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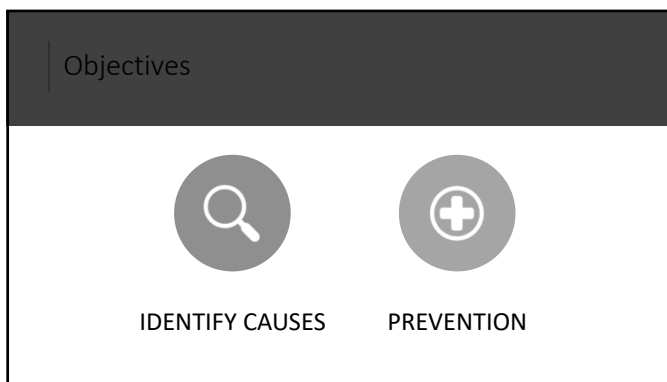
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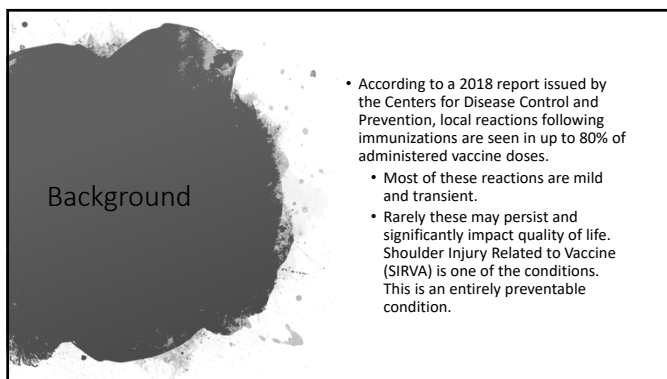
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## What is SIRVA?

- SIRVA is an uncommon but emerging condition that is caused by improper injection technique or landmarking for intramuscular deltoid injections.
- It occurs as the injection is given into the shoulder capsule instead of the deltoid muscle, often creating an inflammatory immune response.  
Caused by improper injection site and NOT the components of the vaccine.
- Symptoms typically do not resolve on their own
- Widely believed to be underreported.

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## Incidence

"According to VAERS reporting, between 2010 and 2016, there were 1006 possible reports of shoulder dysfunction following inactivated influenza vaccination (IIV) compared with an estimated 130 million doses of IIV given each influenza season in the US."

Fed Pract. 2019 Aug; 36(8): 380–384.

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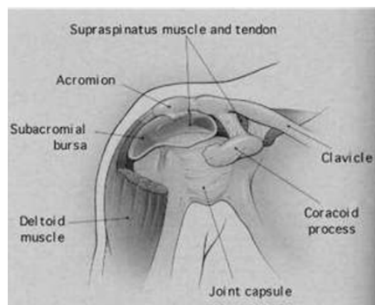
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A SIRVA occurs when a vaccine is injected into the bursa sac or shoulder joint



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## Recognizing a SIRVA

- Pain
- Sensory (paresthesia)
- Motor (weakness)
  - Symptoms typically begin within hours to days
- Most commonly seen in slender females but can happen to anyone.
- Mean duration of initial severe neuropathic pain is 4 weeks, 4.9 % is resolved in 48 hours, 22.7% resolved in 1-7 days.
- May recur in up to 25% of patients

Robinson & Fulcher, 2014; Alcalaay et al., 2009

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## Complications

- Musculoskeletal-Capsulitis, tendinitis, bursitis, periosteum
- Neurologic-Individual nerve injuries and neuralgic amyotrophy



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## Diagnosis

- Clinical evaluation
- Ultrasound
- MRI

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## Treatments

- Range from conservative to invasive:
  - Icing and over the counter NSAIDs
  - Physical Therapy
  - Surgical intervention

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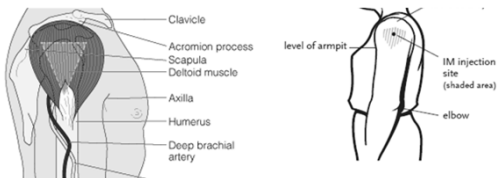
## Headlines

- In 2018 Plymouth, MN woman was hospitalized and required surgery following a SIRVA that resulted in a torn rotator cuff, following a flu vaccination improperly administered.
  - Experienced pain with 24 hours of injection
  - Diagnosed through an MRI

<https://www.dailymail.co.uk/health/article-6277775/Minnesota-woman-hospitalized-undergo-surgery-flu-shot-causes-rare-condition.html>

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Correct Landmarking  
crucial piece in preventing SIRVA –Don't "eyeball"



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### Tips to avoid a shoulder injury

- Patient and vaccinator should be in a seated position
- Have the patient fully expose their arm
- Abduct the shoulder to 60 degrees, placing hand on the ipsilateral hip
- Choose correct needle size for patient
- Injection should be given perpendicular (90 degrees) to the skin.
- Locate the acromion process and middle humerus
  - Form a triangle or 'C' shape 2-3 fingerbreadths from the acromion process.
  - Injection site should be in the middle of the triangle or 'C'

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### Considerations when giving an immunization

- PPE
- Preparing the vaccine
- Injection technique
- Needle size
- Landmarks
- Adverse events

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### Personal Protective Equipment (PPE)

- Alcohol-based hand sanitizer with at least 60% alcohol and hand soap
- Cleaning supplies for more frequent cleanings, using EPA's Registered Antimicrobial Products for Use Against Novel Coronavirus SARS-CoV-2
- Cloth face coverings for patients who arrive without one
- Personal protective equipment (PPE) for staff, including face masks, gloves, and eye protection, based on current guidance for the safe delivery of vaccination services
- Thermometers for checking patients' temperatures before they enter the clinic, if required
- Tissues

<https://www.cdc.gov/vaccines/imz/admin/mass-clinic-activities/pre-clinic-activities.html>

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## Preparing Vaccine

1. Prepare vaccines in a clean, designated medication area away from where the patient is being vaccinated and away from any potentially contaminated items. This is to prevent inadvertent contamination of the vial through direct or indirect contact with potentially contaminated surfaces or equipment.
2. Health care personnel should ensure their clinic has the supplies needed to administer vaccines.
3. Health care personnel should complete proper hand hygiene before preparing vaccines.
4. Use a separate needle and syringe for each injection.
5. Always check the expiration dates on the vaccine and diluent, if needed. Some syringes and needles have expiration dates, so check those, too. NEVER use expired vaccine, diluent, or equipment.
6. Prepare vaccines only when you are ready to administer them.
7. Only administer vaccines you have prepared. This is a medication administration best practice standard. If vaccine is drawn up by one person but administered by another, the person administering the vaccine cannot be sure what is in the syringe and whether it is safe.

<https://www.cdc.gov/vaccines/hcp/admin/prepare-vaccines.html>

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## Reconstitution

~Always refer to package inserts for detailed instructions on reconstituting specific vaccines. In general, follow the steps below.

Before reconstituting, check labels on both the lyophilized vaccine vial and the diluent to verify that:

- they are the correct two products to mix together,
- the diluent is the correct volume, and
- neither the vaccine nor the diluent has expired.

**Reconstitute (i.e., mix) vaccine just prior to use by:**

- removing the protective caps and wiping each stopper with an alcohol swab,
- inserting needle of syringe into diluent vial and withdrawing entire contents, and
- injecting diluent into lyophilized vaccine vial and rotating or agitating to thoroughly dissolve the lyophilized powder.

**Check the appearance of the reconstituted vaccine.**

- Reconstituted vaccine may be used if the color and appearance match the description on the package insert.
- If there is discoloration, extraneous particulate matter, obvious lack of resuspension, or the vaccine cannot be thoroughly mixed, mark the vial as "DO NOT USE," return it to proper storage conditions, and contact your state or local health department immunization program or the vaccine manufacturer.

**If reconstituted vaccine is not used immediately or comes in a multidose vial, be sure to:**

- clearly mark the vial with the date and time the vaccine was reconstituted,
- maintain the product at appropriate temperature, per package instructions.

<https://www.immunize.org/catg.d/p3040.pdf>

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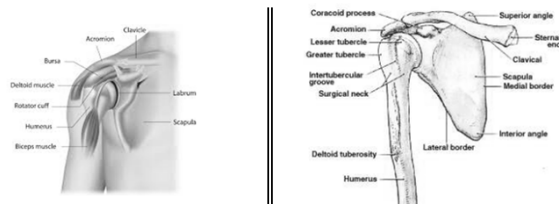
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## Anatomy



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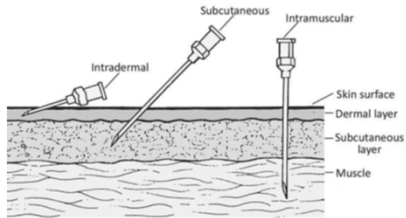
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## Depth of Needle Insertion



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## Intramuscular Injection

### Needle size

- 22-25 gauge, 1-1½" needle (see note below)

### Needle insertion

- Use a needle long enough to reach deep into the muscle.
- Insert the needle at a 90° angle to the skin with a quick thrust.
- Separate two injections given in the same deltoid muscle by a minimum of 1".

**Note:** A 1½" needle is sufficient in adults weighing less than 130 lbs (<60 kg) for IM injection in the deltoid muscle **only** if the subcutaneous tissue is not bunched and the injection is made at a 90° angle; a 2" needle is sufficient in adults weighing 130-152 lbs (60-70 kg); a 2-2½" needle is recommended in women weighing 153-200 lbs (70-90 kg) and men weighing 153-260 lbs (70-118 kg); a 3" needle is recommended in women weighing more than 200 lbs (90 kg) or men weighing more than 260 lbs (more than 118 kg).

[https://www.intramuscular.org/img\\_d/3/2020.pdf](https://www.intramuscular.org/img_d/3/2020.pdf)

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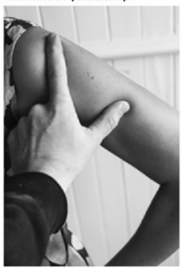
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Hand placement on  
Ipsilateral hip

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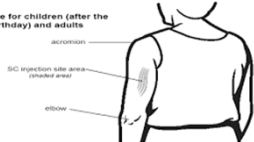
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## Subcutaneous Injection

**SC site for children (after the 1st birthday) and adults**



Insert needle at a 45° angle into the fatty tissue over the triceps muscle. Make sure you pinch up on the SC tissue to prevent injection into the muscle.

**Injection site**

- Give in fatty tissue over the triceps. See the diagram.

**Needle size**

- 23–25 gauge, 5/8" needle

**Needle insertion**

- Pinch up on the tissue to prevent injection into the muscle. Insert the needle at a 45° angle to the skin.
- Separate two injections given in the same area of fatty tissue by a minimum of 1".

<https://www.immunize.org/catg.d/p2020a.pdf>

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Considerations  
for  
Curbside/Drive  
Through  
Vaccination  
Clinics

- When to screen for contraindications and precautions
- How to store, handle, and prepare vaccines properly
- How to follow infection control practices
- How to ensure patient and health care provider safety while administering vaccines
- What measures to take if the driver is being vaccinated

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## Planning

- Start by finalizing clinic specifics, such as what vaccine(s) will be offered to which age group(s) and/or what patient health insurance requirements need to be met.
- Identify the clinic site, considering how much space will be needed based on clinic activities, physical distancing practices, enhanced infection control procedures (including handwashing stations), proper vaccine storage, handling, preparation, and administration practices, traffic and weather considerations, and safety issues for patients and health care personnel. The Advisory Committee on Immunization Practices and CDC ask providers to strongly consider observing patients for 15 minutes after vaccination because syncope (fainting) is possible after vaccination. This is critical at a drive-through vaccination clinic because of the potential for injury when the vaccinated person is the driver. Enough parking should be available for drivers to wait the recommended 15 minutes after vaccination. If possible, this should be done in the same space the vaccination occurs, or in a staff-monitored parking area nearby.
- Internet access may be needed so you can retrieve information from or enter information into an immunization information system (IIS) or electronic medical record.
- Establish logistics and clinic flow. How will you practice social distancing when possible? What safety guidelines are needed (for example, having passengers remain in their vehicles, restraining children properly, not allowing pets that could possibly bite health care personnel, etc.)? Ideally, vehicles should be able to enter and exit in separate areas.

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## Before the Encounter

- Determine staff training needs. Staff may need to practice:
  - Proper storage and handling
  - How to access patients in a potentially limited space (including multiple patients in a vehicle, different vehicle heights)
  - Proper injection site identification and injection technique
- Consider offering clinic services by appointment only. This will allow staff to:
  - Review the patient's vaccination record in the IIS or electronic medical record, screen for contraindications and precautions, and provide after-care instructions by phone or email.
  - Obtain health insurance information if needed.
  - Inform patients of any clinic requirements (such as wearing masks, post-vaccination waiting periods, and clinic restrictions [such as patient age, vehicle type, or number of patients per vehicle, etc.]). Include information on requirements and restrictions in all electronic communications and promotional materials and on websites.

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## During the Encounter

- Staff should wear appropriate personal protective equipment and patients should wear face coverings.
- Provide the patient or parent with the appropriate vaccine information statements and a screening checklist for contraindications and precautions.
- Review and assess the completed contraindications and precautions checklist and any vaccination records provided by the patient, along with those in the IIS and electronic health record (if available).
- Obtain insurance information if needed.
- Inform the driver they will need to wait 15 minutes before leaving the clinic area.
- Ensure staff follows proper vaccine administration practices, including:
  - Aseptic practices for administration supplies (e.g., bandages, alcohol swabs, and syringes and needles)
  - Proper patient positioning
  - Identification of the recommended injection site (does a car door need to be opened to administer vaccine correctly?)
  - Making sure patients are seated to prevent injury from a fall if the patient faints

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Suspect a  
SIRVA or  
adverse  
event?



Create a VAERS report  
<https://vaers.hhs.gov/>



Encourage patient to seek  
treatment/evaluation from  
provider

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## Creating a VAERS report

- Can be done online (preferred) or submitted using a writable PDF.
  - Needs to be done in one sitting
  - Information will be erased if you are inactive for one setting.
- **What will I need to fill out the report?**
  - Patient information (age, date of birth, sex)
  - Vaccine information (brand name, dosage)
  - Date, time, and location administered
  - Date and time when adverse event(s) started
  - Symptoms and outcome of the adverse event(s)
  - Medical tests and laboratory results (if applicable)
  - Physician's contact information (if applicable)

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Questions?

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## ATTESTATION SURVEY

- Upon completion of the presentation a survey will be posted to the [COVID-19 Vaccine Health Care Providers website](#) attesting that your facility has completed the required education. This is a required portion of COVID-19 Vaccine Enrollment.

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## NORTH DAKOTA IMMUNIZATION PROGRAM

### North Dakota Immunization Program Staff

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Vacant CDC Public Health Advisor	Phone: Email:		



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## POST-TEST

- Post-test
  - Nurses interested in continuing education credit, visit <http://www.ndhealth.gov/disease/post/default.aspx?PostID=224>
  - Successfully complete the five-question post-test to receive your certificate
  - Credit for this session will not expire until November 17, 2020.
- This presentation will be posted to our website: [www.health.nd.gov/immunize](http://www.health.nd.gov/immunize)

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