Vaccinations by EMS Providers

Primarily for AEMTs and Paramedics in the GMVEMSC region

Vaccinations by EMS Providers

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Vaccinations by EMS Providers

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Mission

Provision of a foundation of knowledge based upon the EMS scope of practice and the recommendations from our federal and state public health organizations

Objectives

- Understand the transmission, signs, and symptoms of influenza and COVID-19
- Gain knowledge of the types of vaccine available and their respective indications, contraindications, and adverse effects
  - To the degree known at this moment
- Understand legal authorization, requirements, limitations, and liability protections regarding administration of immunizations by EMS providers

Objectives

- Gain knowledge of the need for partnership between local health departments and EMS agencies during vaccination campaigns and their respective roles and responsibilities
- Gain knowledge of the data to be collected and documented prior to, during, and after the administration of a vaccine to a patient
- Note the need for vaccination of healthcare workers as a measure of disease prevention

Potential Roles for EMS Personnel During Vaccination Campaigns

- Depending on availability of vaccines, potential roles for EMS include:
  - Vaccinate EMS personnel in your own agency
  - Vaccinate fire, EMS, and law enforcement personnel in other agencies
  - Vaccinate other public safety and critical infrastructure personnel (after there is adequate vaccine to provide for the CDC-identified priority groups)
  - Provide vaccinations in Closed Points of Dispensing (PODs) (closed PODs are vaccination sites limited to specific personnel, such as schools, businesses, etc.)
  - Assist with vaccinations in Open PODs (sites open to the public)
  - *Provide Mobile PODs for small sites (e.g., daycare), as well as for homeless and homebound individuals
  - Individual EMS personnel can also assist LHDs, for example, as MRC volunteers
- *Note that while vaccines are in short supply, only designated groups can be vaccinated*

Influenza

A highly contagious viral illness

Virus exists in a three types

- Type A: Moderate to severe illness, occurs in all age groups
- Type B: Milder illness, occurs primarily in children

Multiple strains in each type of virus

COVID-19

A highly contagious viral illness

Caused by SARS-CoV-2 virus

Influenza

Classic symptoms include rapid onset of:

- Fever
- Myalgia
- Sore throat
- Nonproductive cough
- Headache

COVID-19

Classic symptoms include:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

Influenza

- Respiratory transmission
- Incubation period of 2 days (range of 1-4 days)
- Infected persons can transmit the virus up to 2 days before onset of symptoms
- Adults can be contagious up to 5 days after onset of symptoms
- Children can be contagious up to 10 days after onset of symptoms

COVID-19

- Respiratory transmission
- Incubation period of up to 14 days with highest rates of transmission in first 5 days
- Infected persons can transmit virus up to 2 days before onset of symptoms

Historic Influenza Pandemics and Deaths in the USA

- 1918: Spanish Flu - A/H1N1 Greater than 500,000
- 1957: Asian Flu -A/H12N2 Approximately 69,800
- 1968: Hong Kong Flu - H3N2 Approximately 33,800
- 2009: Swine Flu - Novel strain of A/H1N1 CDC data: 12,469

Recent Impact of Influenza in the USA

CDC Data	2018-2019	October 1, 2019 through April 4, 2020 (estimate)
Illnesses	Greater than 35.5 million	39 million to 56 million
Medical visits	Greater than 16.5 million	18 million to 26 million
Hospitalizations	490,600	410,00 to 740,000
Deaths	34,200	24,000 to 62,000

Seasonal Influenza

- Onset and duration of influenza season is variable
- Typically begins in mid-October

Peaks between December and March

Vaccine administration

- ➢Ideally in the fall
- ➢However encouraged throughout the entire influenza season

Evolution of the Influenza Vaccine

Influenza vaccines protect against multiple strains of influenza in one dose

- ➢Trivalent – A/H1N1, A/H3N2, type B
- ➢Quadrivalent – A/H1N1, A/H3N2, two types of B

Types of Influenza Vaccine

Inactivated

- ➢Intramuscular
- ➢Intradermal

Live attenuated

- ➢Intranasal
- ➢Approved only for healthy, non-pregnant patients age 2 years through 49 years

Types of COVID-19 Vaccine

Seven now in Phase 3 trials

Approval or Emergency Use Authorization expected soon for at least two

All COVID vaccines in Phase 3 trials as of November, 2020 are administered IM except Inovio

Inovio uses a proprietary device

Vaccination Administration by EMS Providers

- Route of administration is within the EMS scope of practice for the certificate holder
  - IM administration (except auto-injectors) limited to Advanced EMTs and Paramedics
- Administration is pursuant to medical direction and training on the specific vaccine
- Adherence to the recommendations and instructions of the FDA

Requirements

- Appropriate training for the specified vaccine prior to participating in its administration
- Physician medical direction
- Certified EMS providers may not exceed the EMS scope of practice authorized by the EMFTS Board regardless of any training and protocols provided by the EMS medical director

Liability Protections

- Agent or employee of an EMS agency
- Organization or employer that is not an EMS agency
- Federal declaration of emergency

Medical Reserve Corps (MRC)

Partnership with Public Health

LHDs are critical in the determination of:

- Data collection to identify geographic regions of prevalence and severity of disease
- Appropriate dosing of vaccines
- Acquisition and storage of medical records
- Prioritization of available resources to at-risk populations
- Determine points of distribution of the vaccine

Vaccine Administration Guidelines

Vaccine Administration

Appropriate vaccine administration is critical to vaccine effectiveness

Guidelines for vaccine administration

- Professional standards for medication administration
- Vaccine manufacturers' recommendations
- CDC's Advisory Committee on Immunization Practices (ACIP) General Recommendations on Immunization
- State and agency policies and procedures

Vaccine Administration

- There are multiple formulations of influenza vaccine
- Likely to be multiple formulations of COVID-19 vaccine
- LHDs and EMS providers should follow the manufacturer's recommendations for vaccine dosing and administration
- All patients must be screened for contraindications prior to administration of the vaccine
- Epinephrine should always be readily available to treat anaphylaxis if it occurs

Inactivated (Intramuscular) Influenza Vaccine Contraindications/Precautions

Contraindications:

- Severe allergic reaction or systemic hypersensitivity to a previous influenza vaccine
- Known allergy or previous systemic hypersensitivity to egg or chicken protein, neomycin or polymyxin

Precaution:

- Persons who are already moderately or severely ill

Inactivated (Intramuscular) Flu Vaccines Warnings and Precautions

- Immunocompromised persons may have a reduced immune response to the vaccine
- If Guillain-Barré syndrome has occurred within 6 weeks of receipt of a prior influenza vaccine, the decision to give the vaccine should be based on careful consideration of the potential benefits and risks and discussed with the patient's primary healthcare provider

Patient Counseling

- The intramuscular influenza vaccine is an inactivated vaccine that cannot cause influenza and acts by stimulating the immune system to produce antibodies to prevent infection from the virus
- Any severe or unusual adverse reactions should be reported to their healthcare provider

Patient Preparation

Atraumatic Care

Positioning & Comforting Restraint

Pain Control

- Topical Anesthetics
- Analgesic Agents
- Diversionary Techniques

Infection Control

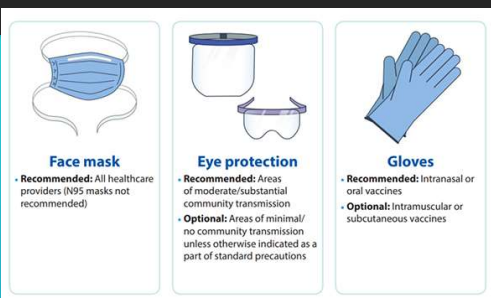
Handwashing procedures

Gloves

Needlestick injuries

Equipment disposal

PPE



Vaccine Preparation

Equipment Selection

- Syringe Selection: 1 mL to 3 mL
- Needle Selection: 22 gauge to 25 gauge

Vaccine Preparation

Equipment Selection

- Needle Length
  - Infants (1-12 months): 1 inch
  - Toddlers and Children (1-18 years): 1 inch to 1¼ inch
  - Adults (Greater than 18 years and older)
    - < 130 pounds: 1 inch
    - ♀ 130-200 pounds or ♂ 130-260 pounds: 1 inch to 1½ inch
    - ♀ > 200 pounds or ♂ > 260 pounds: 1½ inch

Vaccine Preparation

Inspection of the Vaccine

- Expiration date
- Visual inspection of the vial
- Visual inspection of the vaccine

Vaccine Preparation

Shake the solution

Labeling

Storage considerations

May be other requirements with COVID vaccine

Vaccine Preparation: Precautions

Prefilling syringes

High volume vaccine clinics

Vaccine Administration: Intramuscular

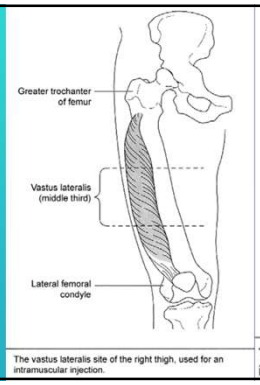
Angle

Site of injection

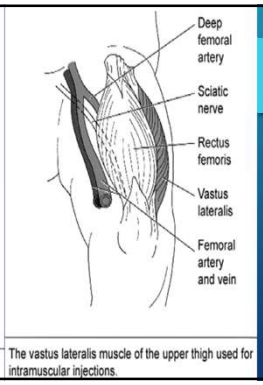
Infants: use anterolateral thigh

Toddlers (ages 1-2 years) anterolateral thigh or deltoid

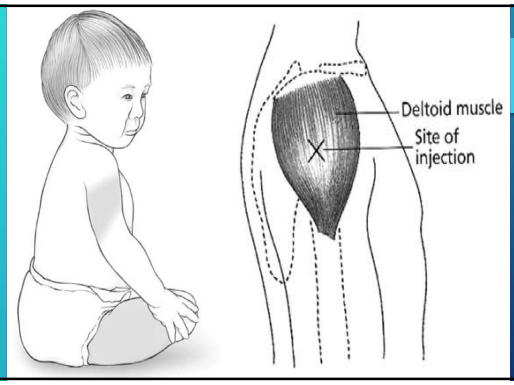
>age 2, preferred site deltoid

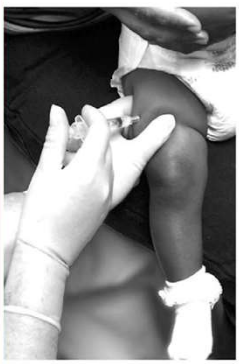


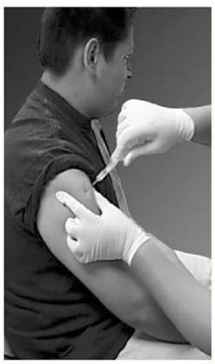
The vastus lateralis site of the right thigh, used for an intramuscular injection.



The vastus lateralis muscle of the upper thigh used for intramuscular injections.







IM Injections in Deltoid Muscle

- Use proper landmarks and technique to identify the injection site
- Use proper needle length based on age and size of the patient and injection technique
- Aspiration is not recommended when administering vaccines

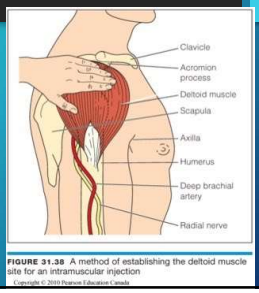


FIGURE 31.38 A method of establishing the deltoid muscle site for an intramuscular injection

Special Situations

Latex allergy

Bleeding disorders

Intramuscular Influenza Vaccine Adverse Reactions

- Fear and/or vasovagal syncope
- Local
- Systemic Anaphylaxis

Follow the EMS protocols provided by your medical director to address these conditions

Intranasal Influenza Vaccine

- Live attenuated intranasal influenza vaccine (LAIV) contains live virus material
- Quadrivalent
- Indicated for healthy non-pregnant individuals of ages 2 to 49 years
- May be preferable in small children because of their fears of injection

Intranasal Influenza Vaccine Contraindications

- Children younger than 2 years
- Adults 50 years and older
- History of severe allergic reaction to any ingredient of the vaccine or to a previous dose of any influenza vaccine
- Children 2 years through 17 years old who are receiving aspirin- or salicylate-containing medications

Intranasal Influenza Vaccine Contraindications

- Children 2 years through 4 years old with asthma or a history of wheezing in the past 12 months
- Immunosuppression from any cause
  Absent or non-functioning spleen
- Caregivers of severely immunocompromised persons who require a protected environment

Intranasal Influenza Vaccine Contraindications

- Pregnant women
- Cochlear implants
- Active leak between the cerebrospinal fluid and the mouth, nose, ear, or other place within the skull
- Receipt of flu antiviral drugs within the previous 48 hours for oseltamivir (Tamiflu®) and zanamivir (Relenza®), previous 5 days for peramivir (Rapivab®), and previous 17 days for baloxavir (Xofluza®)

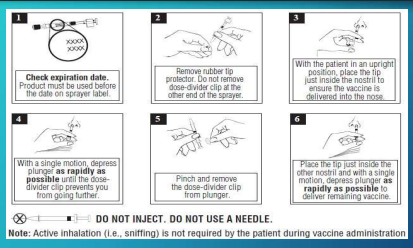
Intranasal Influenza Vaccine Precautions

- Asthma in people aged 5 years and older
- Other underlying medical conditions associated with higher risk of serious flu complications
- Moderate or severe acute illness with or without fever
- Guillain-Barré Syndrome within 6 weeks following a previous dose of flu vaccine

Adverse Reactions

- Runny nose
- Wheezing
- Headache
- Vomiting
- Muscle aches
- Fever (low grade)
- Sore throat (in older children)
- Cough

Intranasal Influenza Vaccine Administration



Documentation

All vaccines administered should be fully documented in the patient's permanent medical record

Documentation should include:

- 1. Date of administration
- 2. Name or common abbreviation of vaccine
- 3. Vaccine lot number
- 4. Vaccine manufacturer
- 5. Administration site, route, and dosage
- 6. Any vaccine information statements (or equivalent for EUA vaccines) utilized by the public health agency, with edition date
- 7. Name and address of public health agency's vaccine administrator who is responsible for the storage of the records
- 8. Name and title of person who administered the vaccine

Documentation

- The patient interview and screening process, including the acquisition of informed consent, to receive the influenza vaccination is determined by the local public health authorities
- All patient allergies, including allergies to medications and foods, must be obtained and documented
- Influenza vaccine is relatively contraindicated in patients who are allergic to eggs or chicken protein

Documentation

- Facilities that administer vaccines are encouraged to participate in state or local immunization information systems
- The patient or parent should be provided with an immunization record that includes the vaccines administered with dates of administration

Vaccination Information Statement (VIS)

- If your LHD elects to utilize a VIS as part of their documentation process, provide a current VIS to each individual or legal guardian
- After the VIS is read by and/or reviewed with the individual or guardian, answer any and all of their questions before vaccine administration
- If the LHD provides them, give an immunization record card to the vaccine recipient to provide them with a record of the vaccination administration

Emergency Use Authorization (EUA)

- EUA means that a COVID-19 vaccine has been authorized for use. The scope of authorized use is specified in the EUA Fact Sheet for Healthcare Providers (similar to a package insert for licensed vaccines)
- For healthcare providers, conditions of use require:
  - Providing the recipient/caregiver the Fact Sheet for Recipients (similar to a vaccine information statement [VIS] for licensed vaccines), which communicates vaccine benefits and risks to the recipient, via hard copy or electronic means
  - Reporting vaccine administration data to CDC
  - Reporting vaccine administration errors and specified adverse events to VAERS

Reporting to the Vaccine Adverse Event Reporting System (VAERS)

- Healthcare providers are required to report the following to VAERS:
  - Vaccine administration errors (whether associated with an adverse event [AE] or not)
  - Serious AEs (irrespective of attribution to vaccination)
  - Multisystem inflammatory syndrome (MIS) in children (if vaccine is authorized for use in children) or adults
  - Cases of COVID-19 that result in hospitalization or death after the recipient has received COVID-19 vaccine
  - Healthcare providers are also encouraged to report any clinically significant AEs that occur after vaccine administration
  - Adverse events should be reported even if the cause of the AE is uncertain
  - Healthcare providers should report any additional AEs and adhere to any revised safety reporting requirements per the FDA conditions of authorized vaccine use posted on FDA's website throughout the duration of the EUA

EUA Fact Sheet for Healthcare Providers

- Each vaccine used under an EUA will come with a specific EUA Fact Sheet for Healthcare Providers will provide the following information:
  - COVID-19 disease description
  - Dosage and administration information
  - Storage and handling instructions
  - Dose preparation and administration information
  - Requirements for use of vaccine under EUA
  - Risks and benefits, including common adverse events (AEs)
  - Any approved available alternatives for preventing COVID-19
  - Reporting requirements, including reporting AEs to VAERS
  - Additional resources

EUA Fact Sheet for Recipients

- Each vaccine-specific EUA Fact Sheet for Recipients will provide the following information:
  - Basic information on COVID-19, symptoms, and what to discuss with a healthcare provider before vaccination
  - Who should and should not receive the vaccine
  - That recipients have the choice to receive the vaccine
  - Dosage and vaccine series information
  - Risks and benefits of the vaccine, including common side effects
  - Information on reporting side effects to VAERS
  - An explanation of what an EUA is and why it is issued
  - Any approved available alternatives for preventing COVID-19
  - Additional resources

Skills Checklist for Immunization

- Completion of a skills checklist for immunization is suggested
- If used, successful completion of the skills checklist for immunization may be verified by an EMS agency's medical director, LHD, or other designated
- A sample skills checklist for immunization administration is available at: https://www.immunize.org/catg.d/p7010.pdf

Reference and Suggested Handout

Epidemiology and Prevention of Vaccine-Preventable Diseases
The Pink Book: Course Textbook
Chapter 12, 13th Edition (2015)

https://www.cdc.gov/vaccines/pubs/pinkboo k/flu.html

COVID-19 Vaccination Efforts

- Vaccine Candidates (Vaccines in Phase 3 Trials)
  - Moderna and National Institute of Health (NIH)
  - Pfizer and BioNTech
  - Janssen Pharmaceuticals and Johnson & Johnson (J&J)
  - Inovio
  - Novovax
  - Arcturus
  - Oncosec

Promising Vaccine Candidates

(As of 11/20/2020, limited information is available on vaccines in Phase 2 and 3 Testing, additional information to be announced)

Vaccine Producer	Vaccine Type	Reported Effectiveness	2nd Dose and Days Between Doses	Cold Chain Requirements	Method of Administration
Moderna and NIH	mRNA	94.5%	Yes, 28 days	25° Fahrenheit -4° Celsius	Intramuscular Injection
Pfizer and BioNTech	3 LNP-mRNA	90%	Yes, 28 days	-94° Fahrenheit -70° Celsius	Intramuscular Injection
Janssen and J&J	Recombinant adenovirus vector	N/A	Single Dose and 2 Dose Trails taking place	N/A	Intramuscular Injection
Inovio	DNA Plasmid	N/A	N/A	N/A	Cellectra Smart Device
Novavax	Protein subunit adjuvanate	N/A	N/A	N/A	Intramuscular Injection
Arcturus	mRNA	N/A	N/A	N/A	Intramuscular Injection
Oncosec	DNA Plasmid	N/A	N/A	N/A	Intramuscular Injection

Storage and Handling

- Proper vaccine storage and handling practices play a very important role in protecting individuals and communities from vaccine-preventable diseases
- Failure to store and handle vaccines properly can reduce vaccine potency, resulting in inadequate immune responses in patients and poor protection against disease
- For specific, detailed storage and handling protocols for individual vaccine products, always refer to the manufacturers' product information or contact the manufacturer directly

COVID-19 Vaccine Temperature Excursion

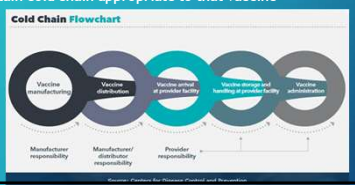
- A temperature excursion is any temperature reading that is outside the recommended range for vaccine storage as defined by the manufacturer's package insert or EUA Fact Sheet for Healthcare Providers
- Identify temperature excursions quickly and take immediate action to correct them
- For COVID-19 vaccines, contact the vaccine manufacturer or your immunization program if you experience temperature excursions

Cold Chain Requirements

- All influenza and COVID vaccines have "cold-chain" requirements
  - Specified temperatures at which vaccine must be kept during transport, storage, administration, etc.
- Cold-chain requirements often differ, e.g., storage vs. just prior to administration
- Cold-chain requirements are specific to each vaccine
  - e.g., with Pfizer and BioNTech vaccine, dry ice needed for transportation and storage when not at -94° Fahrenheit (-70° Celsius) in a freezer.

Cold Chain Requirements

- *Each vaccine will have cold chain requirements*
  - Specific to each vaccine, with different requirements at different points (shipping and storage vs. pre-administration as examples)
  - *Critical* to maintain cold chain appropriate to that vaccine



Thawing Processes for COVID Vaccines

- Specific to each vaccine
- Information will be distributed as it becomes available

Diluent Reconstitution

- Some COVID vaccines will require use of a diluent or reconstitution
- Specific information will be shared as soon as it is officially available
- Reconstitute vaccines according to the manufacturer's package insert
- Use *ONLY* the diluent supplied by the manufacturer for that specific vaccine

Last Steps

- Watch the two other short videos (links are on the training page)
  - What's in a COVID Vaccine Box at https://www.msn.com/en-us/video/peopleandplaces/what-s-inside-an-operation-warp-speed-vaccine-distribution-box/vi-BB1bdqqt?ocid=spartan-ntp-feeds
  - IM Injection Sites at https://www.youtube.com/watch?v=PqSuCPnPeYE
- Successfully complete the quiz to receive your Continuing Education Certificate

Our thanks to:

- Ohio Department of Public Safety, Division of EMS
- Carol Cunningham, MD, Ohio EMS Medical Director
- Greater Miami Valley EMS Council for providing Continuing Education Credit for this presentation
- The Local Health Departments in our region

Greater Miami Valley EMS Council

Public Health

EMS