CBER Plans for Monitoring COVID-19 Vaccine Safety and Effectiveness

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FDA Vaccine Surveillance Programs: Post-Licensure

1. Passive Surveillance of Vaccines
   a) Vaccine Adverse Event Reporting System (VAERS)
      • Management shared by CDC and FDA

2. Active Surveillance Monitoring Program
   a) FDA BEST
   b) FDA-CMS partnership
FDA Vaccine Surveillance Programs: Post-Licensure

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Have you had a reaction following a vaccination?

1. Contact your healthcare provider.
2. Report an Adverse Event using the VAERS online form or the new downloadable PDF. New!

Important: If you are experiencing a medical emergency, seek immediate assistance from a healthcare provider or call 9-1-1. CDC and FDA do not provide individual medical treatment, advice, or diagnosis. If you need individual medical or health care advice, consult a qualified healthcare provider.

¿Ha tenido una reacción después de recibir una vacuna?

1. Contacte a su proveedor de salud.
2. Reporte una reacción adversa utilizando el formulario de VAERS en línea o la nueva versión PDF-descargable. Nuevo!

What is VAERS?

- Report an Adverse Event
- Search VAERS Data
- Review Resources
- Submit Follow-Up Information

http://vaers.hhs.gov
1. VAERS – FDA CBER Efforts

- CDC presentation covered VAERS so will provide summary of FDA efforts

- **FDA and CDC have weekly and bi-weekly coordination meetings** on VAERS and Pharmacovigilance activities between CBER OBE and OBE Division of Epidemiology (DE) and CDC Immunization Safety Office

- **CBER DE Physicians will be reviewing the serious adverse event reports** from VAERS for COVID-19 vaccines – review of individual reports, death reports, conduct aggregate analyses, case-series, etc.

- **FDA will utilize statistical data-mining methods** to detect disproportional reporting of specific vaccine-adverse event combinations to identify AEs that are more frequently reported
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FDA Vaccine—Legislative Authorization Active Surveillance

Legislation, mandates and Current Surveillance

FDA Amendments Act of 2007:
- Directed FDA to develop an active risk identification and analysis system – such as Sentinel, and later BEST, and others and covers >100 million persons

Prescription Drug User Fee Act VI (2017)
- Discussion between FDA and Industry on Priority Areas - Renewed every 5 yrs
- Provides resources/funding for Sentinel, BEST, real-world evidence, etc
COVID-19 Vaccine Monitoring

Data Considerations

• **Rapid data access** for near real time surveillance

• **Large databases of tens of millions of patients** for evaluating vaccine rare serious adverse events

• **Data representing integrated care spectrum** – outpatient, physician, inpatient, etc.

• **High quality data** to assess and confirm potential adverse events or safety concerns for COVID-19 vaccines

• **Data with significant clinical detail** or medical chart access
2a. FDA Biologics Effectiveness and Safety (BEST) System

- Several partners – Acumen, IBM Watson, IQVIA, OHDSI, HealthCore, Humana, Optum, Healthagen, MedStar, OneFlorida, and Academic organizations
- Represents variety of healthcare settings – inpatient, emergency department, outpatient, etc.
- Emphasis on inclusion of Electronic Health Record (EHR) data, some claims data and linked Claims-EHR data
## BEST Initiative Expansion

### CLAIMS Data Sources

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<th>Data Sources</th>
<th>Type</th>
<th>Patients (millions)</th>
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<tbody>
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Data lag: 1-12 months depending on data source
# BEST Initiative Expansion

## EHR Data Sources

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<td>OneFlorida Clinical Research Consortium</td>
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<td>MarketScan Explorys Claims-EHR (CED)</td>
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<tr>
<td>Optum</td>
<td>Linked EHR-Claims</td>
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Data lag: 1-2 weeks to 4 months depending on data source
Why the BEST Initiative?

A modern surveillance system that is able to perform a diversity of queries and studies.
2b. CMS (Center for Medicare & Medicaid Services)

- Federal Partners
  - Ongoing FDA-CMS partnership on vaccine safety since 2002
  - Data cover very large population of approximately 55 million elderly US beneficiaries ≥65yrs of age
  - >92% of US elderly use Medicare so database represents the elderly population and not a sample
  - Represents variety of healthcare settings – inpatient, outpatient, etc.
  - Consists of claims data with access to medical charts
Limitations of Data Systems

• Not all claims and EHR data systems can be used to address a vaccine safety or effectiveness regulatory question

• Each data system has its limitations
  – Populations, healthcare settings, clinical detail, necessary parameters, data lag, exposures and outcomes that are captured
“Near real-time surveillance” or rapid-cycle analyses (RCA)

- FDA plans on monitoring 10-20 safety outcomes of interest to be determined based on:
  - Pre-market review of sponsor safety data submitted to FDA
  - In coordination with federal partners, international regulatory partners and organizations, academic experts, others
  - Literature and regulatory experience with similar vaccines, novel vaccine platforms, and using other relevant data
  - FDA plans on using CMS data for COVID-19 vaccine RCA – near real time with efforts
FDA Safety Surveillance of COVID-19 Vaccines:
**DRAFT Working list of possible adverse event outcomes***

***Subject to change***

- Guillain-Barré syndrome
- Acute disseminated encephalomyelitis
- Transverse myelitis
- Encephalitis/myelitis/encephalomyelitis/meningoencephalitis/meningitis/encephalopathy
- Convulsions/seizures
- Stroke
- Narcolepsy and cataplexy
- Anaphylaxis
- Acute myocardial infarction
- Myocarditis/pericarditis
- Autoimmune disease

- Deaths
- Pregnancy and birth outcomes
- Other acute demyelinating diseases
- Non-anaphylactic allergic reactions
- Thrombocytopenia
- Disseminated intravascular coagulation
- Venous thromboembolism
- Arthritis and arthralgia/joint pain
- Kawasaki disease
- Multisystem Inflammatory Syndrome in Children
- Vaccine enhanced disease
FDA Experience with Near Real Time Surveillance / RCA

FDA and CMS - RCA

- Conduct “near real-time” surveillance for annual influenza vaccine and Guillain-Barre Syndrome (GBS) since 2007

FDA Sentinel – Rapid Surveillance

- Near real-time, rapid surveillance in 2017-2018 seasonal influenza vaccine – evaluation of 6 health outcomes of interest
FDA COVID-19 vaccine safety surveillance Plans

- Epidemiological analyses
  - Need capability to resolve potential safety signals identified from near real-time surveillance, TreeScan signal detection efforts and other sources
  - Rapid queries and small epidemiological studies
  - Larger self-controlled, cohort, comprehensive protocol-based studies
3. COVID-19 Vaccine Effectiveness Surveillance Plans

- COVID-19 vaccine(s) – there may be limited information available at licensure on level and duration of effectiveness
- Manufacturers may conduct certain COVID-19 vaccine effectiveness post-licensure studies
- FDA may conduct COVID-19 vaccine effectiveness studies
  - General effectiveness studies – including subpopulations of interest
  - Duration of protection studies
  - Others
- FDA coordinating COVID-19 Vaccine Effectiveness efforts with the CDC NCIRD through monthly, bi-monthly meetings
FDA-CMS-CDC Vaccine Effectiveness Experience

• Extensive experience with the data and methods needed to conduct vaccine effectiveness studies

• Produced several vaccine effectiveness and relative vaccine effectiveness studies for influenza and zoster vaccines

• Conducted duration of effectiveness analysis of Zostavax vaccine
Large US Government Effort

FDA Coordinating its COVID-19 vaccine safety and effectiveness monitoring efforts with other government agencies:

- Centers for Disease Control (CDC)
- Centers for Medicare & Medicaid Services (CMS)
- Veterans Administration (VA)
- National Institutes of Health
- Department of Defense
- Indian Health Services
4. US Government-wide Efforts

COVID-19 Vaccine Monitoring (2)

Large US Government Effort

- Weekly meetings between FDA and CDC, regular meetings with VA and CMS
- Planned sharing of protocols, discussion safety and effectiveness outcomes of interest
- Coordinated planning and conduct of surveillance activities such as near real time surveillance/RCA between FDA, CDC, CMS, VA, and DOD
Acknowledgments

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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?