Immunizations and communicable diseases

Live vs non-live, who waits, sites and spacing, storage; childhood infections, genetics, lead

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1 AT A GLANCE

Vaccines are one of the most powerful tools in prevention, and nurses give most of them. The CDC schedules change: always check the current schedule before you give or advise.

Live or non-live?

	Know
Live (weakened germ)	MMR, chickenpox. Long-lasting protection, but the most restrictions
Non-live (piece of the germ, or inactivated toxin)	Like the diphtheria, tetanus and pertussis vaccine. Generally fine in pregnancy and immune suppression, as the schedule directs; no risk while breastfeeding
★ **Pregnancy**	**Live vaccines generally not given; MMR and varicella are contraindicated**
Severe immune suppression	Live vaccines generally not given

Who should wait?

	Means
★ **Contraindication**	Don't give: the risk of a serious reaction is too high. **Anaphylaxis after a previous dose, or to an ingredient**
Precaution	Weigh it. Moderate or severe illness: often the vaccine waits until the client is better
★ **Mild illness**	**A cold or a low-grade fever isn't a reason to delay.** Missed doses are a bigger risk

Every dose, ask: Any severe reactions before? Allergies? Pregnant? Immune problems? Sick today?

Giving vaccines

	Do
★ **IM site**	**Infants: the anterolateral thigh (vastus lateralis).** Toddlers: the thigh is preferred; the deltoid works if muscle mass is adequate. From age 3, the deltoid is preferred; teens and adults get routine shots there too
How	No need to aspirate: no large vessels at these sites. Needle length depends on age and size, like 1 inch for an infant's thigh; check the guidance
Several due	Give every vaccine due at the visit. Shots in one limb at least an inch apart; more than two in one limb: use the thigh
★ **Spacing**	**Two live injected or nasal vaccines: same day, or at least 4 weeks apart.** Oral live vaccines, like rotavirus, are exceptions. Non-live: any time, with any other vaccine. Doses 5 or more days too early don't count

Adult and pregnancy anchors

	Schedule: check the current one
Influenza	Adults: once a year. Pregnancy: in flu season
★ **Tetanus**	After a completed primary series: one Tdap, then a booster every 10 years. **Incomplete or unknown history: catch-up series first, including Tdap**
Shingles	Adults 50 and older: two doses of the recombinant vaccine
Pregnancy	**Tdap during every pregnancy**, ideally early in weeks 27 to 36

Storage, records, reactions

- ★ Fridge: **2 to 8 °C** (36 to 46 Fahrenheit). Frozen vaccines, like varicella: minus 50 to minus 15 °C.
- Out of range: don't use it, don't throw it away. Mark it do not use, move it to a unit in range, check with the health department or manufacturer.
- A current Vaccine Information Statement before every dose, including each dose of a series.
- Record the date, manufacturer and lot number, your name, title and address, the statement's edition date and the date given.
- Fainting, especially in teens: consider having clients sit or lie down for 15 minutes.
- ★ Anaphylaxis: **epinephrine first**, then call for help. Report adverse events to the Vaccine Adverse Event Reporting System, even if you're not sure.

Genetics

	Know
★ **Down syndrome**	Extra chromosome 21. Low tone at birth, upward-slanting eyes, flat nose, single palm crease. **Watch the heart: echocardiogram soon after birth.** Early, massive vomiting can signal a bowel blockage
★ **PKU**	Can't break down phenylalanine; found on newborn screening. **Strict, lifelong low-phenylalanine diet**: no milk, eggs or aspartame. Infants can still breastfeed, with careful monitoring
Inheritance	A gene from both parents: cystic fibrosis, sickle cell disease. Carrier mothers to sons: hemophilia, Duchenne muscular dystrophy

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Immunizations and communicable diseases

1 AT A GLANCE, CONTINUED

Childhood infections

	Clue	Precautions and care
★ **Measles**	**Koplik spots**, tiny white spots in the mouth, then a rash spreading from the head down. Fever, cough, runny nose, red eyes	**Airborne**; immune staff care for the child. Supportive care: acetaminophen, rest, humidified air. Immune globulin within 6 days of exposure can reduce illness
★ **Chickenpox**	Crops of itchy blisters that crust over, starting on the face, trunk or scalp	**Airborne and contact.** Acetaminophen; never aspirin (Reye syndrome); avoid ibuprofen. Back to school only when every blister has crusted over
★ **Pertussis**	Violent coughing spells, sometimes ending in a whoop, often with vomiting. **Infants may stop breathing**	**Droplet, until 5 days of effective antibiotics.** Watch infants constantly. Early antibiotics, like azithromycin for young infants, may ease it and limit spread; cough medicines don't help
Mumps	Painful swelling of the parotid glands, between the ear and the jaw	**Droplet.** Ice or heat to the neck, acetaminophen, fluids, soft foods
Fifth disease	Bright red slapped-cheek rash, then a lacy rash on the body	Usually mild; fades in about 2 weeks. A child with sickle cell disease or weak immunity needs prompt care. An exposed pregnant woman tells her provider: it can harm the fetus

Vaccines: MMR at 12 to 15 months and again at 4 to 6 years. DTaP series in early childhood, Tdap at 11 or 12 and in every pregnancy. Large studies show no link between vaccines and autism. Check the current schedule.

Lead and other poisoning

- Lead usually comes from dust or paint chips in **homes painted before 1978**; also old or imported painted toys, soil, some pottery and pipes.
- ★ **There's no safe blood lead level**; the younger the child, the more harm. Often no obvious symptoms, but it harms learning, attention, IQ, growth and hearing.
- Signs: belly pain, constipation, irritability, anemia, losing developmental skills. Very high: vomiting, staggering, seizures, coma.
- Remove the sources, check the blood lead level; chelation removes high levels.
- Any poisoning: 911 for severe symptoms like seizures; otherwise **Poison Help, 1-800-222-1222**, free and open around the clock.

2 PRIORITY AND SAFETY CALLS

★ A 4-month-old due for vaccines has a runny nose and a temperature of 37.8 Celsius: **give the vaccines that are due**.

Pregnant at 20 weeks with no MMR on record: MMR waits until after the birth; a flu shot in season is recommended now.

The vaccine fridge reads 11 degrees Celsius: label them do not use, store them in range, and call the health department or manufacturer.

★ A 2-month-old with pertussis: the top concern is **pauses in breathing** during or after the spells.

A 2-year-old in an old house being sanded, irritable and losing words: anticipate a blood lead test.

3 EXAM ANCHORS

1. Traps: holding a vaccine for a cold, a live vaccine in pregnancy, a deltoid shot in an infant, spacing live shots a week apart.
2. Thigh for infants, preferred for toddlers; deltoid from age 3, or earlier with enough muscle. Store at 2 to 8 Celsius.
3. Measles: airborne; chickenpox: airborne and contact; pertussis and mumps: droplet.
4. Traps: aspirin or ibuprofen for chickenpox, school before crusting, cough medicine for pertussis.
5. Down syndrome: check the heart. PKU: no aspartame. Lead: old paint, no safe level.

4 SELF-QUIZ

1. Refrigerated vaccines are stored at 2 to _____ °C.
2. Two live injected vaccines go on the same day, or at least _____ weeks apart.
3. An infant's IM vaccine goes in the _____ thigh.
4. Pertussis needs droplet precautions until _____ days of effective antibiotics.
5. Chickenpox: back to school when every blister has _____.
6. Poison Help is 1-800-222-_____.

ANSWER KEY 1. 8 · 2. 4 · 3. anterolateral · 4. 5 · 5. crusted over · 6. 1222

5 SOURCES

1. CDC, Contraindications and Precautions. cdc.gov/vaccines/hcp/imz-best-practices/con…
2. CDC, Timing and Spacing of Immunobiologics. cdc.gov/vaccines/hcp/imz-best-practices/tim…
3. CDC, Vaccine Administration. cdc.gov/vaccines/hcp/imz-best-practices/vac…
4. CDC, Storage and Handling of Immunobiologics. cdc.gov/vaccines/hcp/imz-best-practices/sto…
5. CDC/HICPAC, 2007 Guideline, Appendix A: Type and Duration of Precautions. cdc.gov/infection-control/hcp/isolation-pre…
6. MedlinePlus, Lead poisoning. medlineplus.gov/ency/article/002473.htm

Built from RN PocketPal course lessons: Immunizations across the lifespan (c04-l03); Communicable diseases, genetics and poisoning (c18-l08). Every line on this sheet comes from those lesson scripts.

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