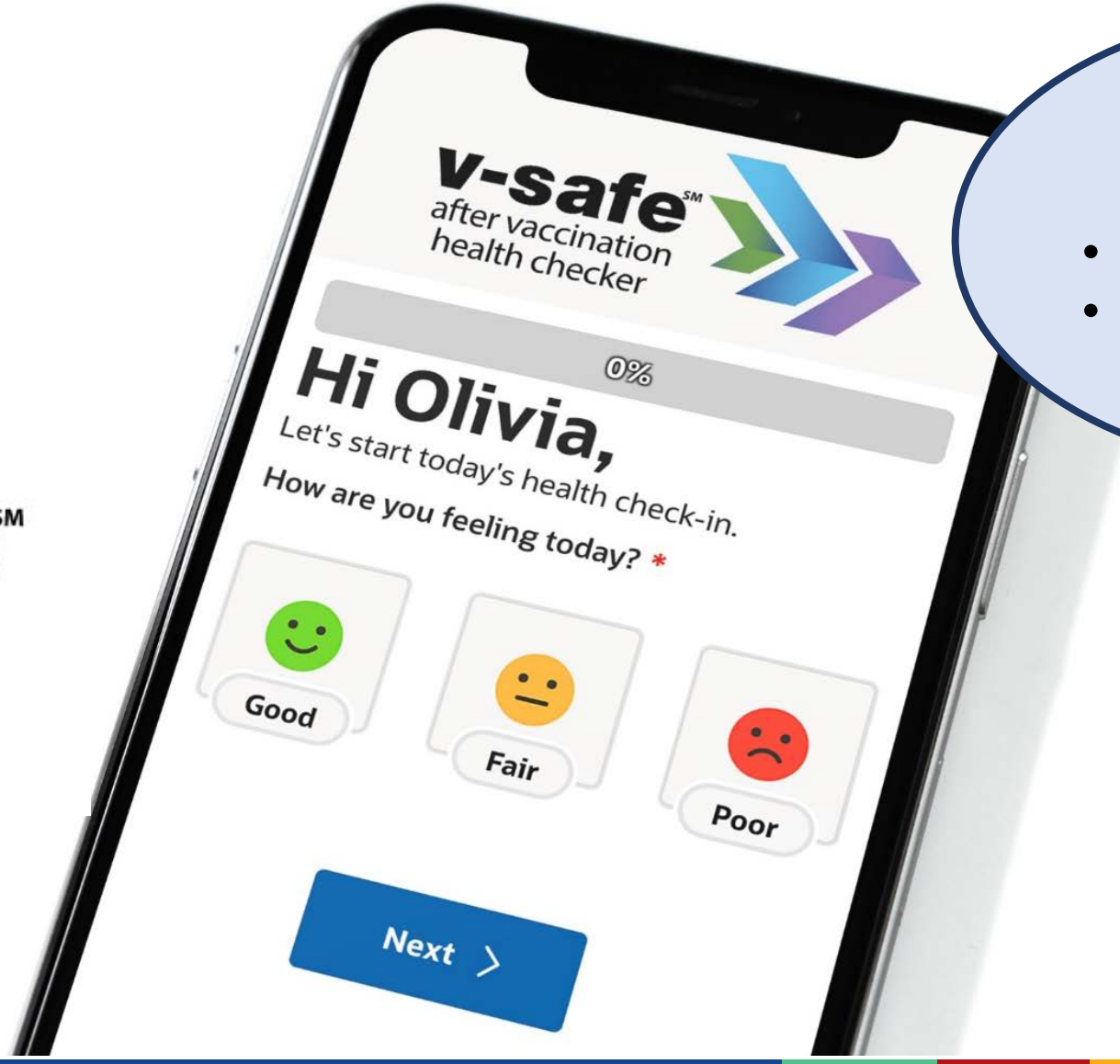


Full list of U.S. COVID-19 vaccine safety monitoring systems

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html

Smartphone-based active safety monitoring

v-safe[SM]
after vaccination
health checker



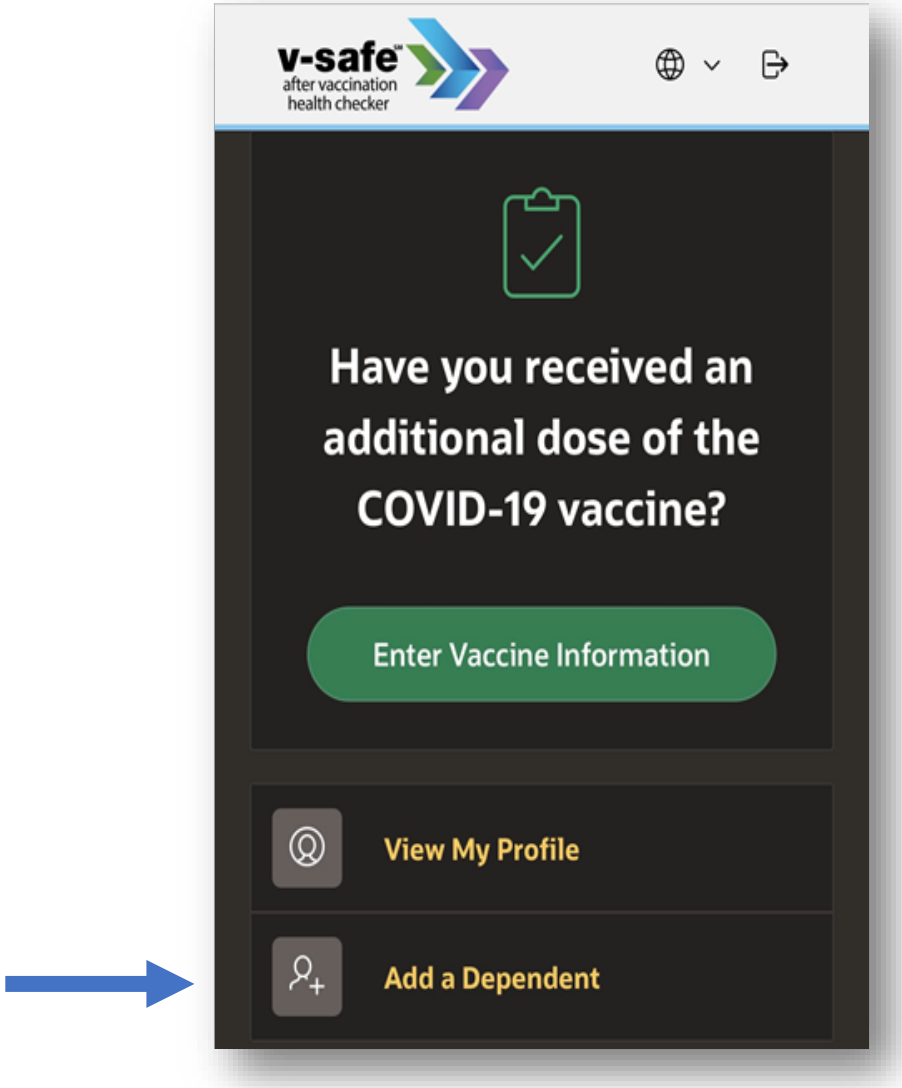
Now available!

- Enrolling **children**
- **3rd dose** reporting

http://cdc.gov/vsafe

Adding a dependent in v-safe

- Participants can register themselves or dependents after dose 1, 2, or 3
- Dependents can be added, even if the primary smartphone account is not a **v-safe** participant
  - Parent/guardian must create a profile then add dependent
  - Text messaging directed to parent/guardian
- **V-safe** check in schedule:
  - Once a day (days 0–7)
  - Once a week (weeks 2–6)
  - Once a month (months 3, 6, and 12)
  - Schedule restarts after each dose received



V-safe analytic plan for children aged 5–11 years

- V-safe will aggregate data from health surveys completed on days 0–7 after vaccination for children aged 5–11 years
  - Describe sex, median age, race/ethnicity of vaccinated children
  - Describe local reactions, systemic reactions, and health impacts by dose received
- Compare reactogenicity profile for children aged 5–11 years to adolescents aged 12–17 years
- Reports to VAERS solicited by active telephone follow-up of v-safe participants are included in VAERS analyses

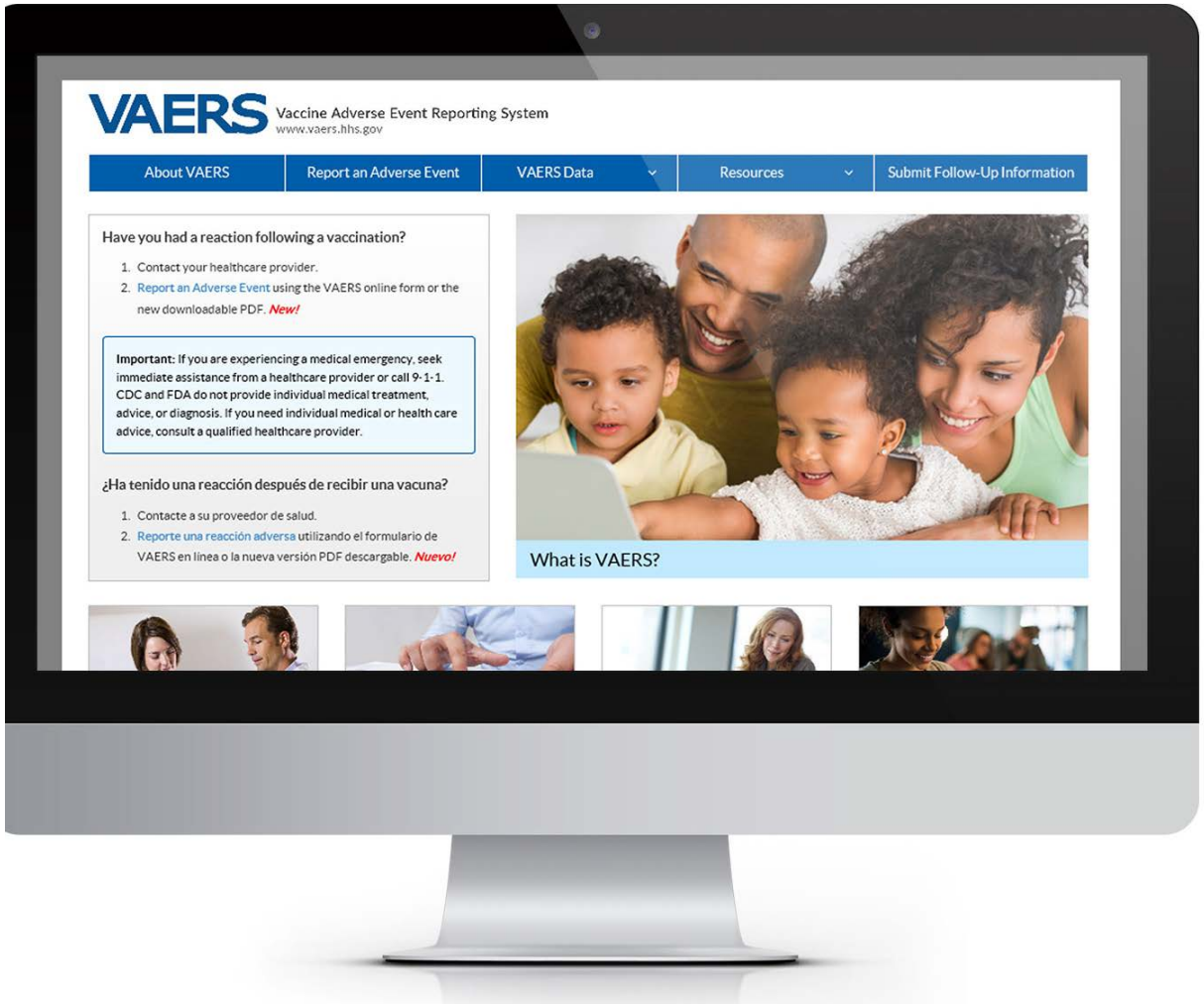
VAERS is the nation's early warning system for vaccine safety

CDC + FDA

VAERS

Vaccine Adverse Event Reporting System

http://vaers.hhs.gov



VAERS accepts reports from everyone

Regardless of the plausibility of the vaccine causing the event or the clinical seriousness of the event

Key strengths

- Rapidly detects potential safety problems
- Can detect rare adverse events

Key limitations

- Passive surveillance system
- Inconsistent quality and completeness of information
- Reporting biases
- Generally, cannot determine cause and effect

VAERS prespecified adverse events of special interest*
(as of Oct 27, 2021)

- Death
- Acute myocardial infarction
- Anaphylaxis
- Coagulopathy
  - Thrombocytopenia
  - Deep venous thrombosis or pulmonary embolism
  - Disseminated intravascular coagulopathy
- Guillain-Barré Syndrome (GBS)
- Kawasaki disease
- Multisystem inflammatory syndrome in children (MIS-C)
- Myocarditis, myopericarditis, and pericarditis
- Narcolepsy/cataplexy
- Seizure
- Stroke
- Thrombosis with thrombocytopenia syndrome (TTS)
- Transverse myelitis

* Assessment includes: clinician review of VAERS report, follow-up to obtain and review medical records, application of case definition (where case definition exists), adjudication to classify the report with respect to case definition

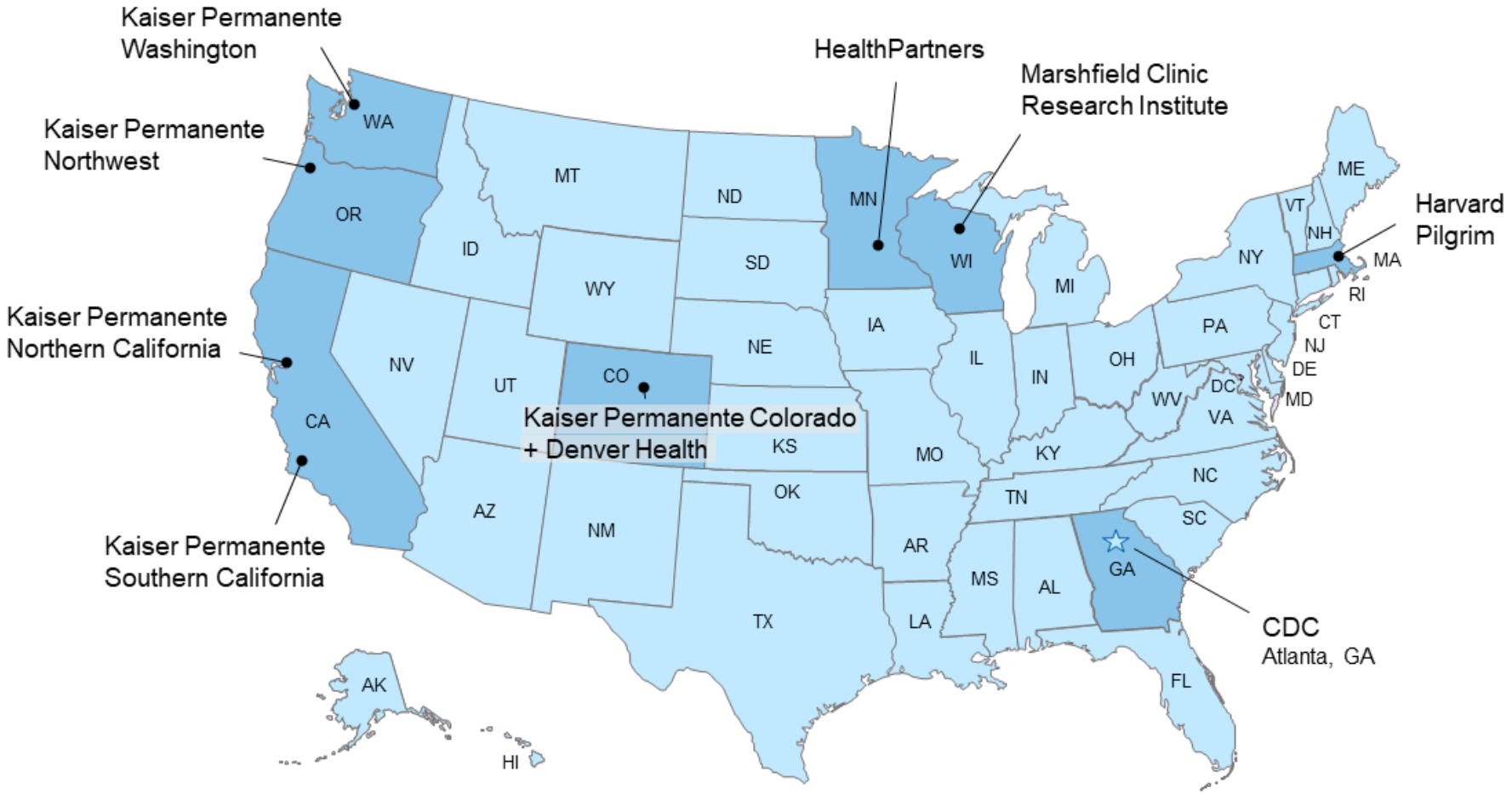
Particular focus on myocarditis/myopericarditis reports

- Potential reports identified by Medical Dictionary for Regulatory Activities (MedDRA)* standardized codes assigned to report that could indicate myocarditis or pericarditis
- Clinical abstraction
  - Review of initial report
  - Outreach to healthcare provider involved in reported patient's care
  - Request and review of medical records
  - Compare abstracted data elements against CDC case definitions for myocarditis and pericarditis
- CDC will conduct periodic analyses of case counts and reporting rates and comparison of reporting rates to background

* www.medra.org

VSD

Vaccine Safety Datalink



- **9** participating integrated healthcare organizations
- Data on over **12 million** persons per year

Vaccine Safety Datalink (VSD) Rapid Cycle Analysis (RCA)

Aims:

- To monitor the safety of COVID-19 vaccines weekly using prespecified outcomes of interest among VSD members
- To describe the uptake of COVID-19 vaccines over time among eligible VSD members overall and in strata by age, site, and race/ethnicity

Surveillance began in December 2020

VSD COVID-19 vaccine RCA outcomes

Prespecified RCA surveillance outcomes	Settings	Risk window (days)	Chart review	Monitoring only	Exclude if COVID-19 in prior X days
Acute disseminated encephalomyelitis	E, I	1-21, 1-42	Yes		
Acute myocardial infarction – **First Ever**	E, I	1-21, 1-42			30 days
Acute respiratory distress syndrome	E, I	0-84		Yes	42 days
Anaphylaxis – **First in 7 days**	E, I	0-1	Yes	Yes	
Appendicitis	E, I	1-21, 1-42			
Bell's palsy – **First Ever**	E, I, O	1-21, 1-42			30 days
Cerebral venous sinus thrombosis	E, I	1-21, 1-42	Yes		30 days
Disseminated intravascular coagulation	E, I	1-21, 1-42			42 days
Encephalitis / myelitis / encephalomyelitis	E, I	1-21, 1-42			30 days
Guillain-Barré syndrome	E, I	1-21, 1-42	Yes		
Immune thrombocytopenia	E, I, O	1-21, 1-42			30 days
Kawasaki disease	E, I	1-21, 1-42			
Multisystem inflammatory syndrome in children/adults (MIS-C/MIS-A)	E, I	0-84		Yes	
Myocarditis / pericarditis – **First in 60 Days**	E, I	1-21, 1-42	Yes (subgroup)		30 days
Narcolepsy / cataplexy	E, I, O	0-84		Yes	
Pulmonary embolism – **First Ever**	E, I	1-21, 1-42			30 days
Seizures	E, I	1-21, 1-42			30 days
Stroke, hemorrhagic	E, I	1-21, 1-42			30 days
Stroke, ischemic	E, I	1-21, 1-42			30 days
Thrombosis with thrombocytopenia syndrome – **First Ever**	E, I	1-21, 1-42			30 days
Thrombotic thrombocytopenic purpura	E, I	1-21, 1-42			30 days
Transverse myelitis	E, I	1-21, 1-42	Yes		
Venous thromboembolism – **First Ever**	E, I, O	1-21, 1-42			30 days

Abbreviations: E = emergency department; I = inpatient; O = outpatient

VSD analytic strategy for the 5–11-year-old age group

- Statistical analysis will be similar to what is being done for other age groups but will include stratified analyses on 5–11-year-olds
  - For the primary analysis, the number of outcomes observed in a **risk interval** after COVID-19 vaccination will be compared to the number expected
    - Risk interval **0–7 days** for myocarditis/pericarditis and seizures
    - Risk interval **1–21 days** for other outcomes
- The expected will be derived from “vaccinated concurrent comparators” who are in a comparison interval (days 22-42) after COVID-19 vaccination
- On each day that an outcome occurs, vaccinees who were in their risk interval are compared with similar vaccinees who were concurrently in their comparison interval
  - Comparisons will be adjusted for by single year of age, sex, race/ethnicity, VSD site, as well as calendar date

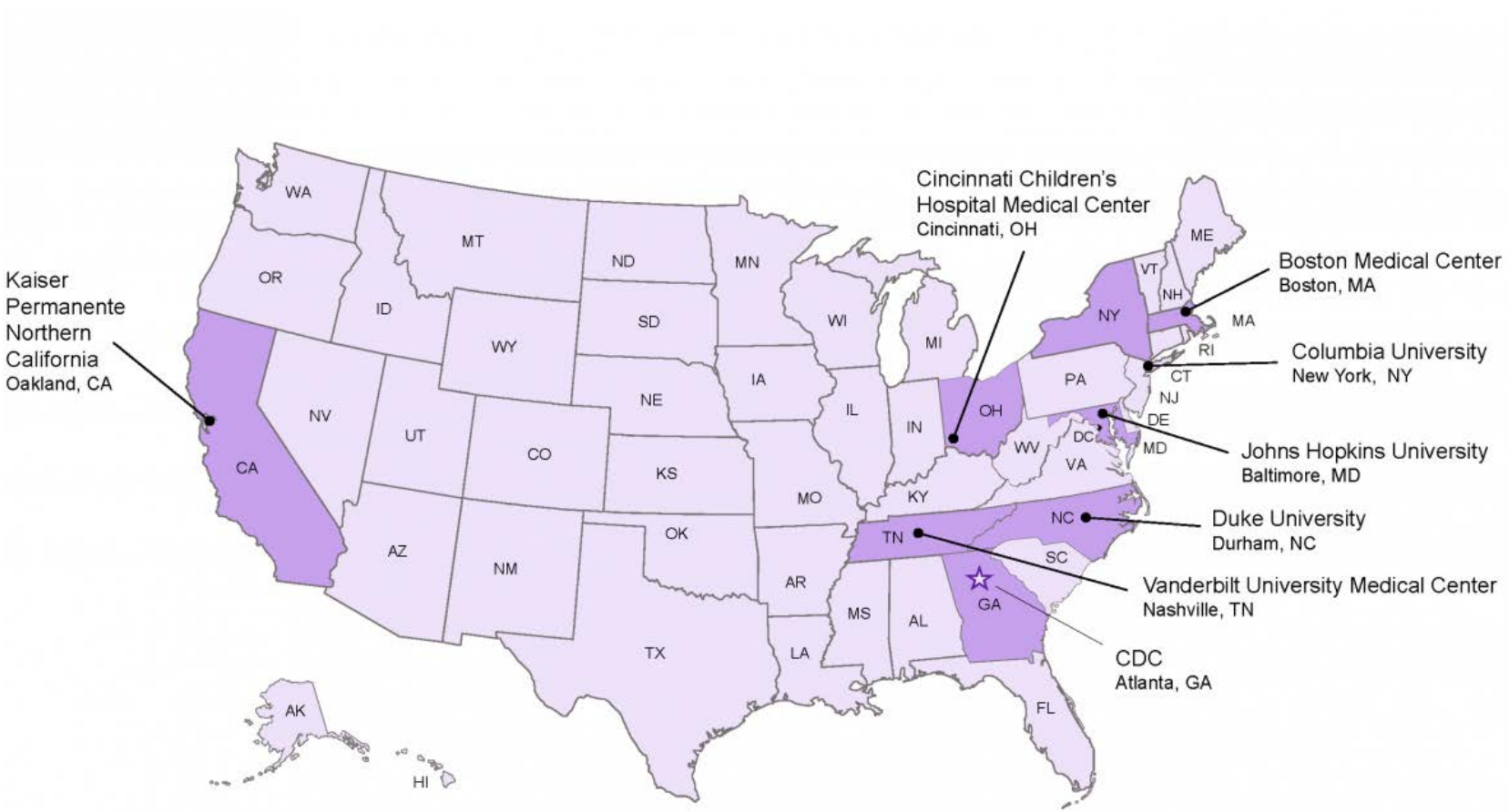
VSD analytic strategy for the 5–11-year-old age group

- VSD will continue to review medical records and adjudicate any potential cases of myocarditis/pericarditis identified within 1–98 days following any COVID-19 vaccination
- In addition, VSD will conduct chart review of all identified cases of GBS, acute disseminated encephalomyelitis, transverse myelitis, anaphylaxis, and cerebral venous sinus thrombosis within 1–98 days following any COVID-19 vaccination
- VSD is able to capture information on simultaneous vaccinations

CISA

Clinical Immunization Safety Assessment (CISA) Project

7 participating medical research centers with vaccine safety experts



- Clinical consult services†
- Clinical research

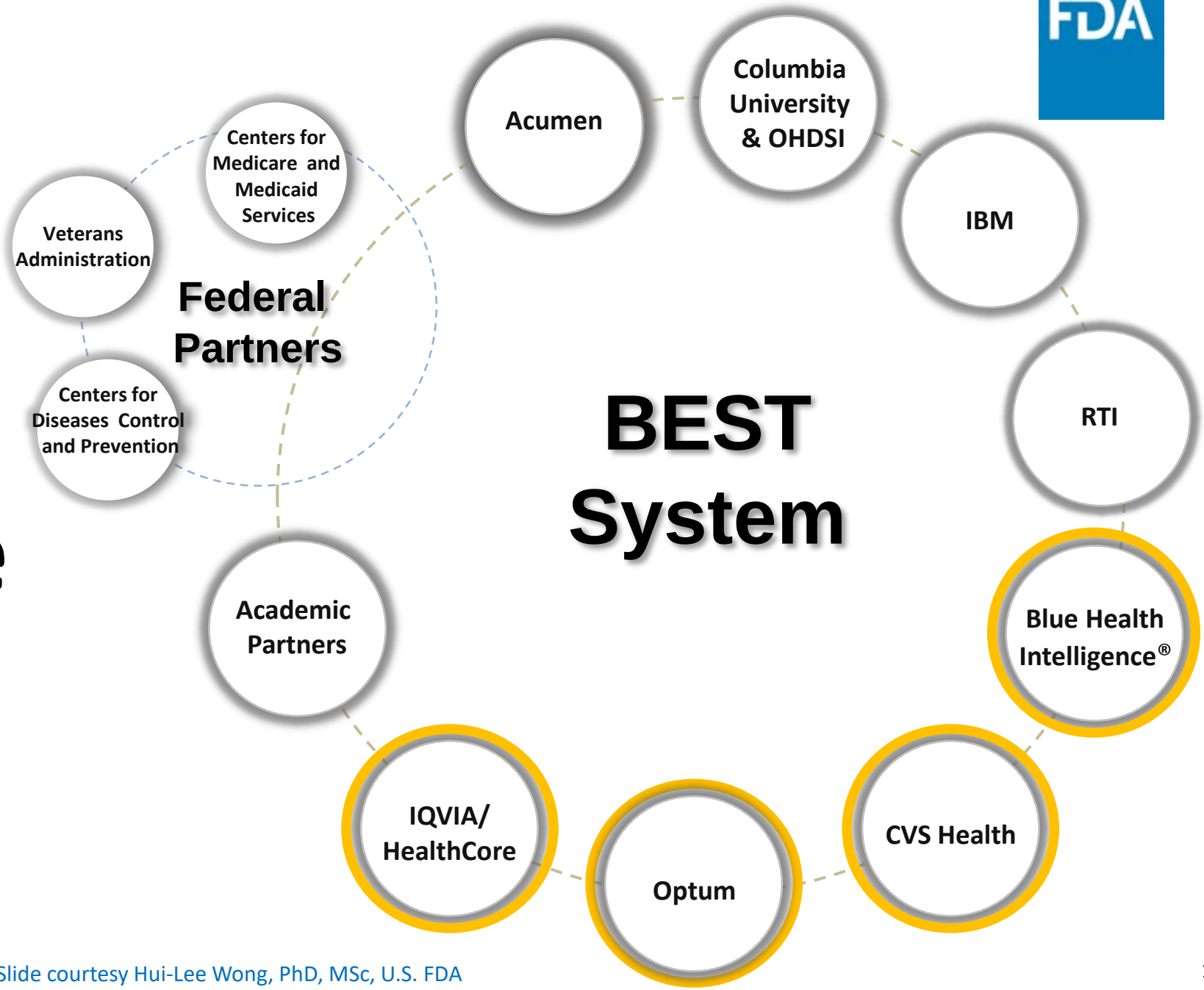
†More information about clinical consults available at http://www.cdc.gov/vaccinesafety/Activities/CISA.html

CISA COVID-19 vaccine core activities

- Clinical case reviews and clinical consults on complex cases of vaccine adverse events
- Technical consultation on clinical guidance and clinical considerations for use of COVID-19 vaccines*
- Contributions to enhanced surveillance for adverse events
- Clinical research, including in pediatric populations

* https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

FDA CBER Active Surveillance Program



CBER: Center for Biologics Evaluation and Research
BEST: Biologics Effectiveness and Safety

Slide courtesy Hui-Lee Wong, PhD, MSc, U.S. FDA

Indian Health Service (IHS) vaccine safety monitoring systems

- Passive Surveillance
  - Vaccine Adverse Event Reporting System (VAERS)
    - VAERS Functionality (“IHS” in item #26) permits analysis of AEs in IHS system of care
  - IHS Safety Tracking & Response System
    - Federal and participating tribal sites
    - Worker-related AEs and vaccine administration errors
- Active Surveillance
  - IHS Sentinel Survey
    - Biweekly survey of AEs, including vaccine administration errors
    - 58 federal and tribal sites representing IHS Areas
    - Supports reporting to VAERS

Slide courtesy CAPT Matthew A. Clark, MD, FACP, FAAP, Indian Health Service

- **DoD Vaccine Adverse Event Reporting System (VAERS) data**- ***Spontaneous adverse event reporting for DoD population***
- **Vaccine Adverse Event Clinical System (VAECS)** ***Case tracking and evaluation of adverse events following immunizations in the DoD and DoD-affiliated populations***
- **DoD Electronic Health Record and Defense Medical Surveillance System** –***Large linked electronic health records (AHLTA/MHS GENESIS) and administrative data systems for near real-time safety monitoring and research***
- **Joint Trauma System/COVID 19 Vaccine Breakthrough Metrics-** ***Case tracking of COVID-19 infection 14 days or greater following receipt of vaccine***

COVID-19 Vaccine Safety Technical (VaST) Work Group

- Serve as the central hub for technical subject matter expertise from federal agencies conducting post-authorization/approval safety monitoring
- Weekly or biweekly review of data on adverse events of special interest (AESI)
- Shared learning including all members, federal partners, and subject matter experts
- Review, evaluate, and interpret post-authorization safety data
- Advise on analyses, interpretation, and data presentation
- Independent discussion of findings by VaST members
- VaST plans
  - Review safety data on 5–11-year-olds as soon as available
  - Continue close review of myocarditis data
  - Provide updates to the ACIP COVID-19 Vaccines Working Group and ACIP on COVID-19 vaccine safety

What can you do for vaccine safety?

- Report adverse events following vaccination to VAERS even if you aren't sure if the vaccination caused the adverse event

CDC + FDA

VAERS

Vaccine Adverse Event Reporting System

http://vaers.hhs.gov

- Enroll yourself in v-safe
- Healthcare providers, encourage your patients to enroll in v-safe
- Parents and guardians, you can enroll your children in v-safe

v-safe℠ after vaccination health checker

vsafe.cdc.gov/en/

Please get involved, your participation matters

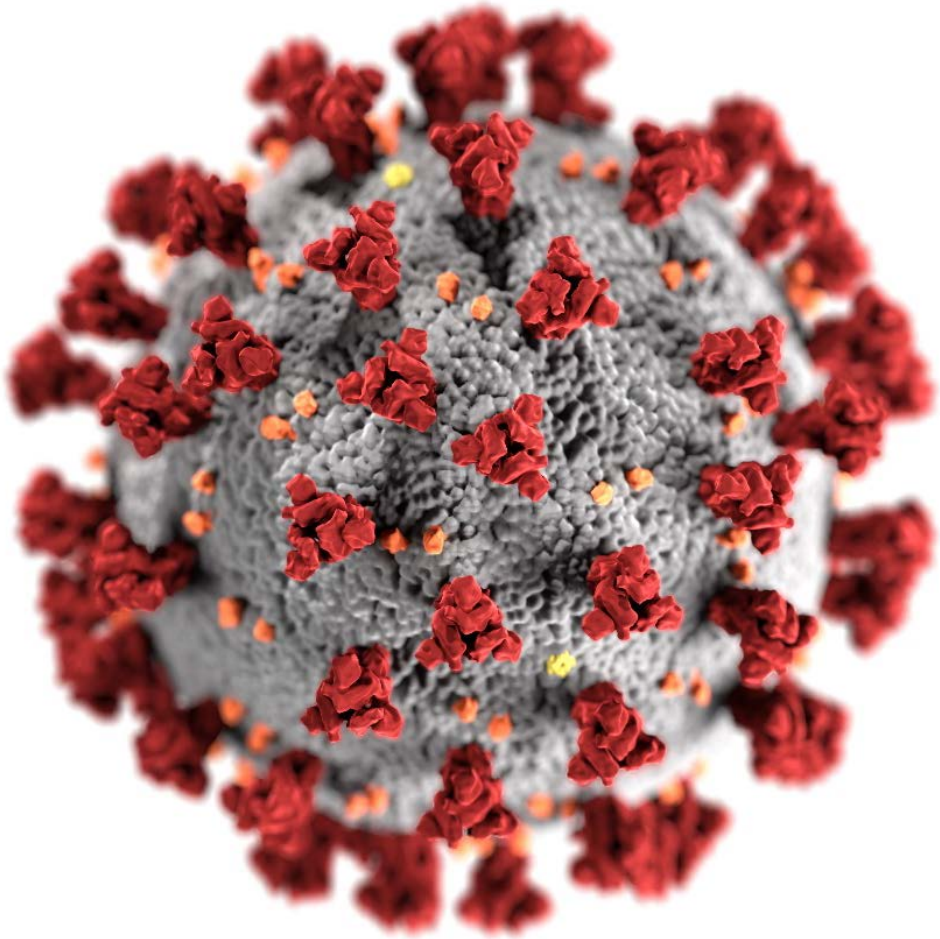
Acknowledgments

- V-safe Team
- V-safe Pregnancy Registry Team
- VAERS Team
- Clinical Immunization Safety Assessment (CISA) Project
- CDC team investigating long-term effects of myocarditis
- VSD Team, VSD participating sites, and investigators from Kaiser Permanente Northern California and the Marshfield Clinic Research Institute
- FDA/Center for Biologics Evaluation and Research
- Indian Health Service
- U.S. Department of Defense, Defense Health Agency

Disclaimer

- The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention (CDC)
- Mention of a product or company name is for identification purposes only and does not constitute endorsement by CDC

Thank you!



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

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