Communicating About Flu Vaccination

modified July 2026

The following chart answers frequently asked questions about flu vaccine efficacy, administration with other vaccines, use in patients who are immunocompromised or pregnant, and more. For information on specific influenza vaccine products, see our resource, Flu Vaccines (US) (Canada).

Question	Answer/Pertinent Information

Who should receive a flu vaccine?	• Flu vaccination is recommended for **everyone ≥6 months** without contraindications.[1,2,34-36]
	  ○ Per Canadian guidelines, influenza vaccination is particularly recommended for:[1]
	  ▪ people at high risk of severe disease, flu-related complications or hospitalization.
	  ▪ people capable of transmitting flu to those at high risk.
	  ▪ people who provide essential community services.
	  ▪ people with increased risk of exposure (occupational or recreational) to avian influenza A.
	• For patients who cannot remember if they received this season's flu vaccine, avoid missed opportunities to vaccinate by giving the flu vaccine even if this means giving a second dose to some patients.[3]

Which flu vaccine is preferred?	• Avoid delaying vaccination in order to use a specific "preferred" flu vaccine.[1,4,36] • A higher-dose, adjuvanted, OR recombinant flu vaccine is preferred (if available) for patients ≥65 years old.[1,3,36] • In Canada, there is **no longer a preference** for quadrivalent flu vaccines over trivalent flu vaccines in children.[1]
When are two doses of a flu vaccine needed?	• To provide optimal protection, **children 6 months through eight years** should receive two doses of flu vaccine (separated by at least four weeks) if they have not received at least two doses of flu vaccine (separated by at least four weeks) prior to July 1 of the current year (US) or if they have not previously received the seasonal flu vaccine (Canada).[1,4,34,35] ○ US guidance specifies that for children who should receive two doses, if the child turns nine years old between doses one and two of the vaccine, two doses are still recommended.[4]

When should flu vaccines be given?	• **In the US**, encourage vaccination by the end of October. Generally, avoid starting vaccinations before September, due to the possibility of reduced effectiveness later in the flu season.[4]
	  ○ Consider earlier vaccination in children (especially if they require two doses), and in pregnant patients, especially those in the third trimester and those with additional risk factors (e.g., asthma, heart disease).[4,14,17,31]
	• **In Canada**, start vaccinations as soon as possible based on availability.[1]
	• Don't miss an opportunity to vaccinate due to fears the vaccine's effectiveness will not last throughout the entire flu season.
	  ○ Though delayed vaccination may lead to increased immunity later in the season, it can lead to missed opportunities to vaccinate, and is not recommended.[1,6]
	  ▪ Booster doses are NOT recommended later in the season for patients who receive their vaccine early in the season.[1,3]
	• Continue to vaccinate as long as flu viruses are circulating and unexpired vaccine is available.[1,3]

Question	Answer/Pertinent Information
Can flu vaccines be given with other vaccines?	• Live-attenuated and inactivated flu vaccines can be given with other vaccines (including COVID-19 vaccines), using separate administration sites (preferably different limbs).[1,2,7] o If two live vaccines (including FluMist) are NOT given on the same day, they should be administered at least four weeks apart.[7] (Canada: Despite the theoretical risk of immune interference (and reduced efficacy), due to lack of data and based on expert opinion, NACI recommends that FluMist can be given together with or at any time before or after any other live-attenuated or inactivated vaccine.[1]) • Data are limited for coadministration of two adjuvanted vaccines (e.g., Fluad, Heplisav-B, Shingrix).[1,4] There are theoretical concerns about more side effects. If a patient is receiving another adjuvanted vaccine, don't delay flu vaccination if an adjuvanted flu vaccine (i.e., Fluad) is the only flu vaccine available.[4]
Can the flu vaccine be given to someone who is acutely ill?	• **Continue to give the flu vaccine to most patients with mild (and moderate in Canada) acute illnesses** to avoid missed opportunities to vaccinate.[1,8] Most acute illness with or without fever (e.g., diarrhea, upper respiratory infection) is not a contraindication to receiving the vaccine.[1,9] • Severe (and moderate in the US) acute illness is a precaution for administering any vaccine.[9,10] Vaccination side effects (e.g., fever, malaise) may make it difficult to assess management of acute illness.[8] In the US, it is recommended that vaccination be deferred in patients with moderate to severe acute illness.[8] In Canada, expert opinion is recommended to assess risks and benefits if there is a high-risk exposure situation or a short window of opportunity for vaccine administration.[10]
Can immuno-compromised patients receive the flu vaccine?	• **Immunocompromised patients** may receive any licensed, recommended, age-appropriate **injectable** flu vaccine.[1,4] o See detailed guidance for the timing of influenza vaccination with specific conditions.[4] o Note that some experts recommend a high-dose or adjuvanted flu vaccine for immunocompromised patients. These vaccines may lead to an improved antibody response compared to standard-dose vaccines in these patients. However, evidence is lacking to show that this antibody response correlates with better protection against flu.[11-13] • In the US, high-dose and adjuvanted flu vaccines are acceptable options for solid organ transplant recipients (18 to 64 years) who are taking immunosuppressants, without a preference over other inactivated or recombinant influenza vaccines.[16,34-36] • Live attenuated influenza vaccine (LAIV) should be **avoided** in immunocompromised patients.[8]
Can pregnant or lactating patients receive the flu vaccine?	• Vaccinate **pregnant patients** (any trimester) with any licensed, recommended, age-appropriate **injectable** flu vaccine.[1,5,14,31,34-36] o Risk of flu and potential complications in pregnant patients and/or the fetus exceeds possible risks associated with flu vaccination.[15] • Vaccinate post-partum patients who did not receive a flu vaccine while pregnant, especially if breastfeeding an infant less than six months old, as these infants are too young to receive a flu vaccine.[5,14,17,31] o Either non-live influenza vaccines or LAIV can be used in breastfeeding patients.[18] ▪ FluMist is an option for breastfeeding patients younger than 50 years (younger than 59 years [Canada]), if there are no other contraindications.[1,19]

Question	Answer/Pertinent Information
What is the status of thimerosal in flu vaccines?	• Thimerosal (an ethylmercury-containing preservative) is used in some multi-dose influenza vaccine vials (varies by manufacturer). • In June 2025, ACIP voted to no longer recommend the use of thimerosal-containing multi-dose vials of influenza vaccine.[29] However, CDC continues to state that there is no evidence of harm caused by the low amounts of thimerosal in vaccines (except for potentially minor reactions of redness and swelling at the injection site).[32] • The American College of Obstetricians and Gynecologists (ACOG), The American Academy of Pediatrics (AAP), and WHO all continue to support the use of thimerosal as a preservative in multi-dose vials of influenza vaccine (including for pregnant patients).[17,30,31] • Methylmercury is the type of mercury that is found in the food chain (e.g., in some fish) and is toxic to humans at high levels. Ethylmercury (found in thimerosal) is metabolized and excreted much faster compared to methylmercury, making it much less likely to accumulate or cause harm.[33]
Can patients with an egg allergy receive a flu vaccine?	• Patients with a history of severe egg allergy (symptoms more severe than hives [e.g., angioedema, respiratory distress, requiring epinephrine]) do not have higher reaction rates to egg-containing vaccines compared to non-egg allergic patients.[4] • Patients with an egg allergy may receive any age-appropriate flu vaccine, including *FluMist*, without prior flu vaccine skin test and with the full dose, irrespective of a past severe reaction to egg, and in any setting where vaccines are routinely administered.[1,4,34-36] • Refer to our resource, *Flu Vaccines* (US) (Canada), to compare formulations, including egg-free vaccine options.
Should unvaccinated people who had the flu this season still get the flu vaccine?	• Yes. Vaccinate unvaccinated people who have already had the flu during this season. The vaccine might protect against other circulating flu viruses.[3]
How effective are flu vaccines?	• During seasons when flu vaccine virus components are similar to circulating strains, flu vaccination is typically about 40% to 60% effective (e.g., reduces flu illness, doctor visits, reduces laboratory confirmed flu).[20] ○ Influenza vaccination reduces the risk of severe flu, ICU admission, and death, even when the vaccine is not perfectly matched with that particular years' circulating flu strains.[21,22] • Higher dose or adjuvanted flu vaccines seem more effective than standard-dose flu vaccines for patients 65 years and older, especially at reducing flu-related hospitalizations.[23] • Trivalent Fluzone High-Dose provided modestly greater protection against lab-confirmed influenza vs standard-dose trivalent vaccine in patients ≥65 years of age (n=31,989; NNT=200), [Evidence Level A-1].[24]

Continued…

Question	Answer/Pertinent Information
How effective are flu vaccines, continued	• Recombinant flu vaccine (e.g., Flublok [US], Supemtek [Canada]) may be slightly more effective in preventing lab-confirmed influenza compared to non-recombinant inactivated flu vaccines in patient ≥50 years of age (N=8,604; NNT=100), [Evidence Level A-1].[25] • *Fluad*, an adjuvanted vaccine, may provide modestly greater protection against lab-confirmed influenza vs non-adjuvanted trivalent vaccine in patients ≥65 years of age (n=227; unable to calculate NNT), [Evidence Level B-2].[27]
Who should NOT receive the LIVE-attenuated flu vaccine (FluMist)?	• AVOID use of the live-attenuated flu vaccine (FluMist) in the following patients: o patients with a history of severe allergic reaction to any flu vaccine or component (excluding egg).[34-36] o children younger than 2 years (and, in the US: 50 years and older).[1,19,36] o anyone who is pregnant.[1,19,34-36] o adults or children with contraindications to live vaccines (e.g., certain chronic diseases, immunosuppression, severely immunosuppressed close contacts).[1,19,34-36] o adults or children who recently took an antiviral (**see row below** "Can the LIVE-attenuated flu vaccine (FluMist) be given to someone who received an antiviral?").[1,19,34-36] o adults or children with asplenia, a non-functional spleen, cochlear implants, or active cerebrospinal fluid leaks (US).[19,34-36] o children between the ages of 2 and 4 years with a history of asthma or wheezing(US).[19.34,35] o severe asthma or medically-attended wheezing within the previous seven days (Canada).[1] o children and adolescents on chronic aspirin or salicylate therapy.[1,19,34,35] If aspirin therapy is needed, aspirin can be started at least four weeks after administering the live-attenuated flu vaccine.[26] o close contacts of patients who are severely immunocompromised (i.e., who requires a protected environment).[1,19,34-36] US guidance recommends avoiding contact with severely immunocompromised patients for 7 days after receiving the live-attenuated flu vaccine.[19.34-36] o significant nasal congestion.[1]
Can the LIVE-attenuated flu vaccine (FluMist) be given to someone who received an antiviral?	• Most advise avoiding FluMist within 48 hours of an antiviral.[1] However, based on antiviral half-lives, it is possible antivirals could interfere with FluMist effectiveness if FluMist is given within the following timeframes BEFORE or AFTER an antiviral:[19] o 48 hours (oseltamivir and zanamivir) o five days (peramivir [approved but not marketed in Canada]) o 17 days (baloxavir) • In Canada, if a patient must take a flu antiviral within two weeks of vaccination with FluMist, it is recommended they be revaccinated with an age-appropriate injectable flu vaccine (or with FluMist based on the timing listing above).[1]

Question	Answer/Pertinent Information
How can FluMist be given at home (US)?	• In the US, FluMist is available via online pharmacies for administration at home.[28] FluMist is also still available in offices and pharmacies for administration by a healthcare professional. • The patient's insurance may cover the cost of FluMist, but there is also an out-of-pocket shipping and processing fee.[28] • FluMist must be refrigerated and is delivered in temperature-controlled packaging.[28] The used, empty sprayers should be returned using a supplied prepaid return envelope.[28] • Confirmation of administration should be sent through the Immunization Information Systems (IIS).

Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.

Levels of Evidence

In accordance with our goal of providing Evidence-Based information, we are citing the **LEVEL OF EVIDENCE** for the clinical recommendations we publish.

Level	Definition	Study Quality
A	Good-quality patient-oriented evidence.*	1. High-quality randomized controlled trial (RCT) 2. Systematic review (SR)/Meta-analysis of RCTs with consistent findings 3. All-or-none study
B	Inconsistent or limited-quality patient-oriented evidence.*	1. Lower-quality RCT 2. SR/Meta-analysis with low-quality clinical trials or of studies with inconsistent findings 3. Cohort study 4. Case control study
C	Consensus; usual practice; expert opinion; disease-oriented evidence (e.g., physiologic or surrogate endpoints); case series for studies of diagnosis, treatment, prevention, or screening.	

***Outcomes that matter to patients** (e.g., morbidity, mortality, symptom improvement, quality of life).

[Adapted from Ebell MH, Siwek J, Weiss BD, et al. Strength of Recommendation Taxonomy (SORT): a patient-centered approach to grading evidence in the medical literature. Am Fam Physician 2004;69:548-56. https://www.aafp.org/pubs/afp/issues/2004/0201/p548.html.]

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RSV Monoclonal Antibodies

Updated September 2025

Also see our resources, *RSV Vaccines* and *Preventing RSV*.

	Nirsevimab (Beyfortus) (preferred)	Clesrovimab (Enflonsia) (US only)	Palivizumab (Synagis)[c] (not recommended [US], not preferred [Canada])
How Supplied	Single-dose prefilled syringes: 50 mg/0.5 mL, 100 mg/1 mL	Prefilled syringe: 105 mg/0.7 mL	Single-dose vials: 50 mg/0.5 mL, 100 mg/1 mL
Storage	• Refrigerate (2°C to 8°C). • May be kept at room temperature (20°C to 25°C) for up to 8 hours. • Store in original packaging to protect from light. • Do not shake.	• Refrigerate (2°C to 8°C). • May be kept at room temperature (20°C to 25°C) for up to 48 hours. • Store in original packaging to protect from light. • Do not shake.	• Refrigerate (2°C to 8°C). • Opened vials may be kept (refrigerated) for up to 6 hours.[3] • Store in original packaging. • Do not shake.

Dosing	• **First RSV season**:
	  ◦ Less than 5 kg: 50 mg IM **x one dose**
	  ◦ 5 kg or more: 100 mg IM **x one dose**
	• **Second RSV season**:
	  ◦ 200 mg IM **x one dose**
	• Give an additional dose to children following cardiopulmonary bypass surgery. See footnote "b" for dosing.
		• For infants born during or who are ≤12 months of age entering their **first** RSV season:
		  ◦ 105 mg IM **x one dose**
		• Give an additional dose following cardiopulmonary bypass surgery.
			• 15 mg/kg IM **monthly** throughout the RSV season.
			• Give an additional dose following cardiopulmonary bypass surgery (even if less than one month since last dose).[1]
			• It is recommended to stop monthly palivizumab if a child has an RSV hospitalization.[1,2]
			• Usual duration is four to five months.[1]

Adverse Effects	• Rash, injection site reactions. • Potential for serious hypersensitivity reactions.	• Rash, injection-site reactions. • Potential for serious hypersensitivity reactions.	• Rash, fever, severe hypersensitivity reactions.
Usual Admin Site	Anterolateral thigh. Avoid the gluteal muscle. 		
Cost (US)[a]	~$520/50 mg or 100 mg syringe	~$560/105 mg	~$1,800/50 mg

Information in the above chart is based on product labeling, unless otherwise referenced: **US**: Synagis (November 2021), Enflonsia (June 2025), Beyfortus (February 2024); **Canada**: Synagis (July 2021), Beyfortus (June 2024).

Footnotes

a. Pricing based on wholesale acquisition cost (WAC).US medication pricing by Elsevier, accessed September 2025.

b. Once infants are stable following cardiopulmonary bypass surgery, administer an additional dose of **nirsevimab** to ensure adequate serum levels. If it is the child's **first RSV season** and within 90 days of the initial nirsevimab dose, give a weight-based dose (<5 kg: 50 mg; ≥5 kg: 100 mg). If it has been more than 90 days since the initial nirsevimab dose, give a 50 mg dose. If it is the child's **second RSV season** and within 90 days of the initial nirsevimab dose, give a 200 mg dose. If it has been more than 90 days since the initial nirsevimab dose, give a 100 mg dose.

c. Palivizumab is scheduled to be discontinued in the US and Canada as of December 31, 2025.[4,5]

RSV Monoclonal Antibodies

Updated September 2025

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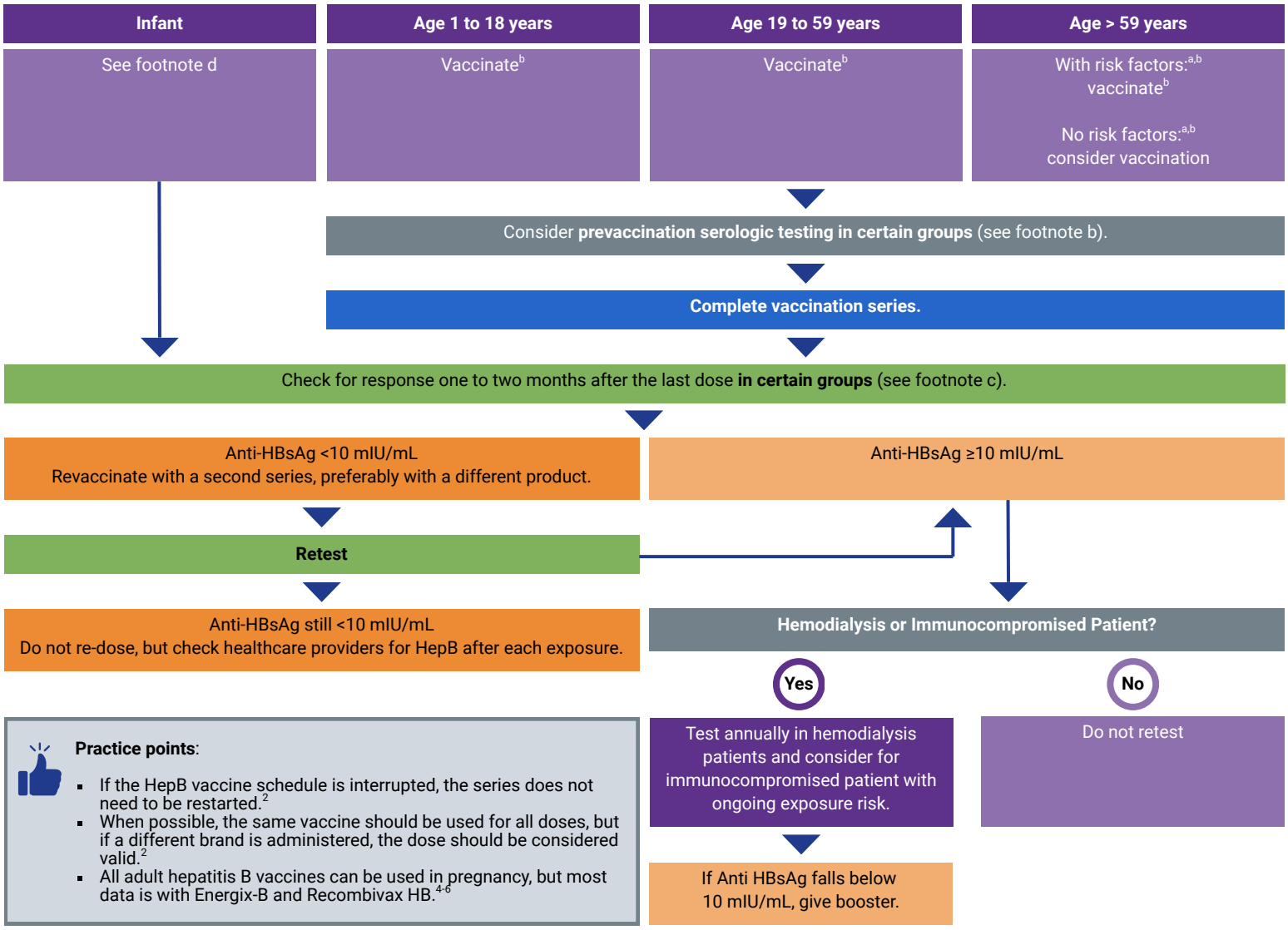
Hepatitis B Vaccination (United States)

Updated December 2025

Decision Aid (Persons not previously vaccinated and with no history of HepB infection)[1-3]



Practice points:

- If the HepB vaccine schedule is interrupted, the series does not need to be restarted.[2]
- When possible, the same vaccine should be used for all doses, but if a different brand is administered, the dose should be considered valid.[2]
- All adult hepatitis B vaccines can be used in pregnancy, but most data is with Energix-B and Recombivax HB.[4-6]

Abbreviations: anti-HBsAg = antibody to HBsAg; anti-HBc = antibody to hepatitis B core antigen; HBIG = hepatitis B immune globulin; HBsAg = hepatitis B surface antigen; hepB = hepatitis B; hepC = hepatitis C; HIV = human immunodeficiency virus; MSM = men who have sex with men; N/A = not applicable; STI = sexually transmitted infection; ULN = upper limit of normal

Footnotes:

a. **Persons at elevated risk** of HepB infection:
- sexual exposure risk: sex partners of HBsAg-positive persons; nonmonogamous persons (e.g., >1 sex partner in the past six months); persons seeking testing or care for a STI)
- percutaneous exposure risk: healthcare provider or first responder with potential blood exposure; residents/staff of facilities for developmentally disabled persons; current or recent injection drug users; household contacts of HBsAg-positive persons; dialysis patients; persons with diabetes
- Other: travel to country with HBsAg prevalence ≥2%; persons with HepC infection, liver enzymes >2x ULN, liver disease, or HIV; incarcerated persons

b. **Prevaccination serologic testing** for HBsAg, anti-HBsAg, and anti-HBc is an option before vaccinating persons in certain high-risk groups (see below). **It is not harmful to vaccinate persons who have/have had HepB**, but pre-vaccination testing can avoid the cost of unneeded vaccinations and identify persons with HepB so that they can get care.
- The first dose of HepB vaccine can be given when blood is drawn for testing. If testing shows that the person is or has been infected, the remaining doses can be skipped.
- Consider prevaccination testing in: sexual or household contacts of persons with HepB; persons who have ever used injection drugs; persons with HIV, hepC, or elevated liver enzymes of unknown cause; hemodialysis patients; MSM; persons born in countries with HBsAg prevalence ≥2%; US-born persons not vaccinated in infancy whose parents were born in a country with HBsAg prevalence ≥8%; persons requiring immunosuppressive drugs; donors of blood, plasma, organs, tissues, or semen

c. Check for response one to two months after the last dose in certain groups: infants born to HBsAg-positive mothers or mothers of unknown HBsAg status; healthcare providers and first responders with potential blood exposure; dialysis or predialysis patients; immunocompromised persons; sex partners of HBsAg-positive persons

d. If mother is HBsAg positive, give vaccine and HBIG within 12 hours of birth. If mother is negative, begin series at birth or two months after birth, with shared-decision-making.

Continued on next page

trchealthcare

Hepatitis B Vaccination (United States)

Updated December 2025

--Information from product labeling (see footnote e) unless otherwise indicated.—

Vaccine/cost[g] How supplied	Usual Adult Dose	Usual Peds Dose	Hemodialysis or Immunocompromised Dose (Adult)
Engerix-B ~$220 • 10 mcg/0.5 mL (pediatric/adolescent) • 20 mcg/mL (adults ≥20 years of age)	≥20 years of age: **three 20 mcg doses** given IM at 0, 1, and 6 months.[f]	Birth through 19 years of age: **three 10 mcg doses** given IM at 0, 1, and 6 months.[f]	Four 2-mL doses (40 mcg each), given IM at 0, 1, 2, and 6 months. (Can give each dose as a single 2 mL dose or as two 1 mL doses.)[f]
Heplisav-B ~$310 • 20 mcg/0.5 mL (adult ≥18 years of age)	≥18 years of age: **two 20 mcg doses** given IM with a minimum of 4 weeks between **doses one and two**.[8]	N/A	Immunocompromised patients: use usual adult dose.[8] Not for predialysis or hemodialysis patients.[7]
Recombivax HB ~$220 • 5 mcg/0.5 mL (pediatric/adolescent) • 10 mcg/mL (≥20 years of age) • 40 mcg/mL (dialysis/predialysis patients ≥18 years of age) Note: syringe tip caps, plunger, and vial stopper contain latex.	≥20 years of age: **three 10 mcg doses** given IM at 0, 1, and 6 months.[f]	Birth through 10 years of age: **three 5 mcg doses** given IM at 0, 1, and 6 months. 11 through 15 years of age: **three 5 mcg doses** given IM at 0, 1, and 6 months OR **two 10 mcg doses** at 0, 4 to 6 months. 16 through 19 years of age: **three 0.5 mcg doses** given IM at 0, 1, and 6 months.	Three 1-mL doses (40 mcg/each) given IM at 0, 1, and 6 months.[f]
Pediarix (diphtheria, tetanus, pertussis, polio, hepatitis b vaccine) ~$310 • 10 mcg HBsAg/0.5 mL (6 weeks through 6 years of age)	N/A	Six weeks through 6 years of age: **three 0.5 mL doses** given IM at 2, 4, and 6 months of age, at intervals of 6 to 8 weeks, preferably 8 weeks. Not for use as the birth dose.[2]	N/A
TwinRix (hepatitis A and hepatitis B vaccine) ~$400 • 20 mcg HBsAg and 720 ELISA units hepatitis A/mL (adults ≥18 years of age)	≥18 years of age: **three 1 mL doses** given IM at 0, 1, and 6 months: • Minimum of 4 weeks between **doses one and two**.[2] • Minimum of 5 months between **doses two and three**.[2] Accelerated dosing: **four 1 mL doses** given IM at 0, 7, and 21 to 30 days (then booster at month 12 for long-term immunity).	N/A	N/A
Vaxelis (diphtheria, tetanus, pertussis, HiB, polio, hepatitis b vaccine) ~$470 • 10 mcg HBsAg/0.5 mL (6 weeks through 4 years of age)	N/A	Six weeks through 4 years of age: **three 0.5 mL doses** given IM at 2, 4, and 6 months of age. Not for use as the birth dose. • Minimum of 4 weeks between doses.[10]	N/A

Footnotes *continued*:

e. Product information used in creation of this document:Engerix-B (November 2024), Heplisav-B (September 2024), Pediarix (May 2024), Recombivax HB (April 2023), TwinRix (April 2023), Vaxelis (November 2025)

f. Minimum of 4 weeks between **doses one and two**.[2] Minimum of 8 weeks between **doses two and three**.[2] Minimum of 16 weeks between **doses one and three**.[2] The higher dialysis dose of Engerix-B or Recombivax-HB can also be used for adults with significant kidney impairment (e.g., creatinine clearance <30 mL/min).Use clinical judgement.[7] Engerix-B or Recombivax can be given subcutaneously in patients at high risk of hemorrhage with IM injections, but with increased risk of local reactions, risk of subcutaneous nodules, and lower antibody response.

g. Cost of usual series (for adults if indicated).Pricing based on wholesale acquisition cost (WAC). US medication pricing by Elsevier, accessed December 2025.

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Tetanus Prevention and Vaccination

full update July 2026

This resource covers management of wounds for the prevention of tetanus, recommendations for tetanus vaccination, and available tetanus toxoid-containing vaccines (including those combined with diphtheria and pertussis [whooping cough]. General information about tetanus vaccine side effects and tetanus itself is provided at the end of the document.

Approach to Tetanus Prevention in Wound Management

1. Provide wound care (e.g., clean wound, remove dirt and foreign material, debride necrotic tissue).[15]
2. Classify wound.
   - Clean, minor wound (does not post a major tetanus risk)[15]

   Or
   - Dirty/major wound (e.g., puncture/penetrating; contaminated with dirt, feces, or saliva (e.g., bites); crush injuries; wound from flying objects; avulsions; burns; compound fractures; frostbite; devitalized/necrotic tissue)[3,7,15]
3. Determine tetanus vaccination history (number of doses and date of last dose).[7]
4. Determine if a tetanus vaccine is needed today.[3,7,17-19]

Number of prior doses	Clean and minor wound	Other wounds (i.e., contaminated wounds)
Unknown or <3	Age-appropriate[a] vaccine needed.	Age-appropriate[a] vaccine needed. Immune globulin **(TIG) is also needed** (see step 5).
≥3 doses	Age-appropriate[a] vaccine needed **if last dose was >10 years ago.**	Age-appropriate[a] vaccine needed **if last dose was ≥5 years ago.**[b] (TIG **might** also be needed [see step 5]).

a. Age-appropriate vaccine (also see vaccine chart below):
   - If <7 years of age, use DTaP.[7] (If the child has a contraindication to the pertussis component, use Td.[16]) Also consider these special circumstances:
     - If <6 weeks of age, no vaccine is approved. For contaminated wounds, give TIG only.[14]
     - If an infant ≥6 weeks of age received only one dose of DTaP <4 weeks earlier, give TIG for immediate protection for contaminated wound and DTaP ≥4weeks after first DTaP dose.[14]
   - If ≥7 years of age, use Tdap. If a non-pregnant patient has previously received Tdap, Td can be used.[11]

b. History of arthus reaction: persons who have experienced an Arthus reaction following a dose of tetanus toxoid or diphtheria toxoid–containing vaccine should not receive a tetanus toxoid–containing vaccine more frequently than every 10 years.[7]

5. Decide if immune globulin (TIG) is needed. (Give 250 IU IM at a separate anatomical site from the vaccine).[3,7,15] TIG is indicated if:
   - Patient has received <3 prior tetanus vaccine doses (unless wound is clean and minor).[7]
   - Patient has HIV or severe immunodeficiency (unless wound is clean and minor).[3,7]

ROUTINE Recommendations for Tetanus Vaccination

US	Canada
Children (DTaP-containing vaccine)[2,16-18] 5-dose series (3-dose primary series, then two boosters): • Age 2, 4, and 6 months • Booster at 15 to 18 months* • Booster at 4 to 6 years** *Dose 4 can be given as early as age 12 months if at least 6 months have passed since dose 3. A 4th dose given accidentally as early as age 12 months can be "counted" if at least 4 months have passed since dose 3. **Dose 5 is not required if dose 4 was given at ≥4 years of age and at least 6 months after dose 3. **Adolescents (Tdap)** • Adolescent booster at 11 to 12 years of age.[2,17,18] • Also see pregnancy and cocooning dose, below. **Adults (Td or Tdap)** • Adults need a tetanus booster every 10 years (Td or Tdap).[2,19] • Pregnancy: give one Tdap dose EACH pregnancy, ideally at 27 to 36 weeks gestation to protect infant from pertussis[2,5,17-19] • Cocooning dose: give one Tdap dose to adults/adolescents who will have close infant contact (if not previously given) preferably two weeks before infant contact, to protect infant from pertussis.[2] • Healthcare professional dose: give one dose of Tdap if not previously given, regardless of the time since their last Td.[2]	**Children (DTaP-containing vaccine)**[3] 5-dose series (3-dose primary series, then two boosters: • Age 2, 4, and 6 months • Booster at 12 to 23 months (usually at 18 months) • Booster at 4 to 6 years* *DTaP-IPV or Tdap-IPV can be used for Dose 5. Dose 5 is not required if dose 4 was given at ≥4 years of age and at least 6 months after dose 3. **Adolescents (Tdap)** • Adolescent booster at 14 to 16 years of age.[3] Use Tdap-IPV[c] if IPV is needed.[3] • Also see pregnancy, below. **Adults (Td or Tdap)** • Adults need a tetanus booster every 10 years (one should be Tdap).[3] • Pregnancy: give one Tdap dose EACH pregnancy, ideally at 27 to 32 weeks gestation to protect infant from pertussis.[6] • Cocooning dose: give one Tdap dose to adults (if not previously given in adulthood) who will have infant contact on a regular basis, preferably two weeks before infant contact, to protect infant from pertussis.[6] • Healthcare professional dose: give one dose of Tdap if not previously given in adulthood.[6]

Tetanus Vaccine Side Effects

- Local reactions (e.g., erythema, induration, pain at site) are common but self-limiting.[2]
- Arthus reactions (extensive, painful swelling of arm) are not common.[2]
  - Typically starts two to eight hours after the injection.[3]
  - More common in adults, particularly those who've received frequent doses of diphtheria or tetanus toxoid vaccines.[3]
  - Do NOT give tetanus toxoid vaccine to patients with a history of an Arthus reaction more than every 10 years.[2,3]
- Tetanus toxoid-containing vaccines are contraindicated in patients who had a severe allergic reaction/anaphylaxis to a previous dose or vaccine component.[2,3,17] Encephalopathy within 7 days after vaccination with DTaP or Tdap is a contraindication to DTaP or Tdap (US).[2,17,18]

Comparison of Tetanus Toxoid-Containing Vaccines

- Can be given at the same visit as other vaccinations, at different injection sites, using separate needles and syringes.[3,4]
- Tetanus toxoid vaccines all have the same dose of tetanus toxoid.[12] Pediatric tetanus-diphtheria vaccines contain a higher dose of diphtheria and pertussis, required for children under seven years (denoted by the capitals "D" and "P" in the descriptions [e.g., **D**Ta**P**]).[1,12]

Vaccine	Age Range	Use
Tetanus toxoid, diphtheria +/- acellular pertussis		
Tdap (Adacel, Boostrix)	≥7 years[2,3]	• Adolescent booster (Canada: use Tdap-IPV[c] if IPV is needed)[2,3,18] • Adult booster (US: Tdap, then Td or Tdap; Canada: one should be Tdap)[2,3,19] • Pregnancy dose[2,5,6,17-19] • Cocooning dose[2,6] • Healthcare professional dose[2,6] • Primary series catch-up: first dose should be Tdap (Canada: Tdap-IPV[c]).[2,3,17-19] • Note (US): if ≥65 years of age, Boostrix preferred, but Adacel acceptable.[2]
Td (Tenivac [US], Td Adsorbed [Canada])		• Adult booster: (US: Td or Tdap; Canada: one should be Tdap).[2,3] • Primary series catch up (three doses): first dose should be Tdap (Canada: Tdap-IPV[c])[2,3,19]
Daptacel (DTaP)(US)	6 weeks through 6 years[9]	5-dose series (3-dose primary series at ages 2, 4, and 6 months, followed by booster doses at ages 15 to 18 months and 4 to 6 years).[16] If dose 4 is given on or after the 4th birthday, the 5th dose is optional.[2] Note: Dose 4 can be given at 12 months if at least 6 months have passed since the third dose.[16] But if the 4th dose is accidentally given at age 12 months and only 4 months have passed since the third dose, the dose "counts".[16]
Infanrix (DTaP)(US)		
DTaP Combination Vaccines for Children (US)		
Pediarix(US)(DTaP plus IPV and hep B)	6 weeks through 6 years[9]	Pediarix is FDA-approved for the 3-dose primary series. Follow with the 4th and 5th doses of DTaP and a 4th dose of polio at appropriate ages.[8]
Pentacel (US)(DTaP plus Hib and IPV)	6 weeks through 4 years[9]	Pentacel is FDA-approved for the first four doses of the component vaccines (2, 4, and 6 months, and 15 to 18 months).[2] Dose 4 must be separated from dose 3 by at least six months, and should not be given before age 12 months.[2] Follow with IPV or DTaP-IPV at age 4 to 6 years.[2]
Vaxelis (US)(DTaP plus Hib, hep B, and IPV)		Vaxelis is FDA-approved for the 3-dose primary series, with the final dose given at ≥24 weeks, the minimum age for completion of the hep B vaccine series.[2]

Kinrix (US)(DTaP plus IPV)	4 to 6 years[9]	Kinrix is FDA-approved for the 5th DTaP dose and the 4th IPV dose in children who received Infanrix and/or Pediarix for doses 1,2, and 3, and Infanrix for the 4th dose.[2] However, if Kinrix is given to children who received another DTaP brand, or if Kinrix is given as dose 1, 2, 3, or 4 of the DTaP series, or dose 1, 2, 3 of the IPV series, it "counts."[2]
Quadracel (US)(DTaP plus IPV)	4 to 6 years of age[2]	Quadracel is FDA-approved for the 5th DTaP dose and the 4th and 5th IPV dose in children who received 4 doses of Pentacel and/or Daptacel. However, if Quadracel is given to children who received another DTaP brand for prior DTaP vaccines doses, or if Quadracel is accidentally given as dose 1, 2, 3, or 4 of the DTaP vaccine series, or dose 1, 2, or 3 of the IPV series, it "counts."[2]
DTaP Combination Vaccines for Children (Canada)		
Infanrix-IPV/Hib, Pentacel (Canada)(DTaP plus IPV and Hib)	6 weeks through 6 years[3]	Give at 2, 4, 6, and 12 to 23 months of age (generally given at 18 months of age).[3] Follow with a booster using DTaP-IPV (Quadracel) or Tdap-IPV[c] at 4 to 6 years of age, and Tdap as a booster at 14 to 16 years of age.[3] The booster at 4 to 6 years of age is not needed if the 4th dose of tetanus-toxoid-containing vaccine was given after the fourth birthday.[3]
Infanrix hexa (Canda)(DTaP plus Hib, hep B, and IPV	6 weeks through 6 years[3]	Can give at 2, 4, 6 and 12 to 23 months, but the fourth dose is unlikely to provide additional hep B protection and will increase cost. Alternatively, give at 2, 4, and 6 months, with Infanrix-IPV/Hib or Pentacel as the dose at 12 to 23-months, **or** give at 2, 4, and 12 to 23 months of age with Infanrix-IPV/Hib or Pentacel as the dose at 6 months.[3] Follow with a booster using DTaP-IPV (Quadracel) or Tdap-IPV[c] at 4 to 6 years of age, and Tdap as a booster at 14 to 16 years of age.[3] The booster at 4 to 6 years of age is not needed if the fourth dose of tetanus-toxoid-containing vaccine was given after the fourth birthday.[3]
Quadracel (Canada)(DTaP plus IVP)	4 through 6 years of age[3]	Can use for the 4 to 6 years of age booster.[3]

c. Boostrix-Polio or Adacel-Polio (Tdap-IPV) (Canada)

General Information About Tetanus

- Tetanus is caused by a neurotoxin from the bacterium *Clostridium tetani*. Its spores are found in contaminated soil, and sometimes in feces.[3]
- Tetanus is rare in fully immunized people, but the mortality rate is ~10%.[3,10]
- There are three clinical forms of tetanus: **generalized** (e.g., difficulty following or breathing, generalized spams [often caused by sensory stimuli], rigidity, seizures, trismus [lockjaw]), **localized** (e.g., localized spasms near wound), and rarely **cephalic** (e.g., flaccid cranial palsies; can be associated with otitis media, and can progress to generalized tetanus).[13]
- Tetanus is a clinical diagnosis; there is no test for it.[13]

Abbreviations: DTaP = diphtheria and tetanus toxoids and acellular pertussis vaccine; hep = hepatitis; Hib = *Haemophilus influenzae* type B; IM = intramuscular; IPV = inactivated polio vaccine; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis; Td = tetanus and diphtheria toxoids; TIG = tetanus immune globulin

Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.

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