The Gap in Childhood Immunization in the Time of COVID-19

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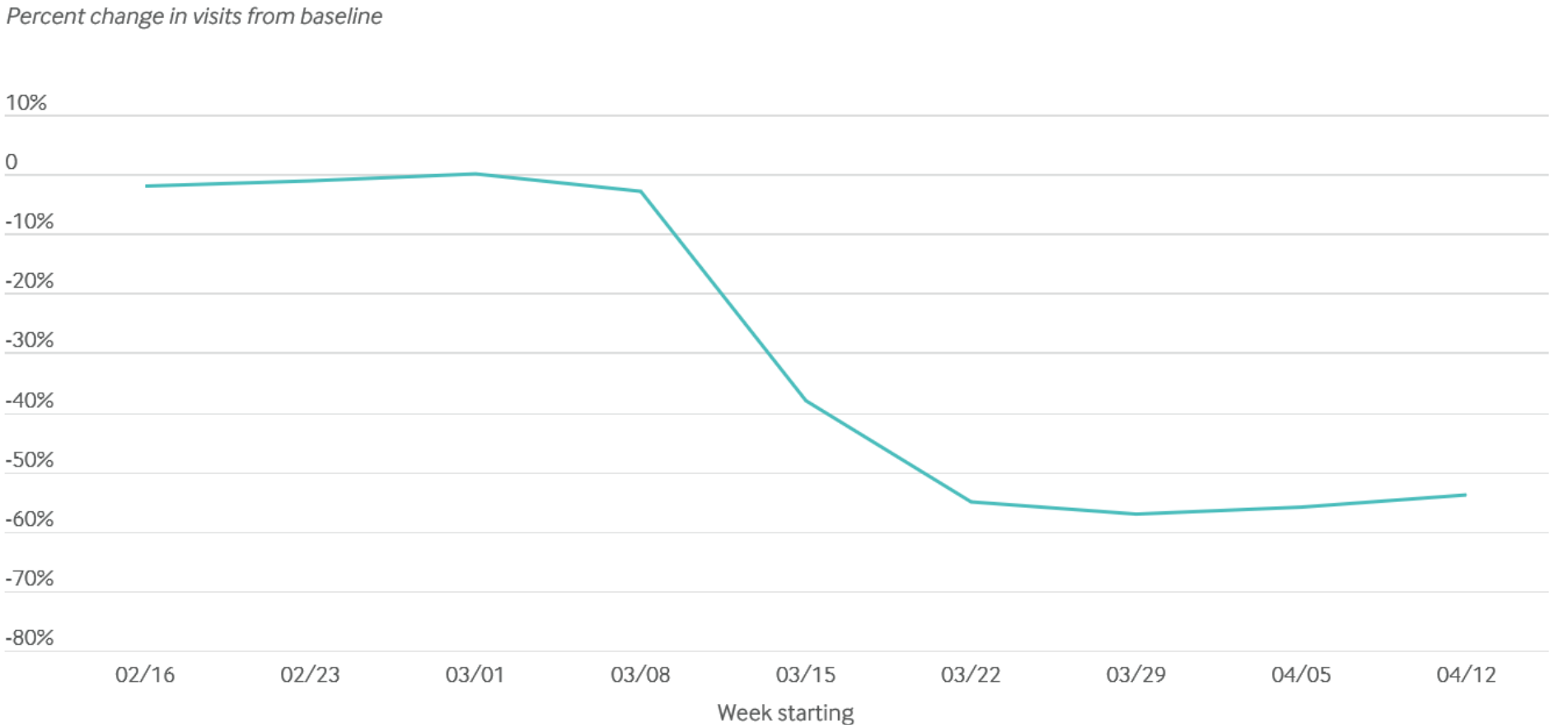
Immunization Services Division

Current Issues in Immunization Webinar

14 July 2021

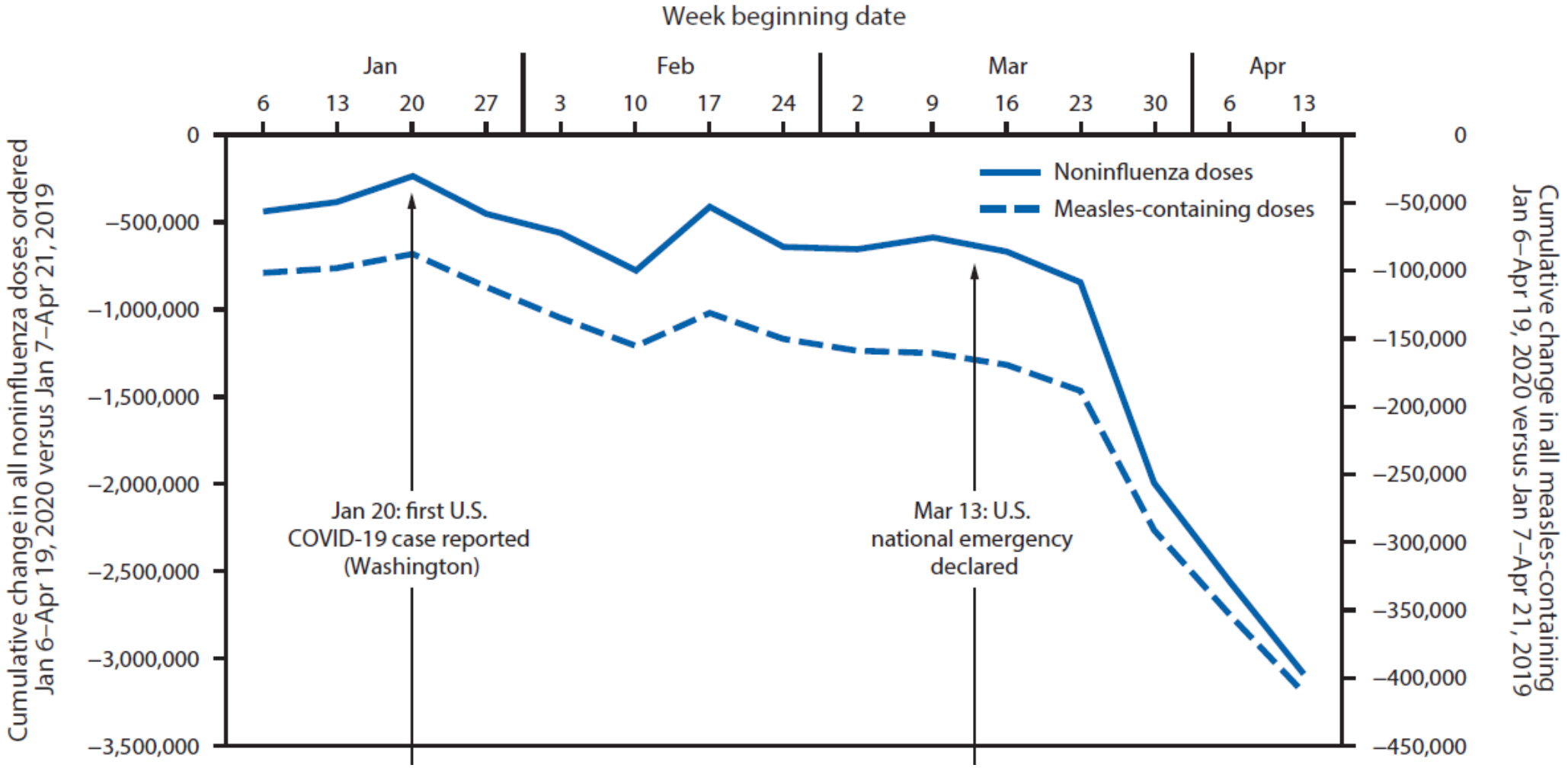
The number of visits to ambulatory practices declined nearly 60 percent in mid-March and has remained low through mid-April.



Note: Data are presented as percentage change in number of visits in a given week from the baseline week (March 1–7). Data for week of April 12 are through April 16.

Source: Ateev Mehrotra et al., "What Impact Has COVID-19 Had on Outpatient Visits?," *To the Point* (blog), Commonwealth Fund, Apr. 23, 2020. https://doi.org/10.26099/ds9e-jm36

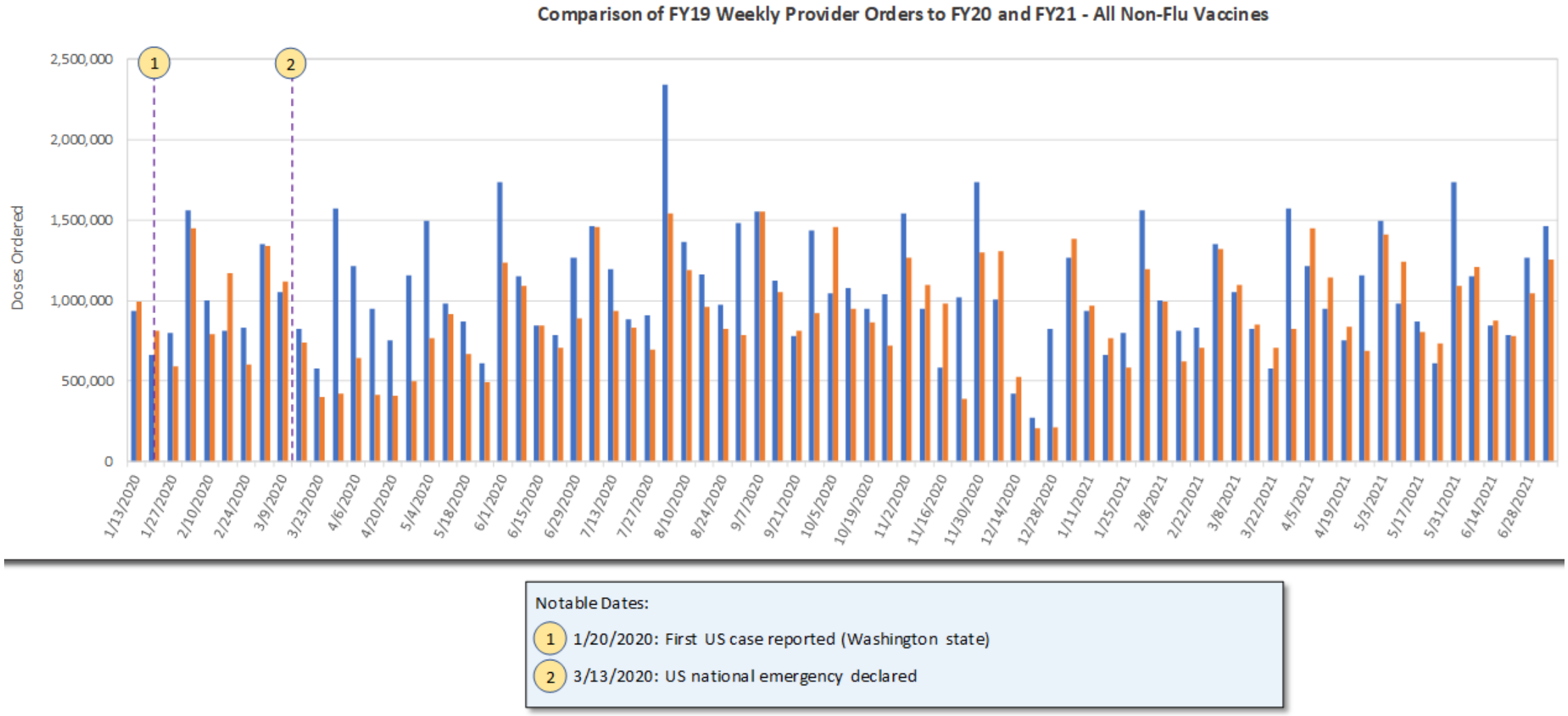
Weekly changes in Vaccines for Children program provider orders for pediatric vaccines – United States, January 6-April 19, 2020



* VFC data represent the difference in cumulative doses of VFC-funded noninfluenza and measles-containing vaccines ordered by health care providers at weekly intervals between Jan 7–Apr 21, 2019, and Jan 6–Apr 19, 2020.

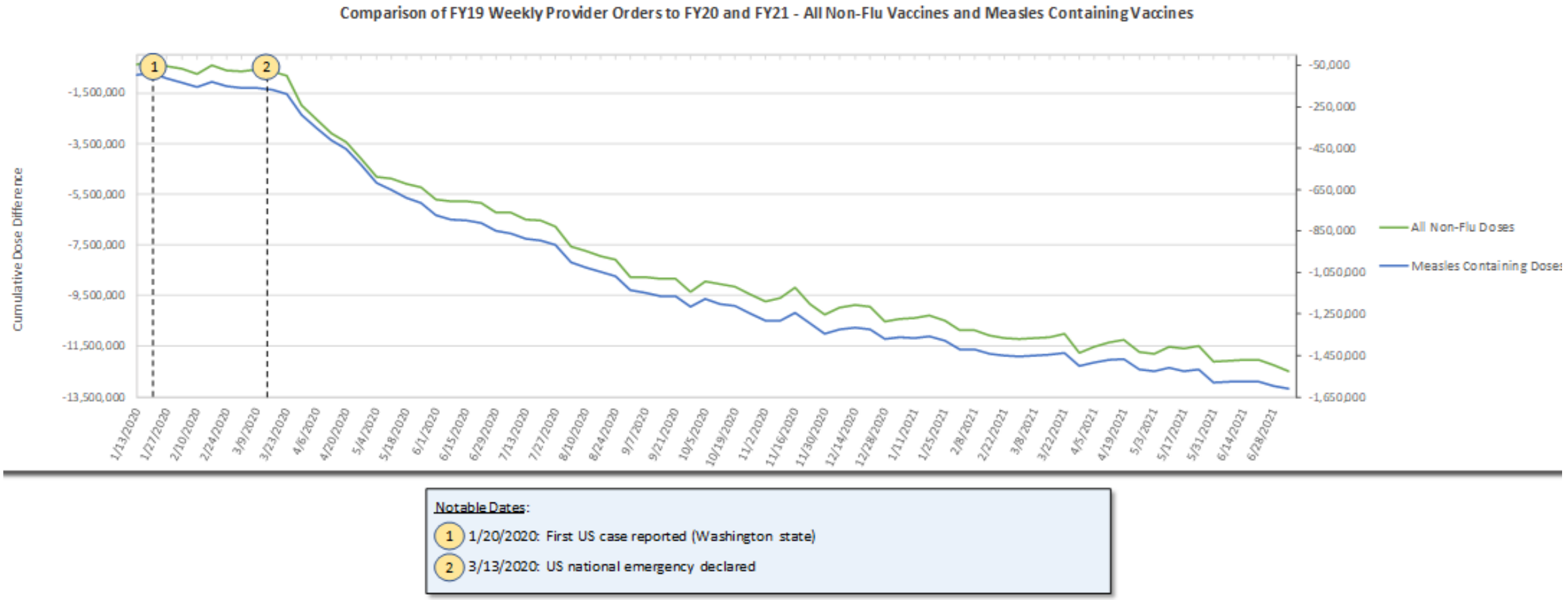
Santoli JM et al, MMWR (May 8, 2020)

VFC provider orders have rebounded…



Data through week ending July 11, 2021

…but there still is a substantial deficit for 2020-2021



As of July 11, overall VFC provider orders (other than flu) are down by **12.5M doses** with MMR/MMRV down by **1.6M doses**

Other data show **a slower recovery in the public sector compared with the private sector**

The COVID-19 gap is larger for some pediatric vaccines than others

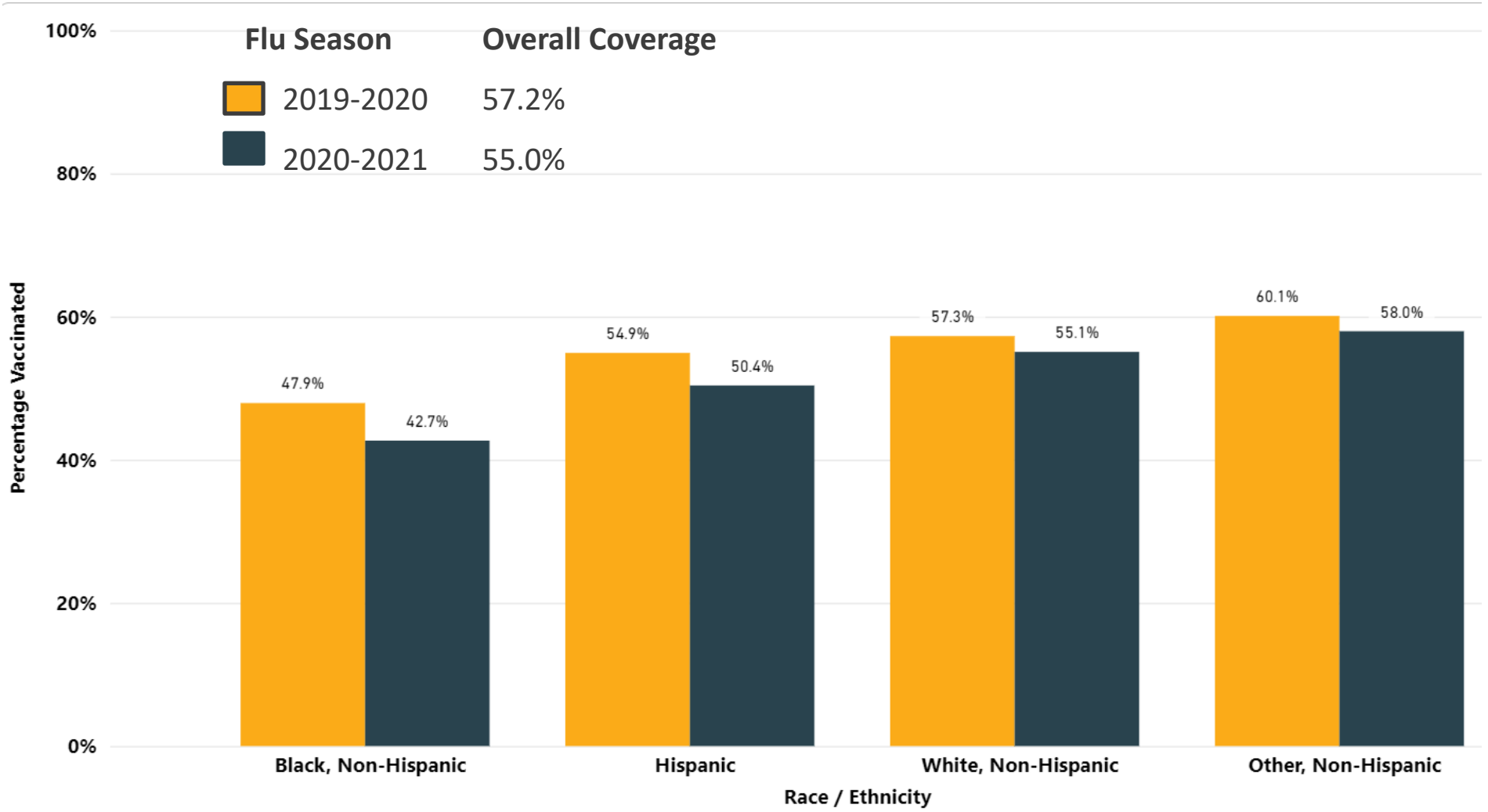
- Many vaccines primarily given to younger age children have smaller gaps than those given to older kids.
  - Rotavirus vaccine – down 5.7%
  - PCV13 – down 8.1%
  - DTaP-containing vaccines – down 8.7%

  - Tdap – down **17.2%**
  - HPV – down **18.1%**
  - Meningococcal conjugate vaccine – down **13.9%**

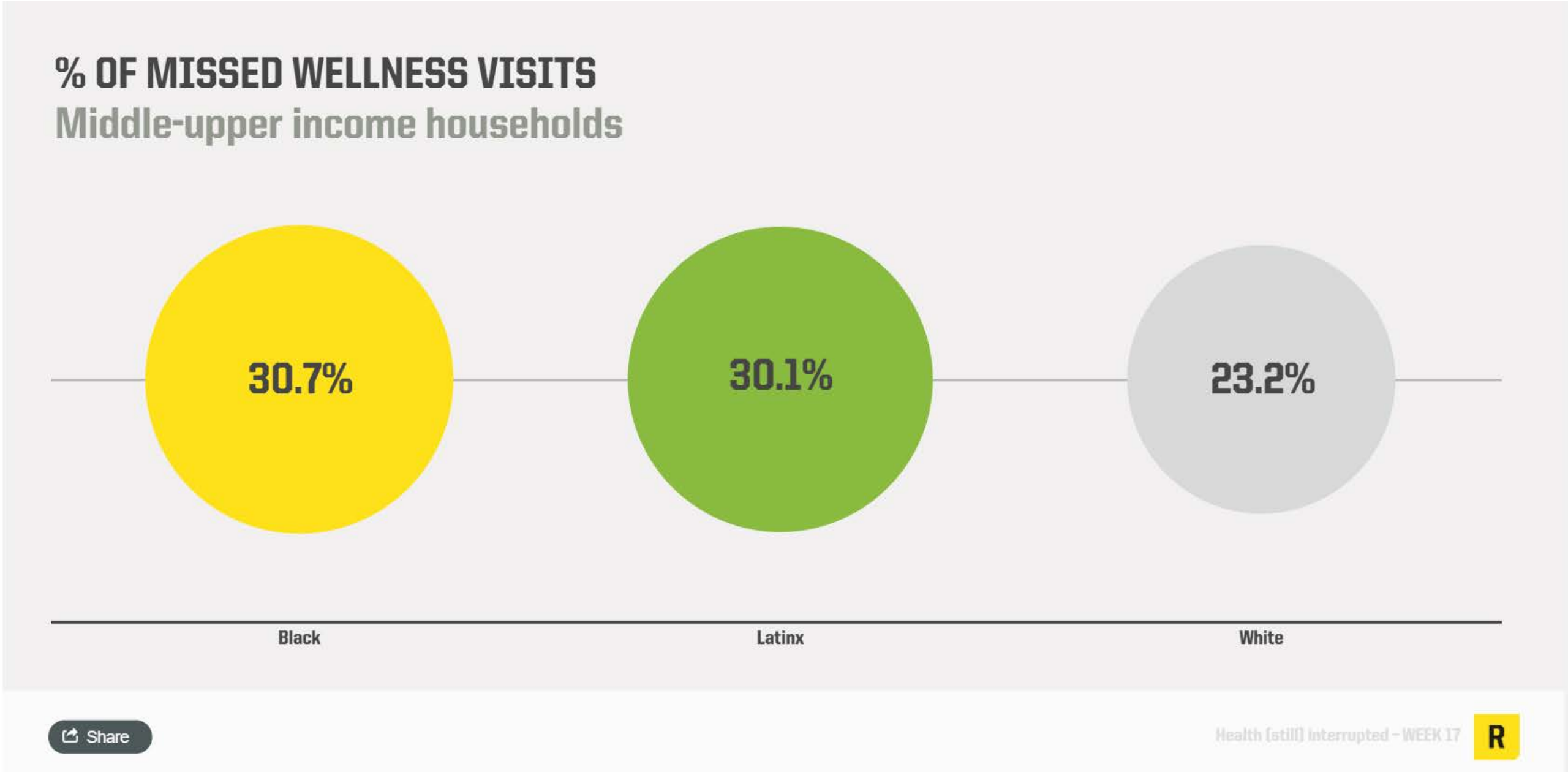
- ***Measles-containing vaccines are down by 18.5%***

Data through week ending July 11, 2021

Influenza vaccination coverage among children is lower than last season, and disparities by race and ethnicity have widened



Through week ending January 2, 2021



Center for Translational Neuroscience (2020, October 13). *Medium.* https://medium.com/rapid-ec-project/health-still-interrupted-pandemic-continues-to-disrupt-young-childrens-healthcare-visits-e252126b76b8

Education

‘They got back to us’: How one school built trust and got reluctant parents to return

Third-grader Za’Quan Daniels, 9, celebrates a correct answer with social worker Alyce Hairston at Patterson Elementary School in Southwest Washington on Friday. (Evelyn Hockstein for The Washington Post)

Perry Stein, The Washington Post, February 28, 2021

“Many are unable to return because they lack the immunizations required to enter the buildings. Youth vaccinations have plummeted during the pandemic, and nurses at Patterson are working with these families to schedule appointments at a nearby clinic.”

The need for catch-up vaccination is urgent as we plan for safe return to in-person school

- Many school-aged children missed recommended vaccines over the last year due to disruptions associated with COVID-19
  - Especially concerning are gaps for measles vaccine and vaccines routinely recommended at 11-12 years of age
- Schools may not have focused on compliance with school vaccination requirements during the 2020-2021 school year
- We need to get children caught up on vaccine doses they missed so that they can safely return to in-person learning
- Now that COVID-19 vaccine is available for younger adolescents, we still need to assure that catch-up efforts continue for routine vaccines

Call to Action: Kids Need to Get Caught Up on Recommended Vaccines for Safe Return to School

- Healthcare systems and healthcare providers should:
  - Identify families whose children have missed doses and contact them to schedule appointments
  - Prompt clinicians when these children are seen to deliver vaccines that are due or overdue
  - Let families know what precautions are in place for safe delivery of in-person services
- Healthcare provider organizations should:
  - Encourage members to identify and follow up with families whose children have missed doses to get appointments scheduled

Help Kids' Safe Return to Schoo Get Caught Up on Recommended Vaccines (cdc.gov)

Call to Action: Kids Need to Get Caught Up on Recommended Vaccines for Safe Return to School

- Schools and state and local governments agencies should:
  - Send reminders to families about school immunization requirements
  - Follow-up with families of children who are not in compliance with requirements to encourage compliance
  - Use the state's immunization information system's reminder-recall capacity to notify families whose children have fallen behind on vaccines
- We all should:
  - Communicate directly to families the importance of well-child visits and getting caught up on any recommended vaccines that were missed

Help Kids' Safe Return to Schoo Get Caught Up on Recommended Vaccines (cdc.gov)

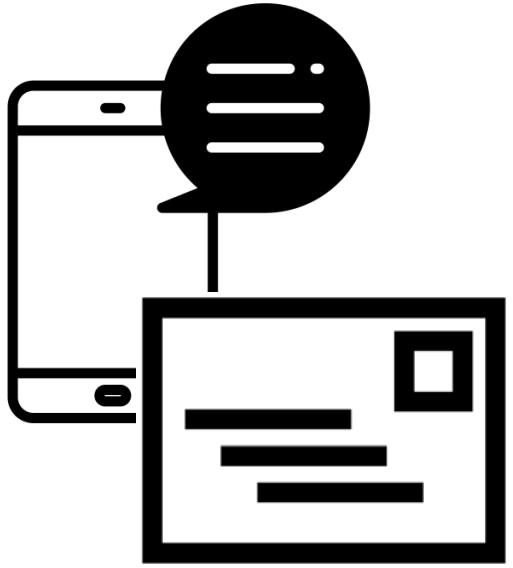
Catch-up Vaccination

Catch-up Priorities – COVID-19 Pandemic

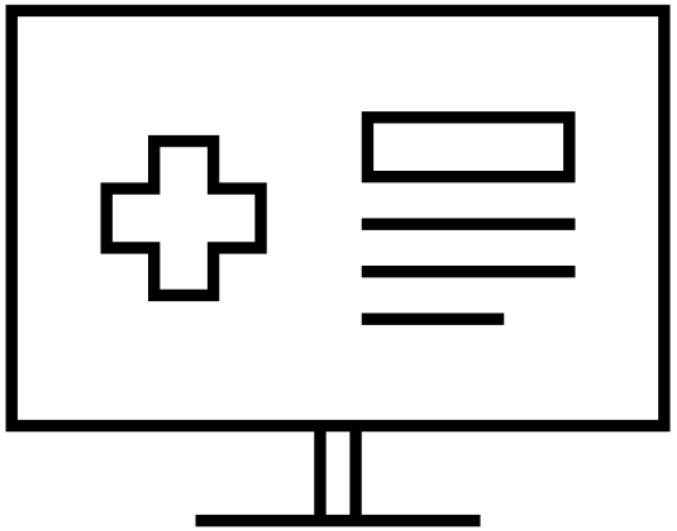
- Children- newborns, infants and children up to 24 months of age, young children, and extending through adolescence
- Pregnant women – Tdap and influenza vaccines should be administered at the next prenatal appointment
- Adults – follow the Standards for Adult Immunization

Catch-up Vaccination Strategies

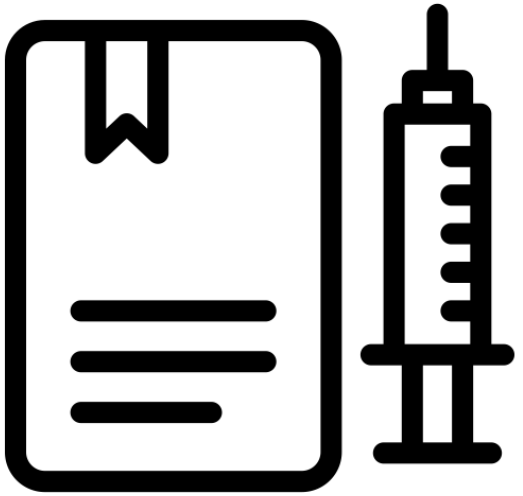
Reminder/recall systems



Forecasting through EHR or IIS*



Standing orders

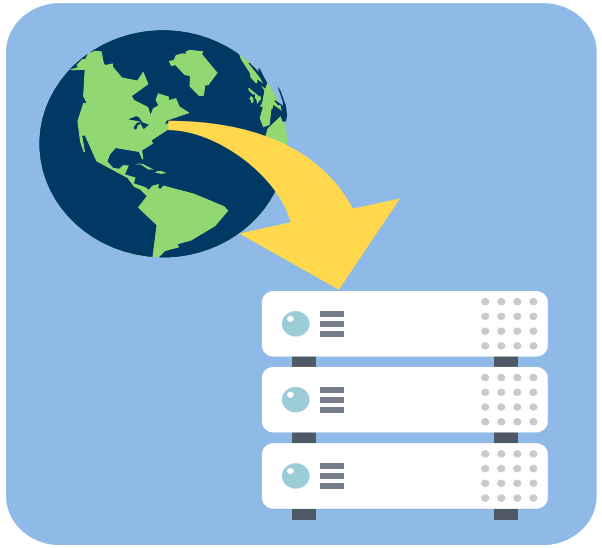


*Electronic health record (EHR) or immunization information system (IIS)

U.S. Community Preventive Services Task Force. Guide to Community Preventive Services. Vaccination Programs. https://www.thecommunityguide.org; Photo credit: Noun project

Vaccination Documentation

Because patients may be receiving vaccines outside their medical home, it is critical all vaccinations are documented in an Immunization information system (IIS) or electronic health record (EHR) for accurate and timely information on patient vaccination status.



Persons with Suspected or Confirmed COVID-19

- Routine vaccination should be deferred for persons with suspected or confirmed COVID-19, regardless of symptoms.

https://www.cdc.gov/vaccines/pandemic-guidance/index.html

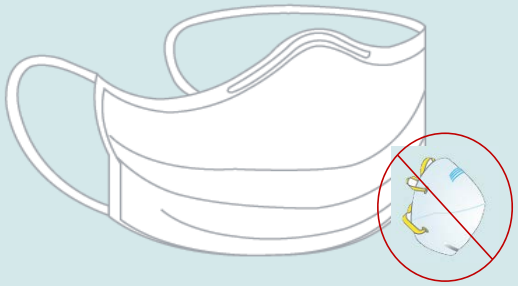
Implement Enhanced Infection Control Measures

- Screen patients for COVID-19 symptoms before and during the visit.
- Maintain physical distancing (at least 6 feet apart, where possible).
- Limit and monitor facility points of entry and install barriers to limit physical contact with patients at triage.
- Practice respiratory hygiene (facemasks for staff and cloth face coverings for patients over 2 years of age, if tolerated) and cough etiquette.
- Practice hand hygiene (including at least 60% alcohol hand sanitizer for patients).
- Enhance surface decontamination.

Refer to guidance to prevent the spread of COVID-19 in https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html

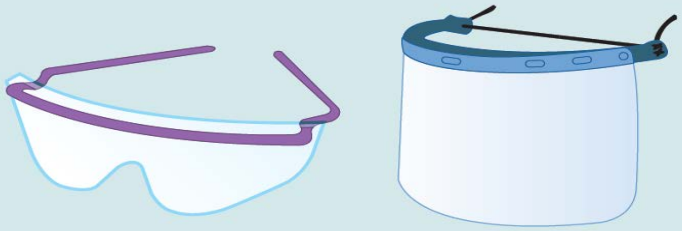
Use Personal Protection Equipment

Face Mask



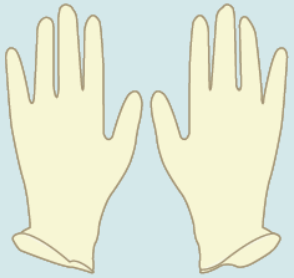
- **Recommended**: All healthcare providers (N95 masks not recommended)

Eye Protection



- **Recommended:** Areas of moderate/substantial community transmission
- **Optional**: Areas of minimal/no community transmission

Gloves

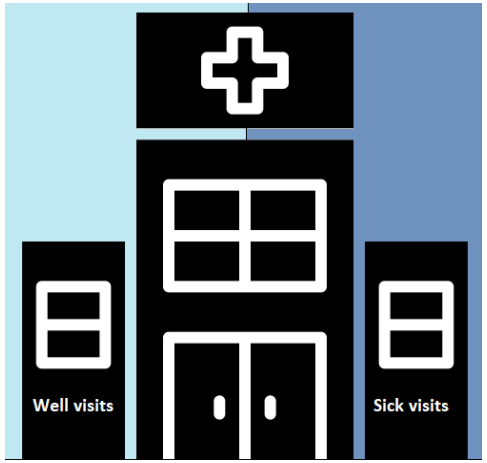


- **Recommended:** Intranasal or oral vaccines
- **Optional:** Intramuscular or subcutaneous vaccines

https://www.cdc.gov/vaccines/pandemic-guidance/index.html; Image credit: Pan American Health Organization

Ensure Physical Distancing during Vaccination Visits

Separate Sick from Well Patients

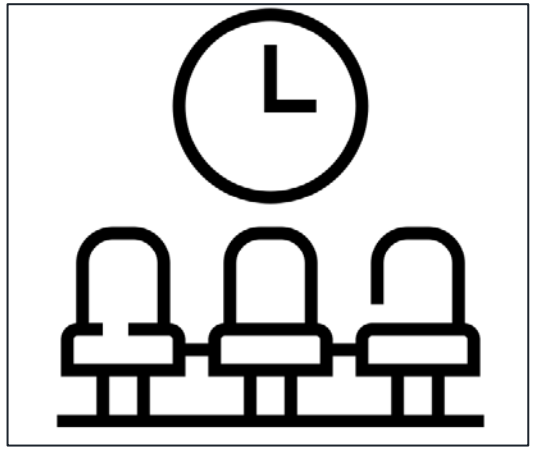


- Schedule well and sick visits at different times of the day.
- Place sick patients in different areas of the facility or different locations.

Ensure Physical Distancing Measures

- At least 6 feet during all aspects of visit: check-in, checkout, screening procedures, postvaccination monitoring
- Use strategies such as physical barriers, signs, ropes, floor markings.

Reduce Crowding in Waiting Room

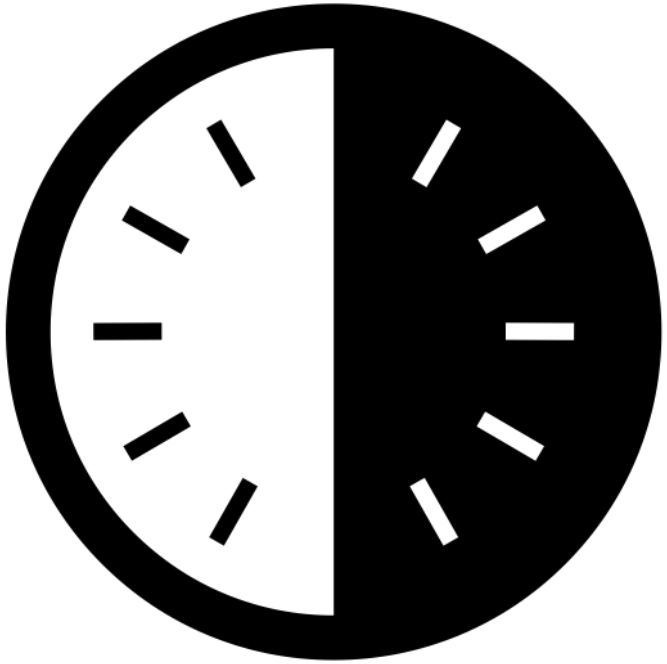


- Ask patients to wait outside (e.g., in their vehicles) until called in.

https://www.cdc.gov/vaccines/pandemic-guidance/index.html; Image credit: Noun Project, CDC

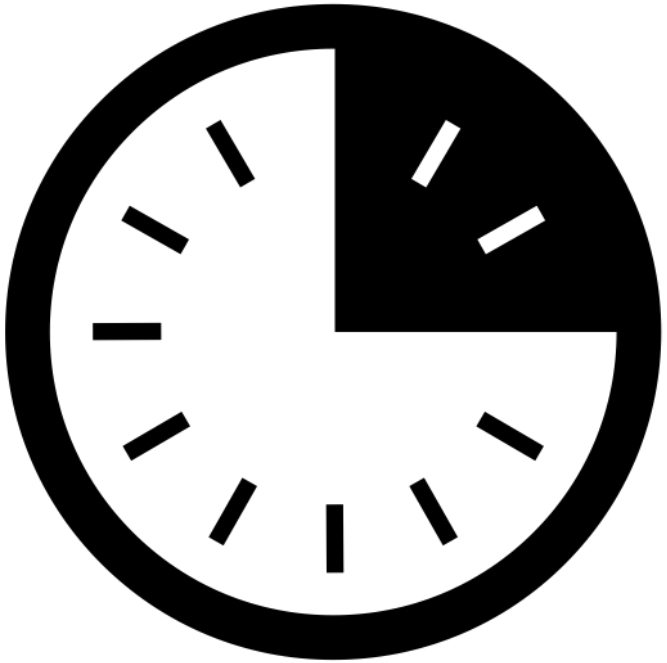
Special Adolescent Concern

History of immediate allergic reaction (any severity) to a vaccine or injectable therapy
Contraindication to a different type of COVID-19 vaccine
History of anaphylaxis (due to any cause)



30 minutes

All other persons



15 minutes

Recommended Child and Adolescent Immunization Schedule
for ages 18 years or younger

UNITED STATES
2021

Vaccines in the Child and Adolescent Immunization Schedule*

Vaccines	Abbreviations	Trade names
Diphtheria, tetanus, and acellular pertussis vaccine	**DTaP**	Daptacel® Infanrix®
Diphtheria, tetanus vaccine	**DT**	No trade name
Haemophilus influenzae type b vaccine	**Hib (PRP-T)** **Hib (PRP-OMP)**	ActHIB® Hiberix® PedvaxHIB®
Hepatitis A vaccine	**HepA**	Havrix® Vaqta®
Hepatitis B vaccine	**HepB**	Engerix-B® Recombivax HB®
Human papillomavirus vaccine	**HPV**	Gardasil 9®
Influenza vaccine (inactivated)	**IIV**	Multiple
Influenza vaccine (live, attenuated)	**LAIV4**	FluMist® Quadrivalent
Measles, mumps, and rubella vaccine	**MMR**	M-M-R II®
Meningococcal serogroups A, C, W, Y vaccine	**MenACWY-D**	Menactra®
	MenACWY-CRM	Menveo®
	MenACWY-TT	MenQuadfi®
Meningococcal serogroup B vaccine	**MenB-4C**	Bexsero®
	MenB-FHbp	Trumenba®
Pneumococcal 13-valent conjugate vaccine	**PCV13**	Prevnar 13®
Pneumococcal 23-valent polysaccharide vaccine	**PPSV23**	Pneumovax 23®
Poliovirus vaccine (inactivated)	**IPV**	IPOL®
Rotavirus vaccine	**RV1** **RV5**	Rotarix® RotaTeq®
Tetanus, diphtheria, and acellular pertussis vaccine	**Tdap**	Adacel® Boostrix®
Tetanus and diphtheria vaccine	**Td**	Tenivac® Tdvax™
Varicella vaccine	**VAR**	Varivax®
Combination vaccines *(use combination vaccines instead of separate injections when appropriate)*		
DTaP, hepatitis B, and inactivated poliovirus vaccine	**DTaP-HepB-IPV**	Pediarix®
DTaP, inactivated poliovirus, and *Haemophilus influenzae* type b vaccine	**DTaP-IPV/Hib**	Pentacel®
DTaP and inactivated poliovirus vaccine	**DTaP-IPV**	Kinrix® Quadracel®
DTaP, inactivated poliovirus, *Haemophilus influenzae* type b, and hepatitis B vaccine	**DTaP-IPV-Hib-HepB**	Vaxelis®
Measles, mumps, rubella, and varicella vaccine	**MMRV**	ProQuad®

*Administer recommended vaccines if immunization history is incomplete or unknown. Do not restart or add doses to vaccine series for extended intervals between doses. When a vaccine is not administered at the recommended age, administer at a subsequent visit. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

How to use the child/adolescent immunization schedule

1 Determine recommended vaccine by age **(Table 1)**

2 Determine recommended interval for catch-up vaccination **(Table 2)**

3 Assess need for additional recommended vaccines by medical condition and other indications **(Table 3)**

4 Review vaccine types, frequencies, intervals, and considerations for special situations **(Notes)**

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American Academy of Pediatrics (www.aap.org), American Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), American Academy of Physician Assistants (www.aapa.org), and National Association of Pediatric Nurse Practitioners (www.napnap.org).

Report

- Suspected cases of reportable vaccine-preventable diseases or outbreaks to your state or local health department
- Clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or 800-822-7967

Download the CDC Vaccine Schedules App for providers at www.cdc.gov/vaccines/schedules/hcp/schedule-app.html.

Helpful information

- Complete ACIP recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- *General Best Practice Guidelines for Immunization*: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Outbreak information (including case identification and outbreak response), see Manual for the Surveillance of Vaccine-Preventable Diseases: www.cdc.gov/vaccines/pubs/surv-manual
- ACIP Shared Clinical Decision-Making Recommendations www.cdc.gov/vaccines/acip/acip-scdm-faqs.html

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS310020-A

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2021

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded in gray.

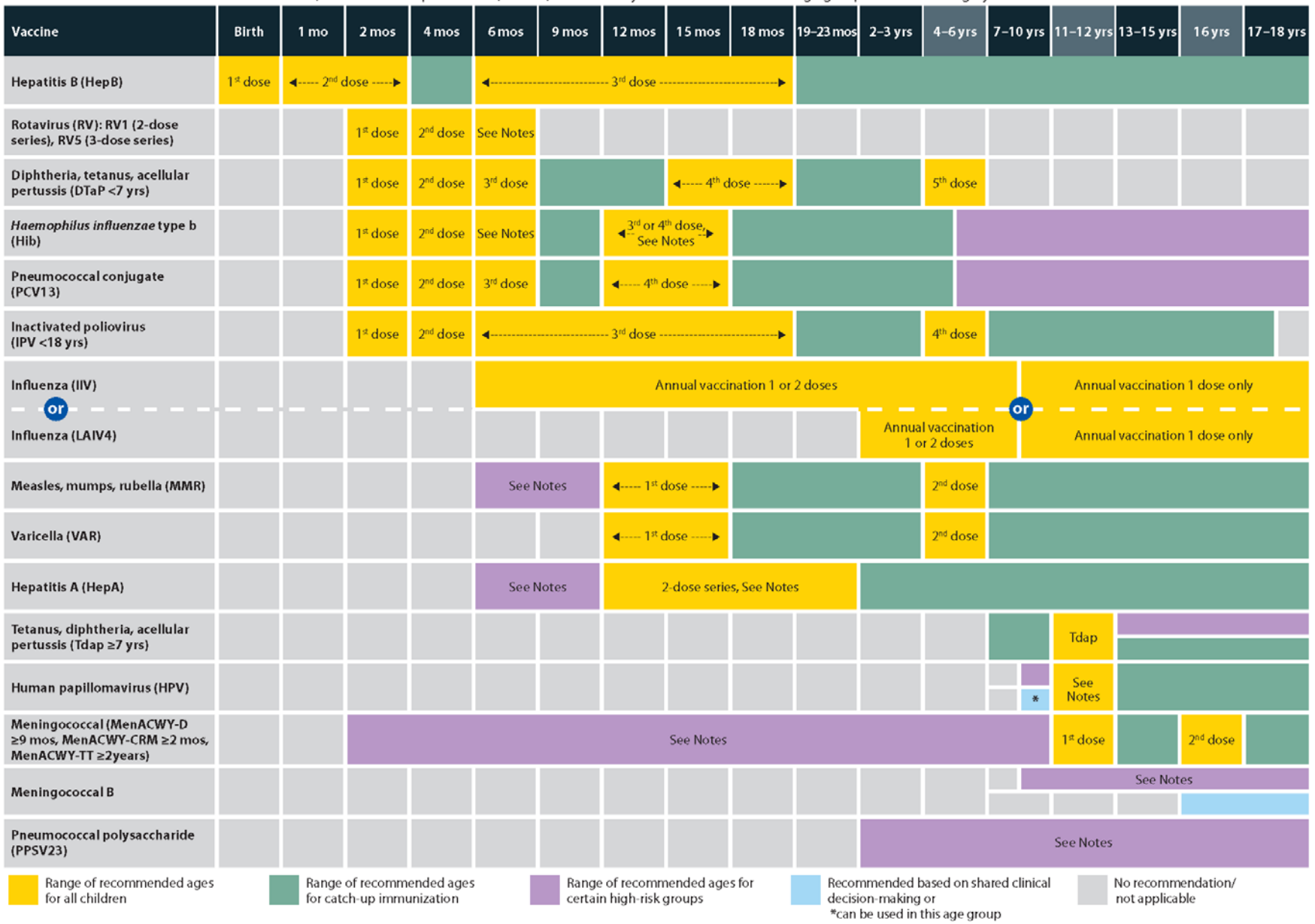


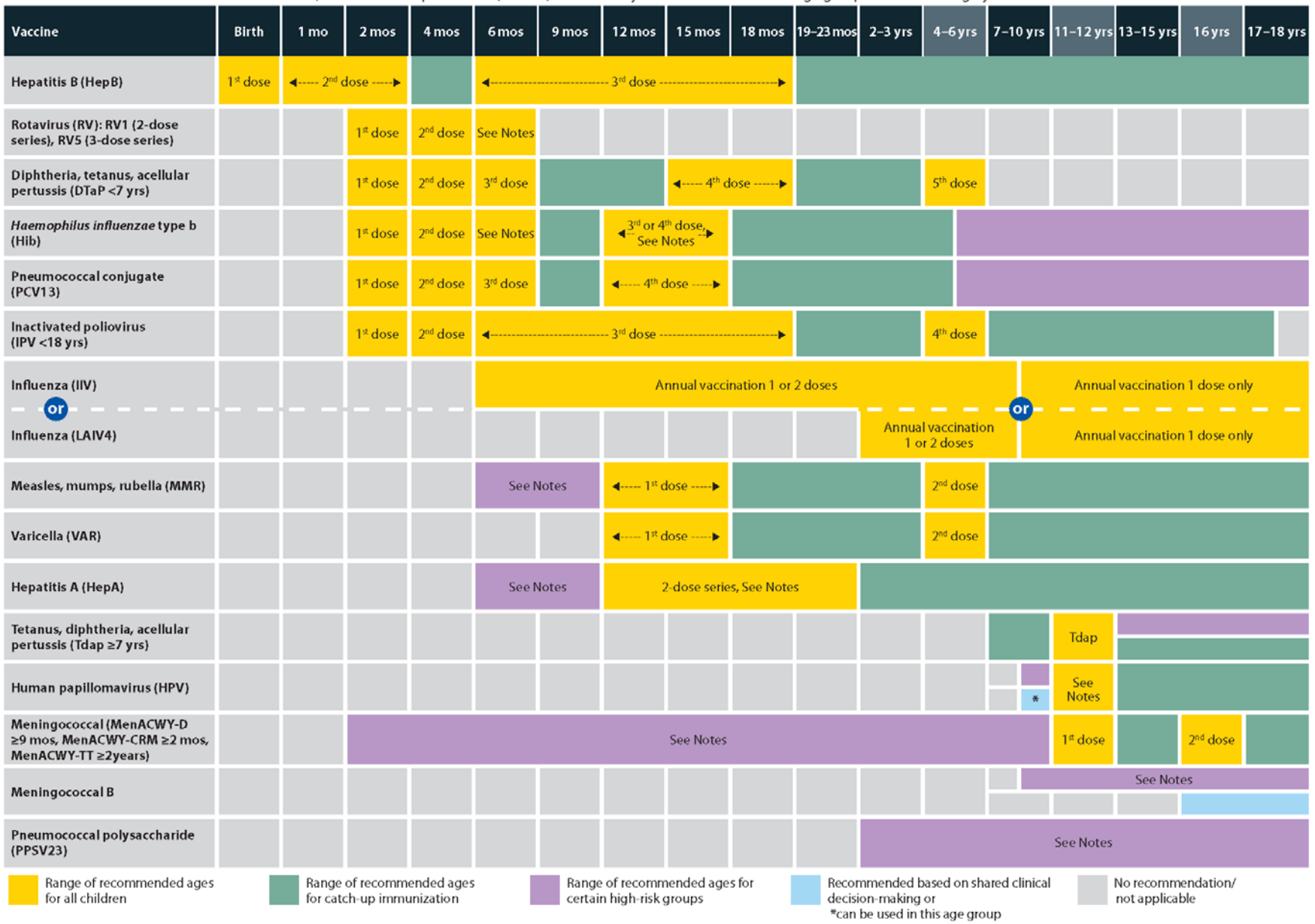
Table 2 Recommended Catch-up Immunization Schedule for Children and Adolescents Who Start Late or Who Are More than 1 month Behind, United States, 2021

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. **Always use this table in conjunction with Table 1 and the notes that follow.**

Children age 4 months through 6 years					
Vaccine	**Minimum Age for Dose 1**	**Minimum Interval Between Doses**			
		Dose 1 to Dose 2	**Dose 2 to Dose 3**	**Dose 3 to Dose 4**	**Dose 4 to Dose 5**
Hepatitis B	Birth	**4 weeks**	**8 weeks *and* at least 16 weeks after first dose.** Minimum age for the final dose is 24 weeks.		
Rotavirus	6 weeks Maximum age for first dose is 14 weeks, 6 days.	**4 weeks**	**4 weeks** Maximum age for final dose is 8 months, 0 days.		
Diphtheria, tetanus, and acellular pertussis	6 weeks	**4 weeks**	**4 weeks**	**6 months**	**6 months**
Haemophilus influenzae type b	6 weeks	**No further doses needed** if first dose was administered at age 15 months or older. **4 weeks** if first dose was administered before the 1st birthday. **8 weeks (as final dose)** if first dose was administered at age 12 through 14 months.	**No further doses needed** if previous dose was administered at age 15 months or older. **4 weeks** if current age is younger than 12 months ***and*** first dose was administered at younger than age 7 months ***and*** at least 1 previous dose was PRP-T (ActHib, Pentacel, Hiberix) or unknown. **8 weeks *and* age 12 through 59 months (as final dose)** if current age is younger than 12 months ***and*** first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months ***and*** first dose was administered before the 1st birthday ***and*** second dose was administered at younger than 15 months; OR if both doses were PRP-OMP (PedvaxHIB, Comvax) ***and*** were administered before the 1st birthday.	**8 weeks (as final dose)** This dose only necessary for children age 12 through 59 months who received 3 doses before the 1st birthday.	
Pneumococcal conjugate	6 weeks	**No further doses needed** for healthy children if first dose was administered at age 24 months or older. **4 weeks** if first dose was administered before the 1st birthday. **8 weeks (as final dose for healthy children)** if first dose was administered at the 1st birthday or after.	**No further doses needed** for healthy children if previous dose was administered at age 24 months or older. **4 weeks** if current age is younger than 12 months and previous dose was administered at <7 months old. **8 weeks (as final dose for healthy children)** if previous dose was administered between 7–11 months (wait until at least 12 months old); OR if current age is 12 months or older and at least 1 dose was administered before age 12 months.	**8 weeks (as final dose)** This dose only necessary for children age 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.	
Inactivated poliovirus	6 weeks	**4 weeks**	**4 weeks** if current age is <4 years. **6 months (as final dose)** if current age is 4 years or older.	**6 months** (minimum age 4 years for final dose).	
Measles, mumps, rubella	12 months	**4 weeks**			
Varicella	12 months	**3 months**			
Hepatitis A	12 months	**6 months**			
Meningococcal ACWY	2 months MenACWY-CRM 9 months MenACWY-D 2 years MenACWY-TT	**8 weeks**	See Notes	See Notes	
Children and adolescents age 7 through 18 years					
Meningococcal ACWY	Not applicable (N/A)	**8 weeks**			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis	7 years	**4 weeks**	**4 weeks** if first dose of DTaP/DT was administered before the 1st birthday. **6 months (as final dose)** if first dose of DTaP/DT or Tdap/Td was administered at or after the 1st birthday.	**6 months** if first dose of DTaP/DT was administered before the 1st birthday.	
Human papillomavirus	9 years	**Routine dosing intervals are recommended.**			
Hepatitis A	N/A	**6 months**			
Hepatitis B	N/A	**4 weeks**	**8 weeks *and* at least 16 weeks after first dose.**		
Inactivated poliovirus	N/A	**4 weeks**	**6 months** A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.	
Measles, mumps, rubella	N/A	**4 weeks**			
Varicella	N/A	**3 months** if younger than age 13 years. **4 weeks** if age 13 years or older.			

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2021

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded in gray.



Adolescent Immunization Issues

Adolescent Immunization Issues

- Timing and spacing
- Vaccine administration – needle length
- Syncope

Timing and Spacing of Vaccine Doses

- General Best Practices: two different vaccines may be given simultaneously (same clinic day)
  - Non-simultaneous: if vaccines are both live, must be spaced by 28 days
- COVID-19 vaccine and other vaccines: may be administered simultaneously or at any interval between them (COVID-19 vaccines are non-live)
- COVID-19 vaccine and vaccines that are reactogenic (tetanus-toxoid containing vaccine, adjuvanted vaccines) should be administered in different limbs

Timing and Spacing of Vaccine Doses: Adjuvanted Routine Vaccines

- Hepatitis B, DTaP, IIV (Fluad), Tdap, HPV, Zoster (RZV), Pentacel, Pediarix, Quadracel, Kinrix, Twinrix.
- Vaccines administered to adolescents: Tdap, HPV, Twinrix (18 years and older), HepB (Heplisav, 18 years and older)

Vaccine Administration: Needle Length

TABLE 6-2. Needle length and injection site of IM injections for children aged ≤18 years (by age) and adults aged ≥19 years (by sex and weight)

Age group	Needle length	Injection site
Children (birth-18 years)		
Neonates[a]	5/8 inch (16 mm)[b]	Anterolateral thigh
Infants, 1-12 months	1 inch (25 mm)	Anterolateral thigh
Toddlers, 1-2 years	1-1.25 inch (25-32 mm)	Anterolateral thigh[c]
	5/8–1 inch (16-25 mm)	Deltoid muscle of arm
Children, 3-10 years	5/8–1 inch (16-25 mm)	Deltoid muscle of arm[c]
	1-1.25 inches (25-32 mm)	Anterolateral thigh
Children, 11-18 years	5/8–1 inch (16-25 mm)	Deltoid muscle of arm[c]
	1-1.5 inches (25-38 mm)	Anterolateral thigh
Adults (≥19 years)		
Men and women, <60 kg (130 lbs)	1 inch (25 mm) [d]	Deltoid muscle of arm
Men and women, 60-70 kg (130-152 lbs)	1 inch (25 mm)	
Men, 70-118 kg (152-260 lbs)	1-1.5 inches (25-38 mm)	
Women, 70-90 kg (152-200 lbs)		
Men, >118 kg (260 lbs)	1.5 inches (38 mm)	
Women, >90 kg (200 lbs)		

Abbreviation: IM = intramuscular.

Source: (14).

[a] First 28 days of life.

[b] If skin is stretched tightly and subcutaneous tissues are not bunched.

[c] Preferred site.

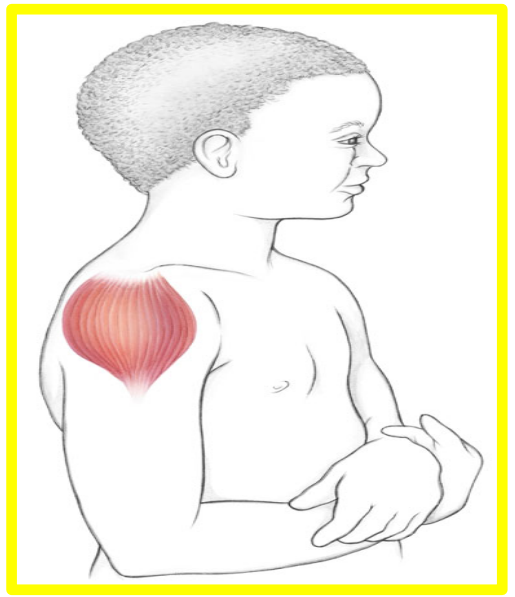
[d] Some experts recommend a 5/8-inch needle for men and women who weigh <60 kg, if used, skin must be stretched tightly (do not bunch subcutaneous tissue)

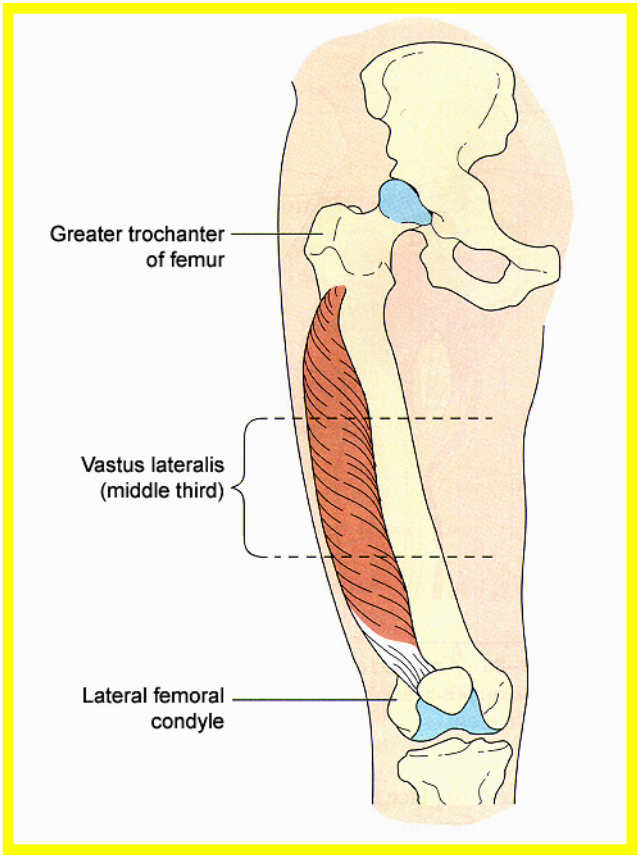
https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.pdf

Vaccine Needle Length: Children 11 Years Through 18 Years

- Deltoid Muscle (preferred site)
  - 5/8 inch through 1 inch
  - 5/8 inch only if the skin is stretched tight and the subcutaneous tissues are not bunched

- Anterolateral thigh
  - 1 through 1.5 inches



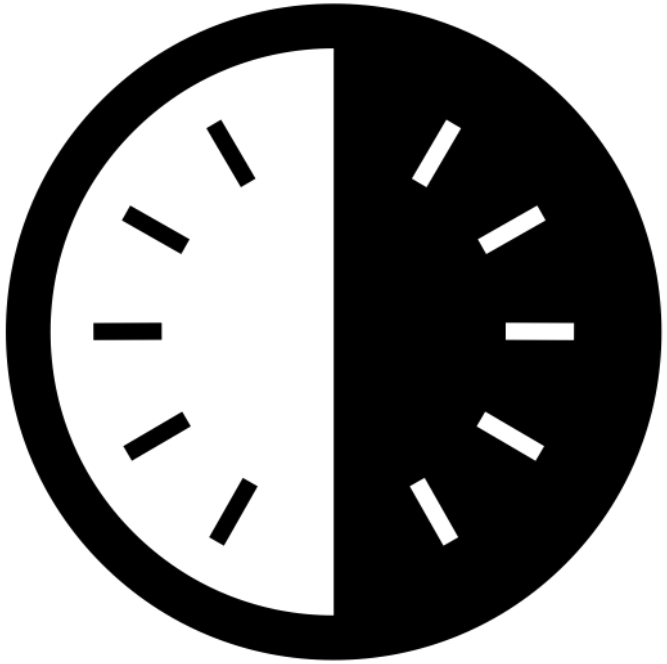


Vaccine Needle Length: COVID-19 Vaccine Issues

- RECONSTITUTION
  - Pfizer COVID-19 vaccine
    - Vaccine must be reconstituted and the recommended syringe size varies for reconstitution and injection into the patient
- MULTIDOSE VIALS
  - mRNA COVID-19 vaccine (Pfizer and Moderna)
    - Needle length should be based on technique, but for persons 19 years old and older (some adolescents) the needle length is based on weight.
    - Need to use a 1.5 inch vaccine to administer into the deltoid for high-weight patient, but USP recommends using a 1 inch needle to draw up vaccines (and switch needles)
    - 1.5 inch needles may not fit both low-dead-volume syringes AND traditional volume syringes
      - Auxiliary kits contain 80% (per vial) low-dead-volume syringes
      - CDC recommends using 50% low-dead-volume syringe and traditional volume syringe when pre-filling from a vial (to produce maximum dose sparing)

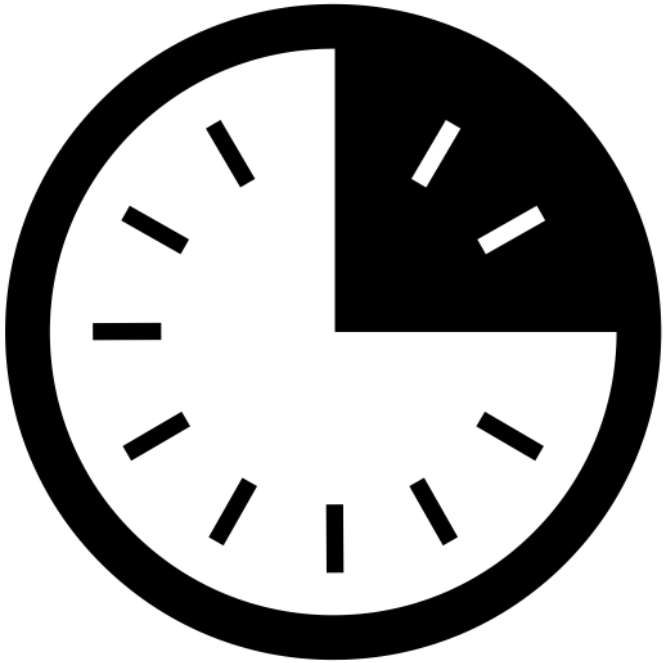
Special Adolescent Concern

History of immediate allergic reaction (any severity) to a vaccine or injectable therapy
Contraindication to a different type of COVID-19 vaccine
History of anaphylaxis (due to any cause)



30 minutes

All other persons



15 minutes


WE
CAN
DO
THIS

Pink Book Webinar Updates

Pink Book Updates

- First vaccine-specific Pink Book presentation of 2020 webinar series: August 5, 2020
- There will not be a 2021 Pink Book Webinar series
- Updates to Vaccine-Specific Recommendations have been made to:
  - DTaP
  - Tdap
  - Vaccine administration
  - LAIV
  - Zoster vaccine
  - MenACWY
  - MenB
  - HPV

https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/general-recs-errata.html

DTaP Updates

- Minimum intervals between 3rd and 4th dose
  - 6 months prospectively and IIS forecasting
  - 4 months retrospectively and IIS evaluation

- Minimum interval between the penultimate and ultimate dose of DTaP
  - 6 months (both prospective and retrospective)

Tdap Vaccine

- Tdap vaccine recommended for current pregnancy
- Tdap vaccine recommended for adolescence
- 2nd dose of Tdap recommended for 11-12 year olds, even if a first dose of Tdap was administered as catch-up between 7 years through 9 years

- For other recommended tetanus-toxoid containing vaccines, EITHER Tdap or Td may be used

Vaccine Administration

- Doses of vaccine from two separate vials should NOT be pooled to create one or more vaccine doses
- Can lead to product contamination