# Preventing Common Vaccine Administration Errors

ImmunizeAR
ARKANSAS IMMUNIZATION ACTION COALITION

Presentation By:

Allie Staton, PharmD
Vaccine Confidence Strategist
Immunize Arkansas

# Objectives

- Identify common preventable vaccine administration errors
- Recognize how to prevent vaccine administration errors
- Understand what to do if a vaccine administration error occurs

# Common Preventable Vaccine Administration Errors

# Common Vaccine Administration Errors

**Common vaccine administration errors include:**

- Doses administered too early
- Wrong vaccine
- Wrong dosage
- Wrong route
- Vaccine administered outside the approved age range
- Expired vaccine or diluent administered
- Improperly stored vaccine administered
- Vaccine administered to a patient with a contraindication
- Wrong diluent used to reconstitute the vaccine or only the diluent was administered

https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html

# Common Vaccine Administration Errors

**Common vaccine administration errors may be due to:**

- Insufficient staff training
- Distraction
- Changes in recommendations
- Lack of standardized protocols
- Patient misidentification
- Using nonstandard or error-prone abbreviations
- Easily misidentified products

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# Error Prevention Strategies

# Error Prevention

**Prevent administering the wrong vaccine.**

**Prevent administering a vaccine by the wrong route.**

**Prevent administering a vaccine to the wrong site.**

**Prevent administering a vaccine to the wrong patient.**

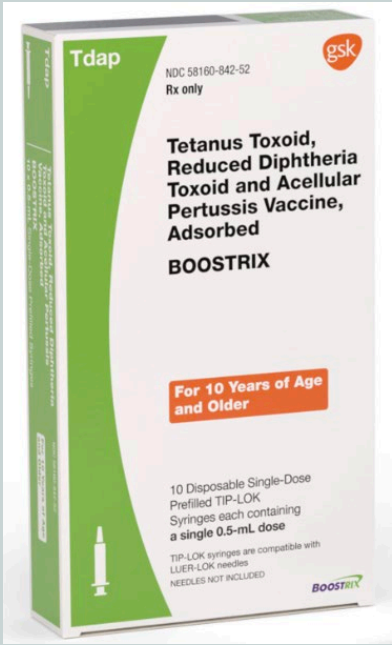
**Prevent administering a vaccine that is expired or improperly prepared.**

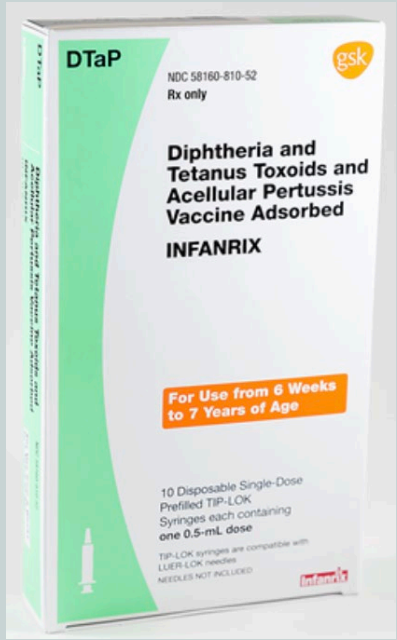
**Prevent administering a vaccine ”off schedule”.**

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# Error Prevention

- Place vaccines that look-alike in different areas of the vaccine storage unit.
- Consider using “look-alike” stickers on vaccine packaging and areas where these vaccines are stored.





https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# Error Prevention

- Use vaccines with the earliest expiration date first.
  - Rotate inventory so the vaccines that will expire the earliest are at the front of the vaccine storage unit.
  - Establish a regular schedule for checking vaccine expiration dates.

- Remove expired vaccines/diluents from storage units and areas where usable vaccines are stored.
  - Always check expiration date before preparing a vaccine.
  - Check manufacturer guidance on how to properly dispose of expired vaccines.
  - Be sure to document expired vaccines appropriately.

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# Error Prevention

- Provide appropriate staff training for vaccine administration.
  - Train staff regarding vaccine storage and handling based on manufacturer guidance and/or requirements.
  - If your staff is administering vaccines, they should be appropriately trained, certified, and comfortable preparing and administering vaccines in your facility.
  - Don’t assume they know your protocols or are comfortable doing things on their own, especially when they are new.
  - Make sure they have a reliable person to go to with questions and that they *can and should* use this person.

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf
https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-needle-length.pdf

# Error Prevention

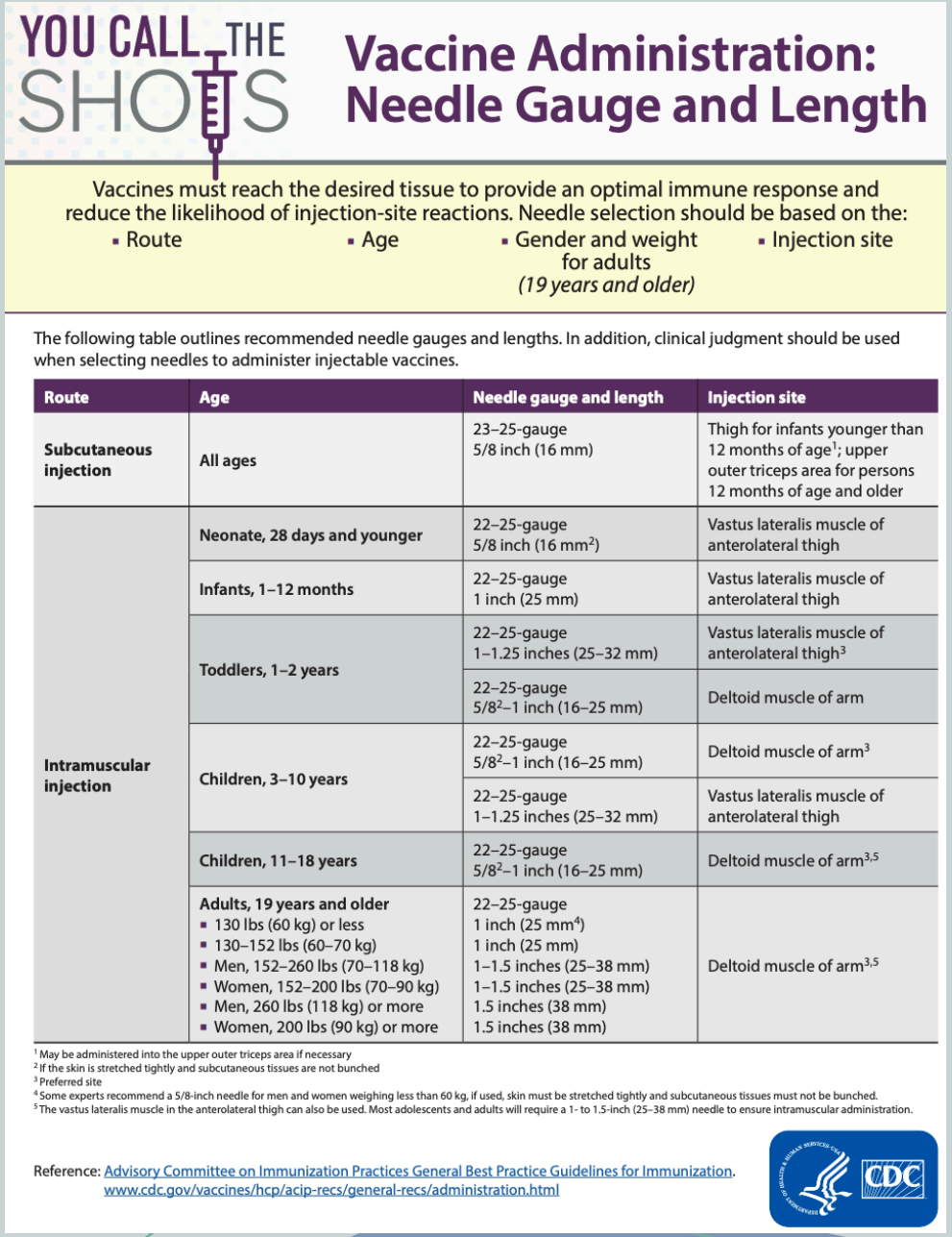
- Distinguish “Do Not Disturb” areas for preparing and/or administering vaccines.
  - Educate staff on the importance of avoiding distractions while preparing and administering vaccines.


- Triple-check your vaccine preparation before administering a vaccine.
  - Was dilution required?
  - Did you mix or shake appropriately?
  - Does the vaccine look like it should? (correct color, nothing floating around, etc.)
  - Did you push the air out of the syringe?

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# Error Prevention

- Keep reference materials on recommended sites, routes, and needle lengths for each vaccine used in your facility.



YOU CALL THE SHOTS

## Vaccine Administration: Needle Gauge and Length

Vaccines must reach the desired tissue to provide an optimal immune response and reduce the likelihood of injection-site reactions. Needle selection should be based on the:

- Route
- Age
- Gender and weight for adults *(19 years and older)*
- Injection site

The following table outlines recommended needle gauges and lengths. In addition, clinical judgment should be used when selecting needles to administer injectable vaccines.

| Route | Age | Needle gauge and length | Injection site |
|---|---|---|---|
| **Subcutaneous injection** | **All ages** | 23–25-gauge<br>5/8 inch (16 mm) | Thigh for infants younger than 12 months of age[1]; upper outer triceps area for persons 12 months of age and older |
| **Intramuscular injection** | **Neonate, 28 days and younger** | 22–25-gauge<br>5/8 inch (16 mm[2]) | Vastus lateralis muscle of anterolateral thigh |
| | **Infants, 1–12 months** | 22–25-gauge<br>1 inch (25 mm) | Vastus lateralis muscle of anterolateral thigh |
| | **Toddlers, 1–2 years** | 22–25-gauge<br>1–1.25 inches (25–32 mm) | Vastus lateralis muscle of anterolateral thigh[3] |
| | | 22–25-gauge<br>5/8[2]–1 inch (16–25 mm) | Deltoid muscle of arm |
| | **Children, 3–10 years** | 22–25-gauge<br>5/8[2]–1 inch (16–25 mm) | Deltoid muscle of arm[3] |
| | | 22–25-gauge<br>1–1.25 inches (25–32 mm) | Vastus lateralis muscle of anterolateral thigh |
| | **Children, 11–18 years** | 22–25-gauge<br>5/8[2]–1 inch (16–25 mm) | Deltoid muscle of arm[3,5] |
| | **Adults, 19 years and older**<br>▪ 130 lbs (60 kg) or less<br>▪ 130–152 lbs (60–70 kg)<br>▪ Men, 152–260 lbs (70–118 kg)<br>▪ Women, 152–200 lbs (70–90 kg)<br>▪ Men, 260 lbs (118 kg) or more<br>▪ Women, 200 lbs (90 kg) or more | 22–25-gauge<br>1 inch (25 mm[4])<br>1 inch (25 mm)<br>1–1.5 inches (25–38 mm)<br>1–1.5 inches (25–38 mm)<br>1.5 inches (38 mm)<br>1.5 inches (38 mm) | Deltoid muscle of arm[3,5] |

[1] May be administered into the upper outer triceps area if necessary
[2] If the skin is stretched tightly and subcutaneous tissues are not bunched
[3] Preferred site
[4] Some experts recommend a 5/8-inch needle for men and women weighing less than 60 kg, if used, skin must be stretched tightly and subcutaneous tissues must not be bunched.
[5] The vastus lateralis muscle in the anterolateral thigh can also be used. Most adolescents and adults will require a 1- to 1.5-inch (25–38 mm) needle to ensure intramuscular administration.

Reference: Advisory Committee on Immunization Practices General Best Practice Guidelines for Immunization. www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf
https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-needle-length.pdf

# Error Prevention

- Post current immunization schedules for children and adults in the areas where vaccines may be prescribed and where they will be administered.

- Include vaccine administration training, including timing and spacing of vaccines, into employee training.
  - Don’t assume employees are comfortable or confident in utilizing current immunization schedules.

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

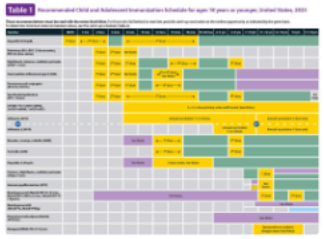
# Error Prevention

**CDC Immunization Schedules**

https://www.cdc.gov/vaccines/schedules/index.html

## Child and Adolescent Schedule

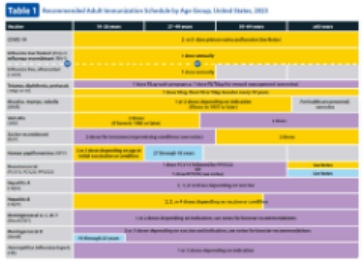
Recommended vaccination schedule for ages 18 years or younger



Birth to 18 Years

## Adult Schedule

Recommended vaccination schedule for ages 19 years or older



19 Years or Older

# Error Prevention

- Provide education when new products are added to inventory.
  - Information about new products should be posted and easily accessible for appropriate staff.
- Provide education when recommendations are changed.
  - Information about updated recommendations should be posted and easily accessible for appropriate staff.

**NEW VACCINE ALERT!**

Read important info below.

After reading, please sign the attached form. Return signed form to *this person* by *this date*.

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf
https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-needle-length.pdf

# Error Prevention

- Create procedures to obtain a complete vaccination history using the immunization information system (IIS), previous medical records, and personal vaccination records.
  - If no records are available, you must assume the patient has never received the vaccine or vaccine series.
  - Follow current CDC guidance on what to do.

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# Error Prevention

- Counsel parents and patients on the importance of keeping an accurate record of vaccination history.
  - In Arkansas, it is only REQUIRED to document routine vaccinations in the state immunization registry for patients under the age of 22.
    - Exception: COVID-19 vaccines
  - State immunization registries currently do not communicate with each other.

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# Error Prevention

- Verify the patient's identity before administering any vaccine.
  - Ask name, date of birth, and confirm which vaccines you will be administering.


- Prepare and administer vaccines for one patient at a time.
  - If you have more than one patient to administer vaccines to during the same visit, take extra precautions to verify everything before you administer any vaccines.
  - Keep everything separate and organized.

https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

# If a Vaccine Administration Error Occurs...

# Common Vaccine Administration Errors

Traditionally, medication errors are thought to be caused by mistakes. This “blame-seeking” approach fails to address the root cause, potentially causing the error to recur. An environment that values the reporting and investigation of errors (and “near misses”) as part of risk management and quality improvement should be established. Health care personnel should be encouraged to report errors and trust that the situation and those involved will be treated fairly without fear of punishment and ridicule. Error reporting provides opportunities to discover how the errors occur and to share ideas to prevent or reduce those errors in the future. When a vaccine administration error occurs, health care providers should determine how it happened and put strategies in place to prevent it in the future.

Guidance for handling some common vaccine administration errors is included in ACIP’s *General Best Practice Guidelines for Immunization*. Some vaccine administration errors require revaccination, but others do not.

https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html

# 1. Recognize a mistake was made.

- Some errors may be recognized immediately.
- Others may be recognized long after the mistake occurred.
- ALL errors must be handled appropriately, regardless of when the mistake was recognized.

# 2. Report mistake to appropriate staff.

- Make sure you know who to report vaccine errors to in your clinic.
- Every clinic should have a protocol on error reporting.

# 3. Research what to do.

- Who should notify the patient?
- Does the patient need a repeat dose? If so, when?
- Does the error need to be reported to the Vaccine Adverse Event Reporting System (VAERS)?
  - Requirement for some errors
  - Encouraged for some errors

# QUESTION

Who in this room has either:

1. Made a vaccine administration error

   **OR**

2. Helped a colleague figure out what to do after an administration error occurred?

# Vaccine Adverse Event Reporting System (VAERS)

Everyone is encouraged to report possible adverse events after vaccination to VAERS, even if they are not sure whether the vaccine caused the problem. In general, **you should report any side effect or health problem after vaccination that is concerning to you.**

Under the National Childhood Vaccine Injury Act (NCVIA), healthcare providers are **required by law** to report to VAERS:

- Any adverse event listed in the VAERS Table of Reportable Events Following Vaccination [PDF – 5 Pages] that occurs within the specified time period after vaccinations
- An adverse event listed by the vaccine manufacturer as a contraindication to further doses of the vaccine

Healthcare providers are strongly **encouraged** to report to VAERS:

- Any adverse event that occurs after the administration of a vaccine licensed in the United States, whether it is or is not clear that a vaccine caused the adverse event
- Vaccine administration errors

**REQUIRED to report vaccine administration errors for COVID-19 vaccines.**

https://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vaers/reportingaes.html

# Vaccine Adverse Event Reporting System (VAERS)

Under the National Childhood Vaccine Injury Act (NCVIA), healthcare providers are **required by law** to report to VAERS:

- Any adverse event listed in the VAERS Table of Reportable Events Following Vaccination [PDF – 5 Pages] that occurs within the specified time period after vaccinations
- An adverse event listed by the vaccine manufacturer as a contraindication to further doses of the vaccine

**VAERS Table of Reportable Events Following Vaccination***

| Vaccine/Toxoid | Event and interval** from vaccination |
|---|---|
| Tetanus in any combination; DTaP, DTP, DTP-Hib, DT, Td, TT, Tdap, DTaP-IPV, DTaP-IPV/Hib, DTaP-HepB-IPV | A. Anaphylaxis or anaphylactic shock (7 days)<br>B. Brachial neuritis (28 days)<br>C. Shoulder Injury Related to Vaccine Administration (7 days)<br>D. Vasovagal syncope (7 days)<br>E. Any acute complications or sequelae (including death) of above events (interval - not applicable)<br>F. Events described in manufacturer's package insert as contraindications to additional doses of vaccine (interval - see package insert) |

https://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vaers/reportingaes.html

# Vaccine Adverse Event Reporting System (VAERS)

## IMPORTANT TO KNOW

- VAERS reports can be submitted by anyone.
- VAERS data can be accessed by anyone.
- VAERS reporting helps CDC and FDA keep watch for unusual or unexpected adverse vaccine events.
- Open public access can help ensure adverse events are reported.
    - This can also lead to misinformation about vaccine adverse events.


https://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vaers/reportingaes.html

# 4. Learn from the mistake.

- How did the error occur?
- What measures can be put in place to prevent the error from happening again?

# Vaccine Injury

# National Vaccine Injury Compensation Program (VICP)

HRSA
Health Resources & Services Administration

## National Vaccine Injury Compensation Program

### Vaccines save lives by preventing disease

In fact, the Centers for Disease Control and Prevention (CDC) named immunizations as one of the ten most important public health achievements of the 20th century.

Most people who get vaccines have no serious problems, but like any medicine, they can cause side effects - most of which are rare and mild. In very rare cases, a vaccine can cause a serious problem, such as a severe allergic reaction.

In those instances, the National Vaccine Injury Compensation Program (VICP) provides individuals with an opportunity to file a petition or claim for financial compensation.

**The VICP is a no-fault alternative to the traditional legal system for resolving vaccine injury petitions.**

The National Childhood Vaccine Injury Act of 1986 created the VICP, which began on October 1, 1988, after a series of lawsuits threatened to cause vaccine shortages and reduce U.S. vaccination rates.

The following three organizations have a role in the VICP.

- The VICP is administered through the Department of Health and Human Services (HHS).
- The Department of Justice (DOJ) represents HHS in Court.
- The U.S. Court of Federal Claims (the Court) makes the final decision regarding whether a petitioner should be compensated.

Any individual, of any age, who received a covered vaccine and believes he or she was injured as a result, can file a petition. Parents, legal guardians and legal representatives can file on behalf of children, disabled adults and individuals who are deceased.

**Please note that, with limited exceptions, all petitions must be filed within 3 years after the first symptom of the alleged vaccine injury, or within 2 years of the death and 4 years after the first symptom of the alleged vaccine injury that resulted in death. For information about additional requirements that must be met in order to pursue compensation, visit the VICP website, www.hrsa.gov/vaccinecompensation.**

Did you know?

The risk of experiencing a severe allergic reaction from one of these commonly administered vaccines covered by the VICP – MMR, Hepatitis B, Diphtheria, Tetanus, and Pertussis-- *is 1 or less than 1 out of 1 million doses*, according to the CDC.

The Court makes the final decision regarding whether a petitioner should be compensated and the amount of compensation.

For more information about the VICP

Visit the website:
www.hrsa.gov/vaccinecompensation

1-800-338-2382

**National Vaccine Injury Compensation Program**

5600 Fishers Lane, 8N146B
Rockville, Maryland 20857

*Revised March 5, 2019*

## Vaccine Injury Table

***Applies Only to Petitions for Compensation Filed under the National Vaccine Injury Compensation Program on or after January 3, 2022***

(a) In accordance with section 312(b) of the National Childhood Vaccine Injury Act of 1986, title III of Public Law 99-660, 100 Stat. 3779 (42 U.S.C. 300aa-1 note) and section 2114(c) of the Public Health Service Act, as amended (PHS Act) (42 U.S.C. 300aa-14(c)), the following is a table of vaccines, the injuries, disabilities, illnesses, conditions, and deaths resulting from the administration of such vaccines, and the time period in which the first symptom or manifestation of onset or of the significant aggravation of such injuries, disabilities, illnesses, conditions, and deaths is to occur after vaccine administration for purposes of receiving compensation under the Program. Paragraph (b) of this section sets forth additional provisions that are not separately listed in this Table but that constitute part of it. Paragraph (c) of this section sets forth the qualifications and aids to interpretation for the terms used in the Table. Conditions and injuries that do not meet the terms of the qualifications and aids to interpretation are not within the Table. Paragraph (d) of this section sets forth a glossary of terms used in paragraph (c).

| Vaccine | Illness, disability, injury or condition covered | Time period for first symptom or manifestation of onset or of significant aggravation after vaccine administration |
|---|---|---|
| I. Vaccines containing tetanus toxoid (*e.g.,* DTaP, DTP, DT, Td, or TT) | A. Anaphylaxis | ≤4 hours. |
| | B. Brachial Neuritis | 2-28 days (not less than 2 days and not more than 28 days). |
| | C. Shoulder Injury Related to Vaccine Administration | ≤48 hours. |
| | D. Vasovagal syncope | ≤1 hour. |
| II. Vaccines containing whole cell pertussis bacteria, extracted or partial cell pertussis bacteria, or specific pertussis antigen(s) (*e.g.,* DTP, DTaP, P, DTP-Hib) | A. Anaphylaxis | ≤4 hours. |
| | B. Encephalopathy or encephalitis | ≤72 hours. |
| | C. Shoulder Injury Related to Vaccine Administration | ≤48 hours. |
| | D. Vasovagal syncope | ≤1 hour. |



https://www.hrsa.gov/vaccine-compensation

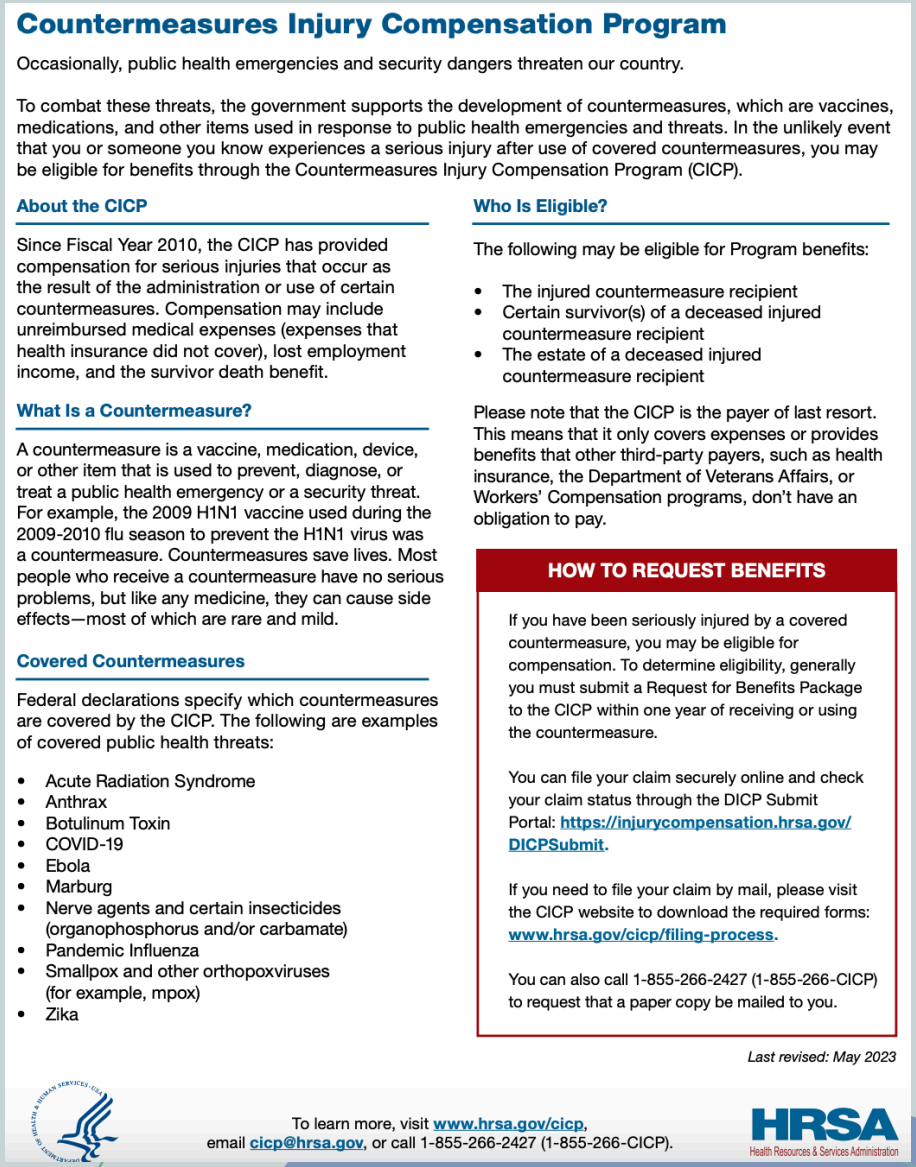
# Countermeasures Injury Compensation Program (CICP)

## COVID-19 Claims

For claims associated with the COVID-19 vaccine or other COVID-19 related countermeasures, please file your Request for Benefits with the Countermeasures Injury Compensation Program.

## Injured Countermeasure Recipient

An individual who was administered or used a covered countermeasure may file for compensation for their out-of-pocket, unreimbursed medical expenses and lost employment income benefits.



### Countermeasures Injury Compensation Program

Occasionally, public health emergencies and security dangers threaten our country.

To combat these threats, the government supports the development of countermeasures, which are vaccines, medications, and other items used in response to public health emergencies and threats. In the unlikely event that you or someone you know experiences a serious injury after use of covered countermeasures, you may be eligible for benefits through the Countermeasures Injury Compensation Program (CICP).

**About the CICP**

Since Fiscal Year 2010, the CICP has provided compensation for serious injuries that occur as the result of the administration or use of certain countermeasures. Compensation may include unreimbursed medical expenses (expenses that health insurance did not cover), lost employment income, and the survivor death benefit.

**What Is a Countermeasure?**

A countermeasure is a vaccine, medication, device, or other item that is used to prevent, diagnose, or treat a public health emergency or a security threat. For example, the 2009 H1N1 vaccine used during the 2009-2010 flu season to prevent the H1N1 virus was a countermeasure. Countermeasures save lives. Most people who receive a countermeasure have no serious problems, but like any medicine, they can cause side effects—most of which are rare and mild.

**Covered Countermeasures**

Federal declarations specify which countermeasures are covered by the CICP. The following are examples of covered public health threats:

- Acute Radiation Syndrome
- Anthrax
- Botulinum Toxin
- COVID-19
- Ebola
- Marburg
- Nerve agents and certain insecticides (organophosphorus and/or carbamate)
- Pandemic Influenza
- Smallpox and other orthopoxviruses (for example, mpox)
- Zika

**Who Is Eligible?**

The following may be eligible for Program benefits:

- The injured countermeasure recipient
- Certain survivor(s) of a deceased injured countermeasure recipient
- The estate of a deceased injured countermeasure recipient

Please note that the CICP is the payer of last resort. This means that it only covers expenses or provides benefits that other third-party payers, such as health insurance, the Department of Veterans Affairs, or Workers' Compensation programs, don't have an obligation to pay.

**HOW TO REQUEST BENEFITS**

If you have been seriously injured by a covered countermeasure, you may be eligible for compensation. To determine eligibility, generally you must submit a Request for Benefits Package to the CICP within one year of receiving or using the countermeasure.

You can file your claim securely online and check your claim status through the DICP Submit Portal: https://injurycompensation.hrsa.gov/DICPSubmit.

If you need to file your claim by mail, please visit the CICP website to download the required forms: www.hrsa.gov/cicp/filing-process.

You can also call 1-855-266-2427 (1-855-266-CICP) to request that a paper copy be mailed to you.

*Last revised: May 2023*

To learn more, visit www.hrsa.gov/cicp, email cicp@hrsa.gov, or call 1-855-266-2427 (1-855-266-CICP).

HRSA Health Resources & Services Administration

https://www.hrsa.gov/cicp

# Shoulder Injury Related to Vaccine Administration (SIRVA)

- Shoulder injury related to vaccine administration (SIRVA) is a preventable occurrence caused by the injection of a vaccine into the shoulder capsule rather than the deltoid muscle.
- As a result, inflammation of the shoulder structures causes patients to experience pain, a decreased range of motion, and a decreased quality of life.
- The main symptoms include persistent shoulder pain and a limited range of motion.
- The keys to distinguishing SIRVA are that the symptoms typically begin within 48 hours of vaccine administration and that they do not improve with over-the-counter analgesic medications.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6347325/

# Shoulder Injury Related to Vaccine Administration (SIRVA)

- Know the anatomy of the upper arm
- Injector should be at the same level as the patient
- Injector should target the lower two-thirds of the deltoid muscle
- Assess history of previous injuries
- Pay attention to proper technique

# Resources
# &
# Helpful Links

# Resources & Helpful Links

- You Call the Shots:  Vaccine Administration: Preventing Vaccine Administration Errors
  - https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-preventing-errors.pdf

- Immunize.org:  Don't Be Guilty of These Preventable Errors in Vaccine Administration
  - https://www.immunize.org/catg.d/p3033.pdf

- Pink Book Chapter 6: Vaccine Administration
  - https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html

- SIRVA Study:  Bancsi A, Houle SKD, Grindrod KA. Shoulder injury related to vaccine administration and other injection site events. Can Fam Physician. 2019 Jan;65(1):40-42. PMID: 30674513; PMCID: PMC6347325.
  - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6347325/

- You Call the Shots:  Vaccine Administration: Needle Gauge and Length
  - https://www.cdc.gov/vaccines/hcp/admin/downloads/vaccine-administration-needle-length.pdf

# Thank you!

Allie Staton, PharmD

Vaccine Confidence Strategist

Immunize Arkansas

Email: allie@immunizear.org

ImmunizeAR

ARKANSAS IMMUNIZATION ACTION COALITION