COVID-19 Vaccine Safety Technical (VaST) Work Group

Safety Assessment

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Advisory Committee on Immunization Practices
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COVID-19 Vaccine Safety Technical (VaST) Work Group

Objectives

- Review, evaluate, and interpret post-authorization/approval COVID-19 vaccination safety data
- Serve as the central hub for technical subject matter expertise from federal agencies conducting post-authorization/approval safety monitoring
- Advise on analyses, interpretation, and presentation of vaccine safety data
- Provide updates to the ACIP COVID-19 Vaccines Work Group and the entire ACIP on COVID-19 vaccine safety

https://www.cdc.gov/vaccines/acip/workgroups.html

VaST continues to review COVID-19 vaccination safety data from passive and active surveillance systems

- U.S. safety monitoring systems including Vaccine Adverse Events Reporting System (VAERS), Vaccine Safety Datalink (VSD), FDA BEST System,[1] Department of Veterans Affairs (VA), Indian Health Service (IHS), Department of Defense (DoD)
- International partners, including Public Health Agency of Canada, Global Advisory Committee on Vaccine Safety
- Special evaluations, including myocarditis case follow-up studies

[1]https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/cber-biologics-effectiveness-and-safety-best-system

VaST activities

- From December 21, 2020 through February 4, 2022
  - 45 independent meetings to review vaccine safety data
  - 12 joint meetings with ACIP COVID-19 Vaccines Work Group
  - 15 ACIP meeting presentations or reports with VaST assessments

VaST review, Moderna COVID-19 vaccine post-authorization safety data

- VaST has continued to review data from
  - CDC safety monitoring systems*
  - Other U.S. monitoring systems
  - International partners

*VAERS (a joint CDC/FDA effort), v-safe, VSD

Anaphylaxis following mRNA COVID-19 vaccination

- Anaphylaxis following mRNA COVID-19 vaccination identified Dec 2020
- Safety data and VaST assessments presented at January & March 2021 ACIP[1]
- CDC and FDA recommended risk mitigation strategies, including:
  - Screening for risk prior to vaccination
  - Monitoring for symptoms post-vaccination
  - Early recognition and management of anaphylaxis on-site
  - Provider and patient education by CDC and partners
- Anaphylaxis following vaccination reviewed again August 2021 for Pfizer BLA[2]
- No substantial change in benefit-risk balance with risk mitigation strategies

[1]https://www.cdc.gov/vaccines/acip/meetings/slides-2021-1-27-21.html; https://www.cdc.gov/vaccines/acip/meetings/slides-2021-02-28-03-01.html
[2]https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-08-30/05-COVID-Lee-508.pdf

Myocarditis following mRNA COVID-19 vaccination

- Myocarditis following mRNA COVID-19 vaccination identified in May 2021[1]
- CDC issued clinical guidance for myocarditis/pericarditis following mRNA vaccines, May 2021
- Data presented at the Vaccines and Related Biologics Products Advisory Committee (VRBPAC), June 10
- Data and VaST assessment presented at ACIP meeting on June 23[2] and MMWR published
- EUA fact sheets revised with warning added, June 25
- FDA approval of Pfizer BioNTech COVID-19 vaccine on August 23, 2021
  - Information on myocarditis/pericarditis in package insert[3]
- FDA approval of Moderna COVID-19 vaccine on January 31, 2022
  - Information on myocarditis/pericarditis in package insert[4]

[1]https://www.cdc.gov/vaccines/acip/work-groups-vast/index.html; [2]https://www.cdc.gov/vaccines/acip/meetings/slides-2021-06.htm;
[3]https://www.fda.gov/media/151707/download; [4] https://www.fda.gov/media/155675/download

VAERS: Reporting rates (per 1 million doses administered) of myocarditis, days 0–7 after Moderna mRNA COVID-19 vaccination

- Reporting rates exceed background incidence

  Males
  - After dose 1: 18–39 years
  - After dose 2: 18–49 years

  Females
  - After dose 2: 18–29 years

	Males		Females	
Ages (years)	Dose 1	Dose 2	Dose 1	Dose 2
18-24	**5.8**	**40.0**	0.5	**5.5**
25-29	**2.9**	**18.3**	0.3	**5.8**
30-39	**3.3**	**8.4**	0.6	0.6
40-49	0.5	**3.5**	0.8	1.6
50-64	0.7	0.9	0.8	0.4
65+	0.2	0.6	0.1	0.5

Males, N = 283; Females, N = 76; Data through January 13, 2022
Source: Shimabukuro, Feb 4, 2022 ACIP presentation

VSD: Confirmed myocarditis/pericarditis in 0–7-day risk interval among 18–39-year-olds compared with events in vaccinated comparators, Moderna vaccination

Moderna COVID-19 vaccine	Adjusted rate ratio[1] (95% CI)	2-sided P-value	Excess cases in risk interval (per million doses)
Both doses	9.18 (4.12 – 22.89)	<0.001	18.8
Dose 1	3.46 (1.12 – 11.07)	0.031	6.9
Dose 2	18.75 (6.73 – 64.94)	<0.001	31.2
Dose 2 males	16.96 (6.02 – 59.17)	<0.001	61.8
Dose 2 females	NE[2] (0.93 – ∞)	0.056	6.2

[1]Adjusted for VSD site, 5-year age group, sex, race/ethnicity, and calendar date
[2]NE = not estimable
Source: Shimabukuro, Feb 4, 2022 ACIP presentation; data through Jan 15, 2022

Myocarditis outcomes following mRNA COVID-19 vaccination

- VAERS
  - 359 reports meeting case definition among individuals ≥18 years in 0–7 days post-vaccination
  - 94% hospitalized
  - 69% recovered from symptoms at time of VAERS report
- Follow-up surveys of myocarditis cases in VAERS
  - 360 patients interviewed with ≥ 90 days of follow-up
  - 92% hospitalized
  - 380 providers contacted, 81% indicated patient fully or probably fully recovered
- VSD (following Moderna vaccination)
  - 38 chart confirmed cases among individuals aged 18-39 years
  - 79% hospitalized; 75% for 2 days or less
  - 100% discharged to home

Sources: Shimabukuro, Feb 4, 2022 ACIP presentation; Kracalik, Feb 4, 2022 ACIP presentation; Klein, Feb 4, 2022 ACIP presentation

VaST Assessment

- Data available to date show association of myocarditis with Moderna mRNA COVID-19 vaccination in adolescents and young adults
- Risk is low overall, but highest in adolescent and young adult males, following dose 2
- Data continue to show that most cases of post-COVID-19 vaccination myocarditis appear clinically mild
- More data are being accumulated and analyzed to further define myocarditis clinical course and risk
- At the present time, data do not suggest new safety concerns regarding Moderna vaccination among persons aged 18 years or older, beyond those previously identified

VaST Next Steps

- Continue to review data on myocarditis from national safety monitoring systems and manufacturer post-marketing requirements
- Continue to review real-time monitoring of vaccine safety as vaccination efforts expand to younger age groups, boosters doses, and new vaccines
- Collaboration across U.S. federal agencies evaluating vaccine safety
- Collaboration with global vaccine safety colleagues on key issues that impact benefit-risk balance
- Continue to provide updates to the ACIP COVID-19 Vaccines Workgroup and the ACIP at future meetings

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