The Six Vaccine Administration Rights

1. **Right** Patient
2. **Right** Vaccine
3. **Right** Dose
4. **Right** Route
5. **Right** Time
6. **Right** Documentation

General Rules of All Vaccines

- All vaccines can be administered at the same visit
  - Exception is Prevnar (PCV13) & Pneumovax (PPSV23)
- Live vaccines not administered at the same time must be separated by 4 weeks (minimum of 28 days)
- Re-administer vaccines given earlier than the minimum interval
- If a dose is given later than a minimum interval, it is ok and counts as a valid dose

Decreasing Missed Opportunities

It is OK to vaccinate if:

- Mild illness or is recovering from illness
- Currently taking antibiotics
- Was exposed to disease
- Lives with someone who is pregnant or has suppressed immune system
- Breastfeeding
- Baby born prematurely
- Non-anaphylactic reaction following a vaccine
- Family history of vaccine adverse events
Preparing Liquid Vaccines

Before You Start

- Wash your hands.
- Gather alcohol pads, appropriate needle, and, as needed, syringe.
- Get the vial or syringe of vaccine.
- Check vaccine against physician’s written order.
- Check that today’s date is sooner than vaccine’s expiration date.

Drawing Up Liquid Vaccine

Single-dose vials

- Remove plastic cap.
- Shake vial.
- Cleanse stopper with alcohol pad and let it dry.
- Assemble needle and syringe.
- Uncap needle.
- Hold vial steady on counter.
- Insert needle straight into center of vial stopper.
- Invert vial and pull needle back so the tip is in the liquid.
- Pull back on plunger and draw up entire contents of vial.
- Withdraw needle.
- Tap syringe and push out air.
- Recap the clean needle.

Multi-dose vials

- Remove plastic cap.
- Shake vial.
- Cleanse stopper with alcohol pad and let it dry.
- Assemble needle and syringe.
- Uncap needle.
- Pull back syringe plunger equal to one dose of vaccine, usually 0.5 cc.
- Hold vial steady on counter.
- Insert needle straight into center of stopper and inject air into vial.
- Invert vial so needle tip is in liquid.
- Withdraw one dose.
- Return needle and vial to counter top.
- Withdraw needle.
- Tap syringe and push out air.
- Recap the clean needle.

Pre-filled syringes

- Shake syringe thoroughly.
- Remove syringe tip cover.
- Attach needle to syringe.

www.eziz.org
Preparing Reconstituted Vaccines

Before You Start

- Wash your hands.
- Gather alcohol pads, appropriate needle, and syringe.
- Get one dose each of vaccine and diluent.
- Check vaccine against physician’s written order.
- Check that today’s date is sooner than vaccine’s and diluent’s expiration dates.

Mixing the Vaccine

- Remove plastic caps.
- Cleanse stoppers with alcohol pad and let dry.*
- Assemble needle and syringe.
- Uncap needle.
- Hold diluent vial steady on the counter.
- Insert needle straight into the center of the vial stopper.
- Invert vial and pull needle back so the tip is in the liquid.
- Draw up all diluent into syringe and then withdraw needle.
- Hold vaccine vial steady on the counter.
- Insert needle into center of stopper.
- Inject diluent
- Holding vial and syringe together, shake to mix.

*Be sure that MMR, Varicella and MMRV stoppers are thoroughly dry before drawing up doses. Alcohol may damage these live vaccines.

Drawing Up the Vaccine

- Invert vial and pull needle back so the tip is in the liquid.
- Pull back on plunger and draw up entire contents of vial.
- Withdraw needle.
- Tap syringe and push out air.
- Recap the clean needle.
- Use reconstituted vaccine promptly.
Administering Injectable Vaccines

Cleaning the Injection Site

1. Wash your hands.
2. Clean the injection site with an alcohol pad or a cotton ball soaked with alcohol. Using a circular motion, wipe from the center of the injection site out about two inches in a spiral pattern.
3. Allow the alcohol to dry for several seconds. (Alcohol stings if it gets into the injection.)
4. Throw away the cotton ball.

Giving an Intramuscular (IM) Injection

1. Clean the injection site. (See above.)
2. With your left hand*, bunch up the muscle.
3. With your right hand*, insert the needle at a 90-degree angle to the muscle.
4. Push down on the plunger and inject the entire contents of the syringe. Do not aspirate.
5. Remove the needle and simultaneously apply light pressure to the injection site with a dry cotton ball or gauze. Hold it in place for several seconds.
6. If there is any bleeding, cover the injection site with a bandage.
7. Put the used syringe in a sharps container.

* Use opposite hand if you are left-handed.

Giving a Subcutaneous (SC) Injection

1. Clean the injection site. (See above.)
2. With the thumb and index finger of your left hand*, pinch up the fatty tissue of the injection site.
3. With your right hand*, insert the needle at a 45-degree angle to the skin. Insert the entire needle.
4. Push down on the plunger and inject the entire contents of the syringe. Do not aspirate.
5. Remove the needle and simultaneously apply light pressure with a dry cotton ball or gauze on the injection site. Hold it in place for several seconds.
6. If there is any bleeding, cover the injection site with a bandage.
7. Put the used syringe in a sharps container.

Important! Dispose of used needles immediately after use. Never re-cap a used needle or try to separate it from the syringe.
How to Administer Intramuscular and Subcutaneous Vaccine Injections to Adults

Intramuscular (IM) Injections

Administer these vaccines via IM route
• *Haemophilus influenzae* type b (Hib)
• Hepatitis A (HepA)
• Hepatitis B (HepB)
• Human papillomavirus (HPV)
• Influenza vaccine, injectable (IIV)
• Influenza vaccine, recombinant (RIV3)
• Meningococcal conjugate (MCV4)
• Meningococcal serogroup B (MenB)
• Pneumococcal conjugate (PCV13)
• Pneumococcal polysaccharide (PPSV23) – may also be given Subcut
• Polio (IPV) – may also be given Subcut
• Tetanus, diphtheria (Td), or with pertussis (Tdap)

Injection site
Give in the central and thickest portion of the deltoid muscle – above the level of the armpit and approximately 2–3 fingerbreadths (~2") below the acromion process. See the diagram. To avoid causing an injury, do not inject too high (near the acromion process) or too low.

Needle size
22–25 gauge, 1–1½" needle (see note at right)

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 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 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).

Subcutaneous (Subcut) Injections

Administer these vaccines via Subcut route
• Measles, mumps, rubella (MMR)
• Meningococcal polysaccharide (MPSV4)
• Pneumococcal polysaccharide (PPSV23) – may also be given IM
• Polio (IPV) – may also be given IM
• Varicella (Var; chickenpox)
• Zoster (HZV; shingles)

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".
Giving All the Doses Under 12 Months

• Needle Lengths:
  IM = 1 inch    SC = 5/8 inch

• IM injections are given in the infant’s thigh

• SC injections may be given in the arm or thigh

• Separate injection sites by 1-2 inches

• Using combination vaccines will decrease the number of injections

• May consider a 5/8 inch needle for IM injections only in newborns less than age 4 weeks

Pain Management:
– Administer vaccines likely to cause a greater local reaction (DTaP, PCV) into separate limbs
– Inject the most painful injections last (i.e., PCV)
Giving All the Doses 12 Months and Older

- Needle Lengths:
  - IM = 1 to 1.5 inches
  - SC = 5/8 inch

- Anterolateral thigh is the preferred site for multiple IM injections and for all toddlers aged 12 months-2 years

- Deltoid is an IM option for children aged 12 months-2 years with adequate muscle mass. Deltoid is the preferred site for age 3 years and older

- Separate injection sites by 1-2 inches

- Using combination vaccines will decrease the number of injections needed to keep a child up-to-date

Pain Management:
- Administer vaccines likely to cause a greater local reaction (DTaP, PCV) into separate limbs
- Inject the most painful injections last (i.e., MMR, PCV)
## Administering Vaccines:

### Dose, Route, Site, and Needle Size

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Dose</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria, Tetanus, Pertussis (DTaP, DT, Tdap, Td)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td><em>Haemophilus influenzae</em> type b (Hib)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Hepatitis A (HepA)</td>
<td>≤18 yrs: 0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>≥19 yrs: 1.0 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Hepatitis B (HepB)</td>
<td>≤19 yrs: 0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>≥20 yrs: 1.0 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Influenza, live attenuated (LAIV)</td>
<td>0.2 mL (0.1 mL in each nostril)</td>
<td>Intranasal spray</td>
</tr>
<tr>
<td>Influenza, inactivated (IIV); recombinant (RIV), for ages 18 years and older</td>
<td>6–35 mos: 0.25 mL</td>
<td>IM</td>
</tr>
<tr>
<td></td>
<td>≥3 yrs: 0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Influenza (IIV) Fluzone Intradermal, for ages 18 years and older</td>
<td>0.1 mL</td>
<td>ID</td>
</tr>
<tr>
<td>Measles, Mumps, Rubella (MMR)</td>
<td>0.5 mL</td>
<td>Subcut</td>
</tr>
<tr>
<td>Meningococcal conjugate (MVC4 [MenACWY])</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Meningococcal serogroup B (MenB)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Meningococcal polysaccharide (MPSV)</td>
<td>0.5 mL</td>
<td>Subcut</td>
</tr>
<tr>
<td>Pneumococcal conjugate (PCV)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>Pneumococcal polysaccharide (PPSV)</td>
<td>0.5 mL</td>
<td>IM or Subcut</td>
</tr>
<tr>
<td>Polio, inactivated (IPV)</td>
<td>0.65 mL</td>
<td>Subcut</td>
</tr>
<tr>
<td>Rotavirus (RV)</td>
<td>Rotarix: 1.0 mL</td>
<td>Oral</td>
</tr>
<tr>
<td>Varicella (Var)</td>
<td>0.5 mL</td>
<td>Subcut</td>
</tr>
<tr>
<td>Zoster (Zos)</td>
<td>0.5 mL</td>
<td>Subcut</td>
</tr>
<tr>
<td>Combination Vaccines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTaP-HepB-IPV (Pediarix)</td>
<td>0.5 mL</td>
<td>IM</td>
</tr>
<tr>
<td>DTaP-IPV/Hib (Pentacel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTaP-IPV (Kinrix; Quadracel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hib-HepB (Comvax)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hib-MenCY (MenHibrix)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMRV (ProQuad)</td>
<td>≤12 yrs: 0.5 mL</td>
<td>Subcut</td>
</tr>
<tr>
<td>HepA-HepB (Twinrix)</td>
<td>≥18 yrs: 1.0 mL</td>
<td>IM</td>
</tr>
</tbody>
</table>

### Injection Site and Needle Size

#### Subcutaneous (Subcut) injection
Use a 23–25 gauge needle. Choose the injection site that is appropriate to the person’s age and body mass.

<table>
<thead>
<tr>
<th>AGE</th>
<th>NEEDLE LENGTH</th>
<th>INJECTION SITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants (1–12 mos)</td>
<td>½&quot;</td>
<td>Fatty tissue over anterolateral thigh muscle</td>
</tr>
<tr>
<td>Children 12 mos or older, adolescents, and adults</td>
<td>½&quot;</td>
<td>Fatty tissue over anterolateral thigh muscle or fatty tissue over triceps</td>
</tr>
</tbody>
</table>

#### Intramuscular (IM) injection
Use a 22–25 gauge needle. Choose the injection site and needle length that is appropriate to the person’s age and body mass.

<table>
<thead>
<tr>
<th>AGE</th>
<th>NEEDLE LENGTH</th>
<th>INJECTION SITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborns (1st 28 days)</td>
<td>½&quot;</td>
<td>Anterolateral thigh muscle</td>
</tr>
<tr>
<td>Infants (1–12 mos)</td>
<td>1&quot;</td>
<td>Anterolateral thigh muscle</td>
</tr>
<tr>
<td>Toddlers (1–2 years)</td>
<td>1–1⅓&quot;</td>
<td>Anterolateral thigh muscle</td>
</tr>
<tr>
<td></td>
<td>⅔–1&quot;</td>
<td>Deltoid muscle of arm</td>
</tr>
<tr>
<td>Children and teens (3–18 years)</td>
<td>½–1½&quot;</td>
<td>Deltoid muscle of arm</td>
</tr>
<tr>
<td>Adults 19 years or older</td>
<td>1½&quot;</td>
<td>Anterolateral thigh muscle</td>
</tr>
<tr>
<td>Female or male &lt;130 lbs</td>
<td>½–1½&quot;</td>
<td>Deltoid muscle of arm</td>
</tr>
<tr>
<td>Female or male 130–152 lbs</td>
<td>1½&quot;</td>
<td>Deltoid muscle of arm</td>
</tr>
<tr>
<td>Female 153–200 lbs Male 130–260 lbs</td>
<td>1–1½&quot;</td>
<td>Deltoid muscle of arm</td>
</tr>
<tr>
<td>Female 200+ lbs Male 260+ lbs</td>
<td>1½&quot;</td>
<td>Deltoid muscle of arm</td>
</tr>
</tbody>
</table>

#### Intradermal (ID) administration of Fluzone ID vaccine

#### Intranasal (NAS) administration of Flumist (LAIV) vaccine

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*Note: Always refer to the package insert included with each biologic for complete vaccine administration information. CDC's Advisory Committee on Immunization Practices (ACIP) recommendations for the particular vaccine should be reviewed as well. Access the ACIP recommendations at www.immunize.org/acip.*

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**Immunization Action Coalition**

Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

www.immunize.org/catg.d/p3085.pdf • Item #P3085 (6/16)
COMFORTING RESTRAINT FOR IMMUNIZATIONS

• The method:

This method involves the parent in embracing the child and controlling all four limbs. It avoids “holding down” or overpowering the child, but it helps you steady and control the limb of the injection site.

• For infants and toddlers:

1. One of the child's arms embraces the parent's back and is held under the parent's arm.
2. The other arm is controlled by the parent's arm and hand. For infants, the parent can control both arms with one hand.
3. Both legs are anchored with the child's feet held firmly between the parent's thighs, and controlled by the parent's other arm.

Hold the child on parent's lap.

• For kindergarten and older children:

1. Parent's arms embrace the child during the process.
2. Both legs are firmly between parent's legs.
Reducing Vaccine Injection Pain in Children
A Guide for Health Care Providers

Preparation:
• Review this evidence-based guide
• Provide parent/caregiver with information and tools
• Discuss pain management strategies

Procedure:
Combine strategies to improve pain relief

Give the most painful last
all ages

Rapid intramuscular injection, no aspiration
all ages

Topical Anaesthetics
under 12 months

Breastfeeding or Sugar Water
over 12 months

infants only

Distraction
all ages

Rub skin near injection site
4 years of age and older

Upright/Holding
all ages

Deep Breathing
3 years of age and older

Practice and Documentation

1. Assess pain
2. Document pain score
3. Assess parent and child satisfaction
4. Reflect and plan approach for next vaccine

Document:
• Age of child
• Vaccines given
• Pain-relieving strategies used
• Pain score
• Parent/child satisfaction

Appendix 2 (as supplied by authors)

Appendix 2 (as supplied by authors)

Reducing Vaccine Injection Pain in Children
A Guide for Health Care Providers

Preparation
Consider using the evidence-based strategies described below in order to minimize pain during vaccine injections in infants/children/teens in your practice. Discuss this information with the parents/caregivers and children/teens prior to vaccine injections.

Prepare Parents and Children
- Encourage parents/caregivers and children (when applicable) to prepare for the procedure ahead of time and to use evidence-based strategies to minimize pain and distress in children during vaccine injections.
- Provide parents/caregivers with the HELPinKIDS Information Sheet: A Guide for Parents, Caregivers and Children on How To Reduce Vaccine Injection Pain in Children.

Rapid Injection Without Aspiration
- Perform all intramuscular injections quickly without prior aspiration. Aspiration is not necessary because the sites used for vaccination are devoid of large blood vessels.

Breastfeeding OR Sweetening Agent
- Encourage mothers to breastfeed infants during vaccine injections. Ensure that an adequate latch is established prior to injection.
- Alternatively, infants can be given sugar water.
- Sugar water can be made by mixing 1 packet of sugar with 2 teaspoons of water. Feed some to the infant with a syringe or pacifier right before the injection (within 1-2 minutes).
- Sugar water is indicated for the management of painful procedures only, not for general comfort or as a food supplement.

Topical Anaesthetics
- Can be used for children of all ages.
- Available for purchase from a pharmacy without a prescription.
- Must be applied up to 1 hour before injection, either at home or upon arrival to the appointment. Check product instructions.
- Consider providing topical anaesthetics in your practice for a minimal cost to parents/caregivers.
- Two doses may be needed (one for each arm or leg) if 2 or more vaccine injections are being given. Specify injection site(s) to parent/caregiver.

Upright Position and Holding
- Infants, children, and teens should not be positioned supine.
- Infants and children should be held by a parent or caregiver in a position that is most comfortable for them and their parent or caregiver (bear hug, on parent/caregiver's lap). Children may lie down after the injection.
- If held by a parent/caregiver, have parent sit on a chair or stand against the examination table to minimize the risk for accidental falls. Keep limbs exposed. Have parent/caregiver secure the child, but advise against undue force as it increases distress.

Multiple Injections
- When multiple vaccines are being administered, always inject the most painful vaccine last.
- There is insufficient evidence for or against simultaneous injections.

Tactile Stimulation Near Injection Site
- Offer to rub/stroke the skin near the injection site with moderate intensity prior to and during injection in children aged 4 years and older.

Distraction (Led by Provider, Parent/Caregiver or Child)
- Distraction involves taking the child's attention away from the procedure. It is effective for children of all ages.
  1. Involve parents/caregivers and children in helping to select the best distraction strategy for the child and involve them in helping with distractions.
  2. Choose an age-appropriate strategy:
     - Infants: toys, bubbles, singing, directing the infant's attention to something in the environment that would be of interest to them.
     - Toddlers: toys, pop-up books, songs, party blowers, kaleidoscopes, singing, directing attention to something in the environment, non-procedural talk (favourite book, etc.)
     - School-aged children: toys, stories, videos, books, jokes, music, counting, non-procedural talk (favourite video game, etc.)
     - Adolescents: games, videos, books, jokes, music, non-procedural talk (favourite movie, etc.)
  3. Stay focused on the child and interact with the child throughout the procedure.
  4. Provide verbal and physical reminders for the child to continue to pay attention to the distraction strategy.
  5. Re-direct the child's attention back to the distraction strategy if their attention wanders to the procedure.
  6. Use a variety of distractions, and multi-sensorial distractions, as necessary.
  7. Maintain a positive attitude.
  8. Praise the child for engaging in distraction behaviours.

Deep Breathing
- Prompt children 3 years and older to take slow deep breaths.
- Deep breaths can be facilitated by using bubbles or pinwheels, which also act as distracting techniques.

Simple Suggestion
- DO NOT tell children that "It won't hurt" because evidence shows that this is ineffective. It also promotes distrust. Instead, tell children how potential discomfort will be minimized.

Combine strategies described above to improve pain relief.

Practice and Documentation
Health care providers are encouraged to develop a consistent approach to immunization pain management in their practice. This includes: integrating pain management education, preparing parents/caregivers and children in advance whenever possible, ensuring consistent understanding among team members of the effective strategies, implementation and documentation of strategies used, and children's pain. Providers are encouraged to modify the pain management plan for individual children, as needed, in order to minimize pain and distress.

In collaboration with www.aboutkidshealth.ca
The Vaccine Adverse Event Reporting System (VAERS)

VAERS is a national vaccine safety surveillance program co-sponsored by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA). VAERS collects and analyzes information from reports of adverse events following receipt of US-licensed vaccines. In recent years, VAERS has received approximately 30,000 US reports annually, most of which describe mild adverse events like fever and injection site reactions. Very rarely, people experience serious adverse events following immunization. By monitoring such events, VAERS can help to identify important new safety concerns.

VAERS is a spontaneous reporting system, meaning that reports about adverse events can be submitted voluntarily by anyone. VAERS has limitations as a surveillance system: data may, and often do, include incorrect and incomplete information. Underreporting, or failure to report events, is another limitation. Serious medical events are more likely to be reported than minor ones. Importantly, VAERS cannot determine cause and effect. The report of an adverse event to VAERS does not indicate that a vaccine caused the event. It only indicates that the event occurred sometime after vaccine receipt. VAERS accepts all reports without judging whether or not the event was caused by the vaccine. More information on the limitations of VAERS data can be found at: http://vaers.hhs.gov/data/index

WHO CAN REPORT? Anyone can submit a VAERS report. Most reports are sent in by vaccine manufacturers and health care providers, but vaccine recipients, parents/guardians, and others may also submit reports.

WHAT SHOULD BE REPORTED? VAERS encourages reporting of any clinically significant adverse event that occurs after the administration of any vaccine licensed in the United States.

The National Childhood Vaccine Injury Act of 1986 requires health care providers to report:
- Any health event listed by the vaccine manufacturer as a contraindication to subsequent doses of the vaccine,
- Any event listed in the Reportable Events Table that occurs within the specified time period after the vaccination.

A copy of the Reportable Events Table can be found on the following page, or at http://vaers.hhs.gov/resources/VAERS_Table_of_Reportable_Events_Following_Vaccination.pdf.

HOW TO REPORT There are three ways to report to VAERS:

- **Online.** Complete a VAERS online form at https://vaers.hhs.gov/esub/step1. Before you begin, review the Instructions for Completing the VAERS On-Line Form at http://vaers.hhs.gov/esub/help. The VAERS On-Line form must be completed in a single sitting (i.e., you cannot save your work and return later to finish). Information supplied on this form is transmitted securely to VAERS.

- **Fax.** Download a VAERS form at http://vaers.hhs.gov/resources/vaers_form.pdf, or request a form by sending an e-mail to info@vaers.org, by calling 800-822-7967, or by faxing a request to 877-721-0366. Review the Instructions for Completing the VAERS Paper Form at http://vaers.hhs.gov/helpinstructions. Fax the completed form to 877-721-0366.

- **Mail.** Download a VAERS form at http://vaers.hhs.gov/resources/vaers_form.pdf, or request a form by sending an e-mail to info@vaers.org, by calling 800-822-7967, or by faxing a request to 877-721-0366. Review the Instructions for Completing the VAERS Paper Form at http://vaers.hhs.gov/helpinstructions. Mail the completed form to VAERS, P.O. Box 1100, Rockville, MD 20849-1100. A pre-paid postage stamp is included on the back of the form.

For more information, visit the VAERS website at http://vaers.hhs.gov.

*Updated March 18, 2013*
## Appendix D

### VAERS Table of Reportable Events Following Vaccination*

<table>
<thead>
<tr>
<th>Vaccine/Toxoid</th>
<th>Event and Interval from Vaccination</th>
</tr>
</thead>
</table>
| **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)  
B. Brachial neuritis (28 days)  
C. Any acute complications or sequelae (including death) of above events (interval - not applicable)  
D. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Pertussis in any combination: DTaP, DTP, DTP-Hib, Tdap, P, DTaP-IPV, DTaP-IPV/Hib, DTaP-HepB-IPV** | A. Anaphylaxis or anaphylactic shock (7 days)  
B. Encephalopathy or encephalitis (7 days)  
C. Any acute complications or sequelae (including death) of above events (interval - not applicable)  
D. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Measles, mumps and rubella in any combination: MMR, MR, M, MMRV, R** | A. Anaphylaxis or anaphylactic shock (7 days)  
B. Encephalopathy or encephalitis (15 days)  
C. Any acute complications or sequelae (including death) of above events (interval - not applicable)  
D. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Rubella in any combination: MMR, MMRV, MR, R** | A. Chronic arthritis (42 days)  
B. Any acute complications or sequelae (including death) of above event (interval - not applicable)  
C. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Measles in any combination: MMR, MMRV, MR, M** | A. Thrombocytopenic purpura (7-30 days)  
B. Vaccine-strain measles viral infection in an immunodeficient recipient (6 months)  
C. Any acute complications or sequelae (including death) of above events (interval - not applicable)  
D. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Oral Polio (OPV)** | A. Paralytic polio  
- in a non-immunodeficient recipient (30 days)  
- in an immunodeficient recipient (6 months)  
- in a vaccine-associated community case (interval - not applicable)  
B. Vaccine-strain polio viral infection  
- in a non-immunodeficient recipient (30 days)  
- in an immunodeficient recipient (6 months)  
- in a vaccine-associated community case (interval - not applicable)  
C. Any acute complication or sequelae (including death) of above events (interval - not applicable)  
D. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Inactivated Polio: IPV, DTaP-IPV, DTaP-IPV/Hib, DTaP-HepB-IPV** | A. Anaphylaxis or anaphylactic shock (7 days)  
B. Any acute complication or sequelae (including death) of the above event (interval - not applicable)  
C. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Hepatitis B in any combination: HepB, HepA-HepB, DTaP-HepB-IPV, Hib-HepB** | A. Anaphylaxis or anaphylactic shock (7 days)  
B. Any acute complications or sequelae (including death) of the above event (interval - not applicable)  
C. Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval - see package insert) |
| **Hemophilus influenzae type b in any combination (conjugate): Hib, Hib-HepB, DTP-Hib, DTaP-IPV/Hib** | Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval – see package insert) |
| **Varicella in any combination: VAR, MMRV** | Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval – see package insert) |
| **Rotavirus (monovalent or pentavalent) RV1, RV5** | Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval – see package insert) |
| **Pneumococcal conjugate (7-valent or 13-valent) PCV7, PCV13** | Events described in manufacturer’s package insert as contraindications to additional doses of vaccine (interval – see package insert) |
Medical Management of Vaccine Reactions in Children and Teens

All vaccines have the potential to cause an adverse reaction. In order to minimize adverse reactions, patients should be carefully screened for precautions and contraindications before vaccine is administered. Even with careful screening, reactions may occur. These reactions can vary from trivial and inconvenient (e.g., soreness, itching) to severe and life threatening (e.g., anaphylaxis). If reactions occur, staff should be prepared with procedures for their management. The table below describes procedures to follow if various reactions occur.

<table>
<thead>
<tr>
<th>REACTION</th>
<th>SYMPTOMS</th>
<th>MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>Soreness, redness, itching, or swelling at the injection site</td>
<td>Apply a cold compress to the injection site. Consider giving an analgesic (pain reliever) or antipruritic (anti-itch) medication.</td>
</tr>
<tr>
<td></td>
<td>Slight bleeding</td>
<td>Apply an adhesive compress over the injection site.</td>
</tr>
<tr>
<td></td>
<td>Continuous bleeding</td>
<td>Place thick layer of gauze pads over site and maintain direct and firm pressure; raise the bleeding injection site (e.g., arm) above the level of the patient’s heart.</td>
</tr>
<tr>
<td>Psychological fright and syncope (fainting)</td>
<td>Fright before injection is given</td>
<td>Have patient sit or lie down for the vaccination.</td>
</tr>
<tr>
<td></td>
<td>Extreme paleness, sweating, coldness of the hands and feet, nausea, light-headedness, dizziness, weakness, or visual disturbances</td>
<td>Have patient lie flat or sit with head between knees for several minutes. Loosen any tight clothing and maintain an open airway. Apply cool, damp cloths to patient’s face and neck.</td>
</tr>
<tr>
<td></td>
<td>Fall, without loss of consciousness</td>
<td>Examine the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated.</td>
</tr>
<tr>
<td></td>
<td>Loss of consciousness</td>
<td>Check the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated. Call 911 if patient does not recover immediately.</td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>Sudden or gradual onset of generalized itching, erythema (redness), or urticaria (hives); angioedema (swelling of the lips, face, or throat); severe bronchospasm (wheezing); shortness of breath; shock; abdominal cramping; or cardiovascular collapse</td>
<td>See “Emergency Medical Protocol for Management of Anaphylactic Reactions in Children and Teens” on the next page for detailed steps to follow in treating anaphylaxis.</td>
</tr>
</tbody>
</table>

CONTINUED ON NEXT PAGE
Emergency medical protocol for management of anaphylactic reactions in children and teens

1. If itching and swelling are confined to the injection site where the vaccination was given, observe patient closely for the development of generalized symptoms.

2. If symptoms are generalized, activate the emergency medical system (EMS; e.g., call 911) and notify patient’s physician. This should be done by a second person, while the primary healthcare professional assesses the airway, breathing, circulation, and level of consciousness of the patient.

3. **DRUG DOSING INFORMATION:** The first-line and most important therapy in anaphylaxis is epinephrine. There are NO contraindications to epinephrine in the setting of anaphylaxis.

   a. **First-line treatment:** Administer aqueous epinephrine 1:1000 dilution (i.e., 1 mg/mL) intramuscularly; the standard dose is 0.01 mg/kg body weight, up to 0.5 mg maximum single dose in children and adolescents. See dosing chart on page 3.

   b. **Optional treatment:** H₁ antihistamines for hives or itching, you may also administer diphenhydramine (either orally or by intramuscular injection; the standard dose is 1–2 mg/kg body weight, up to 50 mg maximum dose in children and adolescents*) or hydroxyzine (orally; the standard dose is 0.5–1 mg/kg/dose up to 50–100 mg maximum per day in children and adolescents). See dosing charts on page 3.

* According to AAP’s Red Book, for children age ≥12 years, the diphenhydramine maximum single dose is 100 mg.

4. Monitor the patient closely until EMS arrives. Perform cardiopulmonary resuscitation (CPR), if necessary, and maintain airway. Keep patient in supine position (flat on back) unless he or she is having breathing difficulty. If breathing is difficult, patient’s head may be elevated, provided blood pressure is adequate to prevent loss of consciousness. If blood pressure is low, elevate legs. Monitor blood pressure and pulse every 5 minutes.

5. If EMS has not arrived and symptoms are still present, repeat dose of epinephrine every 5–15 minutes for up to 3 doses, depending on patient’s response.

6. Record all vital signs, medications administered to the patient, including the time, dosage, response, and the name of the medical personnel who administered the medication, and other relevant clinical information.

7. Notify the patient’s primary care physician.

CONTINUED ON NEXT PAGE
For your convenience, approximate dosages based on weight and age are provided in the following charts. Please confirm that you are administering the correct dose for your patient.

<table>
<thead>
<tr>
<th>First-Line Treatment: Epinephrine</th>
<th>Epinephrine Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group</strong></td>
<td><strong>Range of weight (lb)</strong></td>
</tr>
<tr>
<td>Infants and children</td>
<td>1–6 months</td>
</tr>
<tr>
<td></td>
<td>7–36 months</td>
</tr>
<tr>
<td></td>
<td>37–59 months</td>
</tr>
<tr>
<td></td>
<td>5–7 years</td>
</tr>
<tr>
<td></td>
<td>8–10 years</td>
</tr>
<tr>
<td>Teens</td>
<td>11–12 years</td>
</tr>
<tr>
<td></td>
<td>13 years &amp; older</td>
</tr>
</tbody>
</table>

**NOTE:** If body weight is known, then dosing by weight is preferred.
If weight is not known or not readily available, dosing by age is appropriate.

<table>
<thead>
<tr>
<th>Optional Treatment: Diphenhydramine</th>
<th>Diphenhydramine Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group</strong></td>
<td><strong>Range of weight (lbs)</strong></td>
</tr>
<tr>
<td>Infants and children</td>
<td>7–36 months</td>
</tr>
<tr>
<td></td>
<td>37–59 months</td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Teens</td>
<td>13 years &amp; older</td>
</tr>
</tbody>
</table>

**NOTE:** If body weight is known, then dosing by weight is preferred.
If weight is not known or not readily available, dosing by age is appropriate.

† According to AAP’s Red Book, for children age ≥12 years, the diphenhydramine maximum single dose is 100 mg.

<table>
<thead>
<tr>
<th>Optional Treatment: Hydroxyzine</th>
<th>Hydroxyzine Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group</strong></td>
<td><strong>Range of weight (lbs)</strong></td>
</tr>
<tr>
<td>Infants and children</td>
<td>7–36 months</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**NOTE:** If body weight is known, then dosing by weight is preferred.
If weight is not known or not readily available, dosing by age is appropriate.

**REFERENCES**

- Technical content reviewed by the Centers for Disease Control and Prevention.
Anaphylaxis is an acute life threatening and rare event. Routine childhood immunizations rarely cause anaphylaxis.

1. CALL FOR MD

2. EVALUATE PATIENT FOR ANAPHYLAXIS

<table>
<thead>
<tr>
<th></th>
<th>INFANTS</th>
<th>CHILDREN &amp; ADULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset of symptoms</td>
<td>Over several minutes, usually within 15 min after injection</td>
<td></td>
</tr>
<tr>
<td>First symptoms</td>
<td>Unable to complain</td>
<td>Dizzy, itching, breathing difficulty</td>
</tr>
<tr>
<td>Level of consciousness</td>
<td>Irritable, high pitched cry, anxious, restless</td>
<td>Some confusion or less responsive, usually no loss of consciousness</td>
</tr>
<tr>
<td>Appearance</td>
<td>Flushed (pink-red) with hives</td>
<td>Flushed (pink-red), hives, facial swelling</td>
</tr>
<tr>
<td>Vital signs</td>
<td>Pulse often above 200</td>
<td>Rapid, weak pulse and low blood pressure</td>
</tr>
<tr>
<td>Breathing</td>
<td>Rapid with retractions; possible wheezing, stridor, or cough</td>
<td>Wheezing or stridor with progressive distress</td>
</tr>
</tbody>
</table>

3. CALL 911 Ask clerk or assistant to call, do not leave patient

4. GENERAL TREATMENT

✓ LIE ON BACK, WITH LEGS ELEVATED AS TOLERATED– INFANTS MAY BE HELD BY PARENT

✓ IF AVAILABLE, GIVE OXYGEN

5. SPECIFIC TREATMENT OF ANAPHYLAXIS

AQUEOUS EPINEPHRINE 1:1000 (1 ML = 1 MG) (INTRAMUSCULAR OR SUBCUTANEOUS)

0.01 ML/KG PER DOSE (MAY BE REPEATED EVERY 5 MINUTES AS NECESSARY, UP TO 3 DOSES)

<table>
<thead>
<tr>
<th></th>
<th>Infants: 0.05–0.1 ML</th>
<th>Under 20 lbs</th>
<th>0.1 ML</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Children: 0.1–0.3 ML</td>
<td>20–35 lbs</td>
<td>0.15 ML</td>
</tr>
<tr>
<td></td>
<td>Adolescents/Adults: 0.3–0.5 ML</td>
<td>35–50 lbs</td>
<td>0.2 ML</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50–100 lbs</td>
<td>0.3 ML</td>
</tr>
</tbody>
</table>

*Epinephrine available in glass ampule & EpiPen® & EpiPen Jr.® Replace if expiration date exceeded.

6. EMS TRANSPORT TO ACUTE CARE FACILITY