Objectives

- IDENTIFY CAUSES
- PREVENTION

Background

- According to a 2018 report issued by the Centers for Disease Control and Prevention, local reactions following immunizations are seen in up to 80% of administered vaccine doses.
  - Most of these reactions are mild and transient.
  - Rarely these may persist and significantly impact quality of life. Shoulder Injury Related to Vaccine (SIRVA) is one of the conditions. This is an entirely preventable condition.
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.

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.”

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

References: Robinson & Fulcher, 2014; Alcalay, et al., 2009

Complications

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

Diagnosis

- Clinical evaluation
- Ultrasound
- MRI
Treatments

• Range from conservative to invasive:
  • Icing and over the counter NSAIDs
  • Physical Therapy
  • Surgical Intervention

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.html

Correct Landmarking

crucial piece in preventing SIRVA — Don’t “eyeball”
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’

Considerations when giving an immunization

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

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/hcp/admin/mass-clinic-activities/pre-clinic-activities.html](https://www.cdc.gov/vaccines/hcp/admin/mass-clinic-activities/pre-clinic-activities.html)
Preparing Vaccine

1. Prepare vaccines in a clear, designated area away from where the patient is being vaccinated and away from any potentially contaminated areas. This is to prevent inadvertent contamination of the vial through direct or indirect contact with potentially contaminated areas.

2. Health care personnel should ensure their hands have 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 patient.

5. Always check the expiration date on the vaccine and diluent, if needed. Screw syringes and needles have expiration dates, so check these.

6. Prepare vaccines only when you are ready to administer them.

7. Only administer vaccines you have prepared. This is a medical error. Administration of a vaccine intended for a specific patient but administered by another person can be harmful to the patient and to the patient’s health care provider.

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

Reconstitution

- Always, refer to package insert for detailed instructions on reconstituting specific vaccines. In general, follow the rules below:

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

- They are the correct products to be mixed;
- The labels are the current version; and
- Neither the vaccine nor the diluent has expired.

Reconstitute (i.e., mix) vaccines per package insert:

- Removing the protective cap and opening each step
- Per vial or unit dose
- Mixing needle of syringe into vial and withdrawing entire contents, and
- Ensuring diluent or lyophilized vaccine will not remain after reconstituting

Check the appearance of the reconstituted vaccine:

- Lyophilized vaccine may be used if the color and appearance match the description on the package insert
- In vials that are correctly reconstituted, color is white, odor is not detectable, and lack of particulate matter

A package insert must be clear on what to do if the reconstituted vaccine cannot be used:

- You should not administer a vaccine that cannot be used.
- Only administer the vaccine if it is within the designated area of use.
- You must check the package insert of the vaccine for a complete list of instructions.


Anatomy
Intramuscular Injection

Needle size:
- 20-25 gauge, 1½" needle per vaccine

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 ⅝" needle sufficient in adults weighing less than 130 lbs for IM injections in the deltoid muscle if subcutaneous tissue is not bunched and the injection is made at a 90° angle; a 1" needle is sufficient in adults weighing 130–152 lbs (60–70 kg); a 1–1½" needle is recommended in women weighing 153–200 lbs (70–90 kg) and men weighing 153–260 lbs (70–118 kg); a 1½" needle is recommended in women weighing more than 200 lbs (91 kg) or men weighing more than 260 lbs (more than 118 kg).


Hand placement on Ipsilateral hip
Subcutaneous Injection

Injection site
- Subcutaneous tissue over the triceps. See the diagram.
- 23–25 gauge, 5/8” needle

Needle insertion
- Pinch up 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”.


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

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 conditions, and safety for patients and health care personnel. The Advisory Committee on Immunization Practices (ACIP) asks 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 site because of the potential for a driver who has received a vaccine to drive away while still being observed. 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 to input or retrieve information from or 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 separate areas.
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 requirements 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.

During the Encounter

- Staff should wear personal protective equipment and follow CDC guidelines.
- Provide the patient or parent with the appropriate vaccine information statements and screening checklists for complications and precautions.
- Provide and review the completed screening checklists and any vaccination articles provided by the patient, along with those in the IIS and electronic health record.
- Make sure the vaccination was given correctly.
- Inform the driver they will need to wait 15 minutes before leaving the clinic area.
- Encourage patients to seek treatment/evaluation from provider.
- Make sure patients are seated properly for injection, including:
  - Proper injection site (usually arm, but may vary; and do not use antecubital fossa for injections)
  - Proper patient positioning
  - Identification of the recommended person to give the injection (do not use one arm for multiple injections)
- Making sure patients use appropriate hand hygiene if they touch the injection area.
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)

Questions?

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.
NORTH DAKOTA IMMUNIZATION PROGRAM

NORTH DAKOTA IMMUNIZATION PROGRAM STAFF

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POST-TEST

- Post-test
- Successfully complete the five-question post-test to receive your certificate
- This presentation will be posted to our website: [www.health.nd.gov/immunize](http://www.health.nd.gov/immunize)