FDA Updates of COVID-19 Vaccine Safety Activities

Vaccines and Related Biological Products Advisory Committee
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US Vaccine Surveillance Programs: Post-Authorization

Passive Surveillance of Vaccines

a. Vaccine Adverse Event Reporting System (VAERS)
   - Management shared by CDC and FDA
   - Discussed by Dr. Shimabukuro - CDC

FDA Vaccine Active Surveillance Programs: Post-Authorization

Active Surveillance Monitoring Programs

a. **FDA-CMS Medicare data**: Claims data
b. **FDA BEST system**: Claims and EHR data

FDA-CMS Medicare Data: Active Surveillance

Federal Partners

- Data cover very large population of approximately 34 million elderly US beneficiaries ≥ 65 years of age
- >92% of US elderly use Medicare
- Consists of claims data with access to medical charts

FDA BEST: Active Surveillance

Biologics Effectiveness and Safety Initiative

- Use of claims data for Vaccine Safety:
  - 3 major partners – Optum, CVS Health, HealthCore
- Emphasis on detection of rare vaccine adverse events (<1/100,000 doses)

FDA Near Real-Time Surveillance COVID-19 Vaccines:

CMS + BEST Claims Databases

Data Source (Claims)	Update Frequency	Number of Patients Covered, Millions (National)	Status of Rapid Cycle Analyses
CMS	Daily	**105**	Initiated early March
Optum* (Pre-Adjudicated)	Bi-Weekly	**22**	Initiated mid-May
CVS Health*	Monthly	**26**	Initiation: 1st week of June
HealthCore*	Monthly	**76**	Initiation: 3rd week of June

**Major Sentinel PRISM Partners*

FDA Near Real-Time Surveillance
COVID-19 Vaccine Dose Totals
CMS + BEST Claims Databases

Databases	Pfizer	Moderna	Janssen
CMS* **(data cutoff: 05/22/2021)**	8,630,677	8,815,039	309,315
Optum (Pre-adjudicated) **(data cutoff: 05/17/2021)**	1,971,547	1,178,754	129,369
CVS Health **(data cutoff: 04/30/2021)**	1,648,417	1,122,970	104,267
HealthCore **(data cutoff: 05/31/2021)**	3,508,200	2,507,711	214,111

*65+ years

FDA COVID-19 Vaccine Safety Signal Detection

Conducting “Near real-time surveillance” of 16 safety outcomes of interest:

- Approach used by US government agencies for H1N1 Monitoring in 2009 & 2010

- Approach routinely used by FDA and CDC annually for vaccines

FDA Near Real-Time Surveillance of COVID-19 Vaccines

Working list of at least 16 possible adverse events of special interest (AESI)

Acute myocardial infarction	Bell's Palsy	Narcolepsy
Anaphylaxis	Encephalomyelitis	Non-hemorrhagic Stroke
Appendicitis	Guillain-Barré syndrome	Pulmonary Embolism (PE)
Disseminated intravascular coagulation (DIC)	Hemorrhagic Stroke	Transverse Myelitis
Deep Vein Thrombosis (DVT)	Myocarditis/Pericarditis	Immune thrombocytopenia (ITP)
	Thrombosis with Thrombocytopenia	

Data Coverage of US population

- US government-wide approach provides advantages in covering broader portion of US population
- Primary coverage by three age stratifications
  - ≥ 65 years: FDA-CMS (VSD, VA, BEST)
  - 18 - 64 years: VSD, VA, BEST
  - ≤17 years: VSD, BEST

FDA BEST Data Coverage of US population:

Pediatric Population: Number of Enrollees from January 2021-Present

Data Source	Age < 12 years	Age 12-17 years	Age 18-64 years
CVS Health	2,209,147	1,320,594	12,562,033
Optum (Pre-adjudicated)	1,943,993	1,149,942	10,613,669
HealthCore	2,688,839	1,694,841	15,630,314

Initial Results Myocarditis/Pericarditis Near Real-Time Surveillance in BEST and CMS

Database	Vaccine	Vaccine Doses	Myocarditis/Pericarditis Events after Vaccination (42 days risk interval)	Safety Signal
CMS, ages ≥65 years (data through 5/22)	Pfizer-BioNTech	8.6 M	636	No
	Moderna	8.8 M	601	No
	Janssen	0.31 M	23	No

Initial Results Myocarditis/Pericarditis Near Real-Time Surveillance in BEST and CMS

Database	Vaccine	Vaccine Doses	Myocarditis/Pericarditis Events after Vaccination (42 days risk interval)	Safety Signal
Optum Pre-adjudicated, ages 12-64 years (data through 5/17)	Pfizer-BioNTech	1.9 M	63	No
	Moderna	1.1 M	32	No
	Janssen	0.13 M	4	No

Next Steps

Epidemiological Studies to follow up on potential signals identified by VAERS and Near Real-Time Surveillance:

- Study Protocols – inferential studies, SCRI, cohort analyses, etc.
  - To follow CVST/TTS and Myocarditis/Pericarditis
  - Focus on subpopulations – pediatric, pregnant persons, elderly and residents of long-term care facilities, comorbidities, etc.

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- CBER OBE Colleagues
- CDC Colleagues
- CMS Colleagues
- VA Colleagues
- FDA Partners: Acumen, IBM Watson – and new partners in FY2021

Thank you!

Questions?

RESERVE SLIDES

FDA BEST COVID-19 Vaccine Protocols

1. Background Rates of Adverse Events of Special Interest for COVID-19 Vaccine Safety Monitoring Protocol
2. COVID-19 Vaccine Safety Surveillance: Active Monitoring Master Protocol
3. Assessment of Risk of Safety Outcomes Following COVID-19 Vaccination Draft Master Protocol
4. Assessment of the Performance of COVID-19 Diagnosis Code Using SARS-CoV-2 Test Results Draft Protocol

Learn More on BEST's
Vaccines and Allergenics website

CBER Surveillance Program Collaborative

Through multiple contracts and partnerships, CBER works with a diverse group of scientists and clinicians to conduct active surveillance.

Note: CERSI: Centers of Excellence in Regulatory Science and Innovation